MANISTEE CITY PLANNING COMMISSION
425 Sixth Street
Manistee, MI 49660

PUBLIC HEARING/WORKSESSION

February 19, 2004

A Public Hearing/Worksession of the Manistee City Planning Commission was held on Thursday, February 19, 2004 at 7:00 p.m. in the Middle School Gym, 550 Maple Street, Manistee, Michigan.

MEMBERS PRESENT: Ray Fortier, Cyndy Fuller, Christa Johnson-Ross, David Kelley, Mark Wittlief and Roger Yoder

MEMBERS ABSENT: Bob Davis, Greg Ferguson and Tony Slawinski

OTHERS: Jay Kilpatrick (Williams & Works), Brian Sousa (Wade Trim), Jon Rose (Community Development), Denise Blakeslee (Administrative Assistant) and others

Public Hearing was open at 7:15 p.m. by Chairman Yoder.

PUBLIC HEARING:

Manistee Saltworks Development Corporation - Coal Fired Power Plant

Chairman Yoder explained the Public Hearing Procedures to the people in attendance as printed on the the Agenda. Sign up sheets were provided for those who wished to speak during the Public Hearing. The Public Hearing will begin with the applicant.

Joe Tondu, Tondu Corporation introduced members of Tondu Corporation, Beverly Baker, Jim Ford, Jim Tondu, Meaghan Kempf and Bill Rickter. Mr. Tondu gave a power point presentation (attachment #1) on the Northern Lights Project (Manistee Saltworks Development Corporation). The presentation included: Why Northern Lights, the permitting process, Michigan's Growing Energy Needs, Clean affordable and Reliable Energy, the Manistee Advantage, Michigan at an Energy Crossroads, Michigan's Growing Demand for Energy, Where will our energy come from, Where does energy go, How Energy is used, The advantages in Manistee (Port, Water, Transmission Grid, Large Industrial Site, Skilled Labor), The Northern Lights Project ($700 million investment in Manistee, Energy for more than 300,000 homes, create good jobs and economic prosperity, will be the cleanest coal-fueled power plant ever built in Michigan), Construction, New Jobs, Economic Boost, Existing Site Information, Site Remediation, A Liability becomes an asset, Environmental Trends in Coal, Permitting Process (MDEQ - Air Permit, City of Manistee Planning Commission - Special Use Permit).

Air Permit Presentation by Del Rector, Senior V.P., NTH Consultants. Mr. Rector spoke about the DEQ Air Permit which included the DEQ's authority, determination, public comment, MDEQ will only issue a permit if it meets most restrictive of all state and federal regulations, Best Available Control

Technology (BACT), Maximum Achievable Control Technology (MACT), Meets public health requirements, Control Technology for the cleanest Coal Power Plant in Michigan, Public Health Protections, Predicted Air Quality, Particulate (PM/PM 10) Sulfur Dioxide (SO2), Mercury Emissions, Compliance requirements.

Joe Tondu spoke of the proposed plant being consistent with the Master Plan and the I-2 Zoning District. Mr. Tondu spoke of the Special Use Permit Process and summarized by speaking of the Economic boost for the City, the production of Affordable and Reliable electricity and being Environmentally responsible. Mr. Tondu spoke of the misstatements that he has heard regarding Mercury and the amount necessary to pollute a lake. Mr. Tondu said he would not build if it would have any adverse effect on anybody's health.

Patty O'Donnel/Great Lakes United, Grand Traverse Band, 260 N. West Bayshore Drive, Peshawbestown - Spoke from a letter from Dr. Mick DeGraeve, President Great Lakes Environmental Center (attachment #2) which included information on the Environmental impact, health and welfare of people, poisoning of fish, and acid rain. Encouraged the Planning Commission to look at all aspects of coal burning plants including the effects on society and children. Great Lakes Environmental Center promotes renewable energy sources and are a strong voice in cleaner production, educating workers. Manistee could be a big player in the renewal of Manistee Lake.

Dr. Christopher Grobbel, Tip of the Mitt Watershed Council, 232 E. Front Street, Ste 7, Traverse City - Dr. Grobbel is firmly against proposed proposal and feels that the proposed plant is inconsistent with the Master Plan and Zoning Ordinance. Spoke of the Master Plan as a vision for 20 years and the Zoning Ordinance being the law to get there, Likely impact on neighboring properties, mercury, lead and acid rain. Said that the DEQ will issue permit and the decision must be made here locally. Said that the project was inconsistent with the Master Plan (commercial/industrial use not compatible with site, small town character, increased truck traffic, environmental safety not in character with community). Said the Planning Commission has a difficult decision to make and must balance the economic future and tourism. They should preserve water quality and not allow more industry. Spoke of the injurious consequences that occur the longer you live in an area with a Coal Fired Power Plant, the need for an Environmental Assessment and expressed concerns over the noise.

Alan, O'Shea, Manistee County Commissioner, 10156 Witala, Copemish - Spoke of the letter in support that the County Commissioners read at the first Public Hearing in November, reservations were expressed by the County Commissioners at the meeting in December, and he now read a letter from the County Commissioners that states they have reconsidered their position on the Northern Lights Project (attachment #3). Mr. O'Shea expressed his respect and support of the City of Manistee but has received a 70% negative reaction to the project from people he has spoken to. They feel that this process has proceeded too fast, too soon, and there are too many grey areas in the process. Spoke of the decimation of governmental support in the 1980's for alternative energy sources. Someone has to draw the line and hopes that it is done here.

George Wagoner, 3 Cottage Lane, Manistee - Read a prepared statement (attachment #4) expressing his opposition to the proposed power plant.

Lydia Murray, MDEC, 300 N. Washington Sq, Lansing - Was in attendance to support the Northern Lights project. She was asked to attend on behalf of David Hollister, Director Department of Labor and

Economic Growth. She spoke of the economic benefits, construction jobs and that a labor agreement has been signed. The Northern Lights project will use local trades people. Spoke of the economic benefits that will come to the area from the 60 full time employees, services, maintenance and repairs for the plant. The State of Michigan needs energy production and the use of Natural Gas for electricity has increased the cost drastically. Coal Fired Power Plants will keep the costs down. The price of electricity is a big concern. This plant will help keep jobs and clean up a Brownfield Site that has been in use for over 100 years. The State supports the reuse of industrial sites. Taxes paid will include sales tax and income tax that will help support the State including our Schools. The Michigan Department of Labor Economic Development supports this project and the DEQ will hold public hearings in response to this request. This project will benefit the area and the economy.

Robert T. Hensel, MD, 2567 Crescent Beach Road - Opposed to the Coal Fueled Plant proposed by the Tondu Corporation from Houston, Texas. The Special Use Permit Standards are designed to protect the health, safety and welfare of the community. He was first introduced to toxins in the late 1960's when Lake St. Clair was closed due to the levels of mercury. Spoke of the effects of DDT, Lead, Agent Orange, Asbestos, PCB's, acid rain and what we have learned since the 1960's. Said that Coal Burning Public Utilities are the largest source of man-made toxic substances or pollutants released into the atmosphere and the environment. He believes that the cost to the community for people who will be adversely affected will not be worth construction of the plant.

Tom Kubanek, Industrial Development Corporation of Manistee County, 11 Cypress Street, Manistee - Mr. Kubanek asked to resubmit a letter of support from the IDC dated November 19, 2003 (attachment #5).

Tex Collins, 92 Poplar Street - Mr. Collins spoke of the proposed project, the PCA Plume, and Waste Water Treatment Plant expansion. Mr. Collins expressed his views on Northern Lights, local government and referendums, pollution credits, economic impacts, impacts on the community, and effluent. Mr. Collins feels that there are unanswered questions at this point that should be answered before we proceed at this time.

Monica Evans, Sierra Club, 3840 Blueberry, Honor - Is in opposition to the project and asked that the Planning Commission weigh the following; Cost of health care, effect on the environment, and negative effect on downwind communities. She asked for studies that included the destination of potential contaminates. Questioned the little amount of information available regarding on-site wells. Spoke of the qualifications of Asbestos Contractor. Feels that more time should be given and the community could be better served by alternative energy sources. Requested that the Planning Commission deny the permit.

Pam Smith, 730 Hastings Street, Traverse City - Member of Great Lakes Environment Center. She asked that the Planning Commission consider how water will be obtained and in what quantity. Spoke of the damage to fish from the intake cooling systems of plants and the large number of fish that are killed. This has a huge impact on the ecological balance to fish. Chemicals are used against zebra mussels and effect other aquatic organisms. Concerned over the sediments at the bottom of Manistee Lake and the impact construction, dredging will have on them, coal pile contaminates, hazardous waste products, local and regional impacts, thermal pollution.

Bernard Ware, 9094 Alkire Road, Bear Lake - Read a prepared statement (attachment #6) expressing his opposition to the proposed plant.

Chairman Yoder called for a 5 minute recess. Chairman Yoder said that due to the number of people who have signed up to speak this evening we will adjourn the Public Hearing at 10:00 p.m. We will continue the Public Hearing at 7:00 p.m. on February 26, 2004 in the Middle School Gym.

After the recess Chairman Yoder said that people had asked to be moved up on the sign in sheet to speak this evening. Chairman Yoder said that to be fair to all that have signed in we will proceed in the order in which people have signed in and apologized for any inconvenience.

Jim Sluyter, Citizens for Responsible Development, 3480 Potter Road, Bear Lake - Read a prepared statement (attachment #7). Expressing his opposition to the proposed plant.

Glenn T. Lottie, Spirt of the Woods Conservation Club, 11579 River Road, Brethren - Read a prepared statement for the organization which included a resolution for the Michigan United Conservation Clubs which they expect to be approved (attachment #8) expressing opposition to the proposed plant.

Shirley Skiera, 1307 24th Street - Read a prepared statement (attachment #9) in opposition to the proposed power plant.

Lora Sutterland, Michigan Chapter of Lung Association, Traverse City - Read a resolution from the Lung Association in opposition to the proposed power plant. Spoke of the number of residents in Manistee County diagnosed with lung disease. Communities to the north and south have non-attainment status and Manistee County does not monitor their Air Quality. She is opposed to the construction of the Plan and would like to see monitoring equipment installed in Manistee.

Ruth Pratt, 463 Third Street, Manistee - Read a prepared statement (attachment #10) Spoke of her opposition to the proposed power plant and made a derogatory comment relating to the Planning Commission in the event they approved the application.

Edward Atkins, 1870 Pine Ridge Drive, Manistee - Spoke of the economic impact and number of jobs the proposed plant would have. Spoke of the jobs that would be lost at Morton's if Tondu furnished power to that plant, which would lower the actual number of jobs. Spoke of the industry base in the community in 1948 and the current vacancies in the Industrial Parks. We need jobs but we don't need a coal burning power plant. Recommends that the Planning Commission not accept the proposed project which provides minimum employment.

Julia Chambers, 2254 S. Meyers, Ludington - Teaches in Manistee and would love to move to Manistee but would not if a coal fired power plant were here. Spoke of alternative energy practices, concerns over health and environmental impacts. Many groups are opposed to the group. Why? Burning coal is bad for the environment. Said there were no monitoring stations in Manistee. Spoke of the impacts from the proposed plant.

Rebecca Fox, 4510 W. Decker Road, Ludington - Said that she is an Environmental Researcher who Researched Coal Plants. Said that there is always detriment to the community and their health. The Coal plant will kill people 100 mile away. Minute amounts of mercury will contaminate Manistee Lake for a low number of jobs - at what cost? Costs will increase in health care and infrastructure for the community. A new coal plant should never be allowed anywhere again.

Duane Marquand, 2107 Red Apple Road, Manistee - Suggested that Coal Fired Power Plants be built where the coal is produced, spoke of the cost savings. Said to keep the plant away from Manistee Lake, Lake Michigan and our rivers. 100 years ago it was fine to have industry on lakes and where people lived because they did not have automobiles. We need to take care of our lake. The City of Manistee is not the only community to boarder Manistee Lake, there are five others. These communities should realize the importance of the lake. Mr. Marquand stated that Brownfield Redevelopment was encouraging sprawl. Our health is our wealth and should be given our greatest consideration.

Attachments were left with the Recording Secretary not listed above.

David L. Gard, Michigan Environmental Council (attachment #11)
National Wildlife Federation Great Lakes Office, 213 W. Liberty, Suite 200, Ann Arbor (attachment #12)
Erik Kinzinger & Julie Laporte, 4281 Joyfield Road, Arcadia (attachment #13)
Anna Grabowski, 1004 Alkire Road, Bear Lake (attachment #14)
Phillip Carleton, Facility Manager, Morton Salt, 180 Sixth Street, Manistee (attachment #15)
Gary VanHouten, 1822 Shadyside Drive, Cadillac (attachment #16)
Ron Renner, Crystal Lake Association, P.O. Box 89 Beulah, MI 49617 (attachment #17)

Adjourn

At 10:04 Chairman Yoder adjourned the Public Hearing until Thursday, February 26, 2004 at 7:00 p.m. in the Middle School Gym.

FEBRUARY 26, 2004 - PUBLIC HEARING RE-CONVENED

The City of Manistee Planning Commission Re-Convened the Public Hearing of Thursday, February 19, 2004 at 7:00 p.m. on Thursday, February 26, 2004 in the Middle School Gym, 550 Maple Street, Manistee, Michigan.

MEMBERS PRESENT:	Ray Fortier, Cyndy Fuller, David Kelley, Mark Wittlief, and Roger Yoder
MEMBERS ABSENT:	Bob Davis, Greg Ferguson, Christa Johnson-Ross, and Tony Slawinski
OTHERS:	Brian Sousa (Wade Trim), Jon Rose (Community Development), Denise Blakeslee (Administrative Assistant) and others

Public Hearing was re-convened at 7:04 p.m. by Chairman Yoder.

Chairman Yoder began by clarifying the time allotted to the applicant on February 19th. The City of Manistee Planning Commission begins every Public Hearing with a presentation by the applicant. There has never been a time limit for this presentation. Mr. Yoder read an excerpt from the Michigan Society of Planning's Basic Training for Planning and Zoning Part II. This section addresses Public Hearings and reads "Limit speaking time, when necessary. If there are many people who wish to speak, it is appropriate to limit the time of each speaker, **with the exception of the applicant**. The applicant should be given as much time as needed..."

Chairman Yoder read the rules of procedure that will be followed for the public hearing. The continuation of the Public Hearing will begin by Chairman Yoder calling the name of the next person to speak and the name of the following person. Names shall be called in the order in which they were signed in. If anyone is not in attendance they will be removed from the list and then proceed to the next person. 104 people are left to speak and the Planning Commission wishes to be fair to everyone. To facilitate this they will adhere to the 5 minute limit. The time keeper will give notice of 1 minute remaining, 15 seconds remaining and time is up. If a person continues to speak after their allotted time the timekeeper will shut off the microphone and the next speaker will be called forward.

Dick Albee, 365 Lighthouse Way, Manistee - Read a prepared statement in opposition to the Proposed Coal Fired Power Plant (attachment #18).

Linda Albee, 365 Lighthouse Way, Manistee - Is opposed to the Proposed Power Plant and read a letter from 10 local physicians in opposition to the plant (attachment #19).

Mary Russell, 267 Lighthouse Way, Manistee - not in attendance

Carol Pasko, 610 Spruce Street, Manistee - Read a prepared statement expressing her opposition to the Proposed Power Plant (attachment #20).

Carol Atkins, 1870 Pine Ridge Drive, Manistee - Read a prepared statement in opposition to the Proposed Power Plant (attachment #21).

John Veach, 485 Oxford Ct., Manistee - Read a prepares statement and presented a copy of the Tax Tribunal Record: TES Filer City Station v Township of Filer (attachment #22).

Jim Dulzo, 556 Case Road, Bear Lake - Mr. Dulzo is a member of the Michigan Land Use Institute and read a letter from Hans Voss, Executive Director (attachment #23) and urged the Planning Commission to reject the proposal until independent analysis could be obtained.

Sister Anne Monica Shalda, 501 Michael Street, Manistee - Read a prepared statement expressing her opposition to the power plant (attachment #24).

Kevin Hughes (MCSGA), P.O. Box 442, Onekama - Read a prepared statement in opposition to the proposed power plant and provided a handout "Manistee County Sport Fishing Fact Sheet" (attachment #25).

Lynise Hensel, 2567 Crescent Beach Road, Manistee - Read a prepared statement in opposition to the proposed power plant w/attachments (attachment #26).

Eric Pyne, 2837 Forrester Road, Frankfort - Mr. Pyne said that everyone knows burning coal will effect the environment and spoke of the meeting where the lights went out. Mr. Pyne asked the Planning Commission what are you going to say to God when your lights go out? What is he going to say to you?

Ashley Andrews, 480 Eighth Street, Manistee - Did not want to speak and said to give her time to a speaker that needs it.

Steve Cote, 322 Lighthouse Way S., Manistee - Read a portion of a letter from Michigan Power Agency(attachment #27). Spoke of the impact to the Municipal services Police, Fire, infrastructure etc for what so that Manistee can become the largest pollutant in Michigan. Lighthouse Landings pays more in property taxes than Tondu has proposed to pay in a Customer Service Fee. Mr. Cote is opposed to the proposed power plant.

Kari Tomashik, 10515 Fowler Road, Honor - Spoke of her visit to the area of the proposed power plant, her discussion with residents and a drive around the lake. Ms. Tomashik is opposed to the proposed plant citing the following reasons; 1) air quality -gas smell & soot on houses, 2) water quality - Manistee Lake already impacted by the industry on the lake including TES and the toxins in the lake, worried about ground water contamination, 3) Tax exempt status - felt that Tondu misled the City regarding taxes, 4) Infrastructure - who will pay for the war and tear on roads, bridges, docks in river channel damaged by freighter traffic and what if there were an environmental accident. Expressed compassion for the people who need good paying jobs in Manistee. Spoke about the jobs that could be created by using an alternative energy source. Manistee could be a pioneer in new technology. Spoke about the effects of coal on the environment, health of community and air.

Daniel Behring, 3695 Lakeshore Drive, Manistee - Daniel Behring read a prepared statement and when he ran out of time asked to use Ashley Andrews time. Chairman Yoder approved request. Mr. Behring also submitted handouts and two computer disks (on file at City Hall). Mr. Behring's information is attached (attachment #28).

Robert Lawrence, 7481 Torrant Street, Manistee - not in attendance

William Kracht, 403 First Street, Manistee - Read a prepared statement in opposition to the proposed power plant (attachment #29).

Nancy Behring, 3695 Lakeshore Drive, Manistee - Read a prepared statement in opposition to the project (attachment #30).

Mary Cunningham, 620 Bryant Avenue, Manistee - Spoke about a newspaper article on Ice Mountain (attachment #31) and how grass roots organization blocked a huge corporation. Citizens have the power to protect their environment. Do not fail the Citizens of our community; deny the permit.

Carol Fox, 277 First Avenue, Manistee - not in attendance

Philip Joseph, 9220 S. Portage Point Drive, Onekama - Mr. Joseph spoke of how Manistee was originally a Lumber town and does not know what the future holds. Our Great Lakes and fresh water are the envy of the nation. The Japanese want to buy our water. Coal Fired Plants are not as dirty as they used to be. The tall stack will spread pollutants further away. Why don't they locate the Plant in Holland where the energy will be used? He said that Holland does not want the plant in their community they have beautiful marinas and lakes and plan to keep it that way. Manistee Lake is polluted but citizens one day will clean it up. Do not let someone take us back 50 years. It is critical that an outside unbiased expert evaluate the documents. People want good jobs, they can get those jobs by clean industry. He hopes the Planning Commission makes the right decision.

Roger Huckendubler, 24 Anchor Rode Drive, Manistee - not in attendance

Erik Kinzinger, 4281 Joyfield, Arcadia - not in attendance

Bill Dean, 282 Lighthouse Circle, Manistee - Read a prepared statement in opposition of the proposed power plant with copies of articles submitted for the record (attachment #32).

Kevin Postma, 11185 N. Morton Road, Manistee - Read a prepared statement in opposition of the project (attachment #33).

Brett Hamilton, 17096 Bigge Road, Kaleva - Read a prepared statement (attachment #34).

J. Bowerman, 2189 Frost Road, Manistee - not in attendance.

Nisha Kapadia, 213 W. Liberty, Ste. 200, Ann Arbor - not in attendance (attachment #12 has Ms. Kapadia's name listed - handed to the Recording Secretary 2/19/04).

Helen Ann Yunis, 444 Third Street, Manistee - not in attendance.

Ashley Pratt, 463 Fourth Street, Manistee - not in attendance.

Jan Shireman, 10040 Alkire Road, Bear Lake- Read a prepared statement in opposition of the power plant (attachment #35).

Hope Hogan, 721 Tamarack Street, Manistee - not in attendance.

National Energy Education Development Project, Kennedy Elementary, 610 Parkdale Avenue, Manistee (Students addresses have been removed per schools request)

Alex Tomazewski - Read a report in opposition of Plant (attachment #36).

George Brown - Read a report in favor of Proposed Power Plant (attachment #36).

Ethan Thompson - Read a report in opposition of Plant (attachment #36).

Hanna Sartor - Spoke in opposition of Proposed Plant, non renewable energy source, not for the common good, negative effects of mercury, use of Wind Energy. Requested the Planning Commission deny the request for a power plant.

Paul Swedenborg - Spoke in opposition of the Proposed Plant because of health problems including increased heard disease, ADD, & AHDD. Negative effects of mercury and the effects to the residents in Filer City and Manistee. People who do not live in Manistee will be getting the energy. Requested that the Planning Commission deny the request.

Karl Jaskiw - Spoke in opposition of Proposed Plant. Said that there would be 51 jobs and you would be killing a hundred people. Mercury contaminates the environment and is dangerous. Requested the Planning Commission to deny permit.

Delaney Bachman, 610 E. Parkdale Avenue, Manistee - not in attendance

Valoyce A. Dean, 282 Lighthouse Circle, Manistee - gave time to husband Bill Dean.

Shari Spoelman, 1822 Shadyside Drive, Cadillac - not in attendance

Chris Machir, 12311 N. Kilcherman, Northport - not in attendance

Marty Holtgren, 1308 25th Street, Manistee - Read a prepared statement in opposition to the proposed power plant (attachment #37).

Mark DiBenedetto, 13191 Chicago Avenue, Wellston Read a prepared statement support of the project (attachment #38).

Ronald Martin, 6789 W. Maple Road, Ludington - Mr. Martin said that he has been eating fish for 52 years and never had any problems. The largest Brown Trout was caught in the Manistee River Channel. We have good fish here. Mr. Martin supports the Tondu Project he will work there then retire on Manistee River. Spoke of the Vietnam Memorial in Washington where the by-product fly ash was used to build the foundation.

Nita Guenthardt, 5342 Caberfae Hwy., Manistee - Ms. Guenthardt is a third generation Manistee County Resident. Spoke of the children who are unable to live in Manistee because there are no jobs. A lot of people she grew up with had to leave the area because of lack of employment. Spoke of the lack of trust she has in the DEQ, DNR and Tondu. Concern over the fact that wood chips from PCA are not being used at the TES Station in Filer they are trucked out of town. The promise of jobs tempt us from preserving our community. The decedents from the original factories on Manistee do not live here they have long since left. We have been cleaning up Manistee Lake, do not go back to smoke in the air and

pollution. Citizens do not have a voice with the DEQ they only have the Planning Commission to listen to them. Requests that the permit is denied.

Jeremy Truog, 8728 Wilderness Trail, Traverse City - Mr. Troug is a member of the American Lung Association. Said that there was brainwashing during the presentation by Tondu who used fear. Everyone should look at the negative impacts to health and added pollution. Spoke of studies by the American Lung Association (attachment #39). There is no such thing as clean coal. Manistee will suffer increased pollution as well as communities downwind.

Chuck Oyler, 12399 N. Buys Road, Muskegon - Read a prepared statement in favor of proposed power plant (attachment #40).

Lee Sprague, 5475 Pine Creek Road, Manistee - Mr. Sprague is representing the Little River Band of Ottawa Indians who are against the proposed power plant, but is not against jobs. The addition of 60 jobs in the community does not lower the unemployment rate down to 3.5% it will still be over 6%. Expressed concerns over mercury emission. Asked Mr. Tondu to bring in a Doctor that would talk about the heath benefits from a coal fired power plant and spoke of the many doctors in our communities that are opposed to the plant. Applauded the County Commissioners request for Environmental and Economic Statements. Expressed his concern that four Planning Commission members were not in attendance. Mr. Sprague said that we need heros the Planning Commission members could be our heros.

Roger Snyder, 100 Main Street, Eastlake - not in attendance.

Timothy Strahan, 903 St. Paul, Ludington - not in attendance.

Joe Harper, Fifth Street, Manistee - not in attendance.

Kirk Stevenson, 1350 Seminole, Muskegon - not in attendance.

Zippy Adamczak, 252 W. Fox Farm Road, Manistee - not in attendance.

Bruce Hawley, 14300 Afton Avenue, Kent City - Mr. Hawley works for the Iron Workers and West Michigan Building Trades. Spoke of the construction workers from Manistee working on two plants larger than Tondu. He wants the plant to be clean and trust them to build a clean plant. He lives downwind from a coal plan and has no problems. There will be 60 jobs and the plant will require maintenance.

Todd Guenthardt, 2445 Main Street, Rt 3, Manistee - not in attendance

Pat Guzikowski, 8359 Second Avenue, Onekama - Mr. Guzikowski has been an Ironworker for 30+ years, is a life long Manistee County resident, also is a farmer and an environmentalist. He is a realist and knows that there will be some negative effects, but supports the project. He is familiar with coal fired power plants but is not in fear of them. You must consider the opportunity for our children to find employment. Coal is 100% domestic energy and you must look at the proof that we have an energy problem. Tondu promises clean water, air and a stable environment.

Gerard Grabowski, 10040 Alkire Road, Bear Lake - Mr. Grabowski is a member of the Aurora Association and they are opposed to the power plant. He read a prepared statement and included a copy of the Cooperation Agreement between Tondu and Michigan Public Power Agency, and Michigan South Central Power Agency (attachment # 41).

Brian Allen, 5539 Bar Lake Road, Manistee - Dr. Allen expressed his concerns about the detrimental effects the plant will have on our health, fishing and our infrastructure. Also concerned about the economy. He did some research that shows that the property values of the adjoining neighboring property could be reduced up to 40% and that the impact would reach as far as 18 miles away from the plant. He gave a handout with information (attachment #42).

Attachments were left with the Recording Secretary not listed above.

Henry Lester, 122 Lighthouse Way N., Manistee (attachment #43)
Dorothy Thorson, 268 Fifth Street, Manistee (attachment #44)
Phyllis Marquand, 2107 Red Apple Road, Manistee (attachment #45)
Sue Kuckhahn, 3498 Lindeman Road, Manistee (attachment #46)
Dale & Helen Switzer, 714 High Street, Manistee (attachment #47)
Dale, Helen, Gordon & Scott Switzer, 714 & 712 High Street, (attachment #48)
Patrick Kochanny, President, Pine River Area Chapter of Trout Unlimited, 23297 Mackinaw Tr., Tustin (attachment #49)
W. Frank Beaver, 5369 Dar Mill Road, Benzonia (attachment #50)

Adjourn

At 9:57 Chairman Yoder adjourned the Public Hearing until Thursday, March 4, 2004 at 7:00 p.m. in the Middle School Gym.

MARCH 4, 2004 - PUBLIC HEARING RE-CONVENED

The City of Manistee Planning Commission Re-Convened the Public Hearing of Thursday, February 19, 2004, Thursday, February 26, 2004 at 7:10 p.m. on Thursday, March 4, 2004 in the Middle School Gym, 550 Maple Street, Manistee, Michigan.

MEMBERS PRESENT:	Bob Davis, Ray Fortier, Cyndy Fuller, Christa Johnson-Ross, David Kelley, Mark Wittlief, and Roger Yoder
MEMBERS ABSENT:	Tony Slawinski
OTHERS:	Jon Rose (Community Development), Denise Blakeslee (Administrative Assistant), Jay Kilpatrick (Williams & Works), Brian Sousa (Wade Trim) and others

Richard Krieger, 410 Ramsdell, Manistee - Read a prepared statement expression his opposition to the proposed power plant (attachment #51).

Stephanie Ogren, 465 Eighth Street, Manistee - Biologist for the Little River Band of Ottawa Indians, read a prepared statement in opposition to the proposed power plant (attachment #52).

Nathan Svoboda, 410 Sibben Street, Manistee - Wildlife Biologist for the Little River Band of Ottawa Indians read a prepared statement in opposition to the proposed power plant and included a portion of the report (thru page 27) "Michigan Wildlife Contaminant Trend Monitoring Year 1999 Annual Report Nestling Bald Eagles" (attachment #53).

Jim O'Keefe, 18811 Sand Lake Road, Dublin-Irons - Read a prepared statement which included comments from Ted Nugent (attachment #54).

Mark Knee, 4290 N. Sherman, Ludington - Wildlife Biologist/GIS Specialist for the Little River Band of Ottawa Indians read a prepared statement in opposition to the proposed power plant (attachment #55).

Denny Douglas, 10607 W. Cadillac Road, Cadillac - not in attendance.

Robert Ogilvie, 6041 N. Reek Road, Fountain - not in attendance.

Madelyn Klusowski, 21 Cottage Lane, Manistee - Read a prepared expressing her opposition to the proposed power plant (attachment #56).

Dave Crockett, 260 Third Avenue, Manistee - Said that he took the challenge from Tondu and walked around the neighborhood. He said everyone should take a walk to see how it will effect the neighborhood. Do you want this plant to leave its mark on the community. Look at Harbor Village, Lighthouse Landings and Dunes Drive. The Planning Commission is the visionaries of the community, is a coal fired power plant the mark you want left?

Kurt Harvey, 17136 Fourth Street, Arcadia - Read a prepared statement in opposition to the project (attachment #57).

Gary VanHoten, 1822 Shadyside Drive, Cadillac - not in attendance.

Patrick Kochanny, 23297 Mackinaw Trail, Tustin - not in attendance.

Mark Hamilton - not in attendance.

Tom Boensch, 425 Washington Square South, Lansing - Not in attendance. Prepared Statement turned into Recording Secretary with name crossed out and Jeff Cole's name inserted (attachment #73)

Arthur Wendt, 2750 Schoedel Road, Manistee - not in attendance.

Anna Grabowski, 10040 Alkire Road, Bear Lake - gave time to Gerard Grabowski who spoke during continuation of Public Hearing on February 26, 2004. Ms. Grabowski left a prepared statement with recording secretary on February 19, 2004 (attachment #14).

Pete Landis, 2085 Water Street, Manistee -Read a prepared statement in support of the proposed power plant,left attachments with Recording Secretary and submitted petitions in support (attachment #58)

Sandee Ware, 9094 Alkire, Bear Lake - Read a prepared statement in opposition of the proposed power plant (attachment #59).

Beverly Wagoner, 3 Cottage Lane, Manistee - Ms. Wagoner has lived in Manistee for 8 years and is opposed to the proposed power plant. Ms. Wagoner's background is Public Health and spoke of the Health Risks for a Coal Fired Power Plant. She does not believe the emissions from a "modern" plant is good for public health. She spoke of years ago when it was believed that cigarette smoke was not bad for your health and how that opinion has been changed. She feels that the air quality in Manistee should be monitored.

April Sadd, 2005 Merkey Road, Manistee - Ms. Sadd demanded that the Planning Commission find out if Manistee County should be designated "non-attainment" for air quality. She loves our beaches and is concerned about her health. She asked again that we find out what our air quality designation is. She then read a letter from Terry Lindeman in opposition to the power plant (attachment #60).

Bruce Baker, 3376 S. Scottville, Road, Scottville - Read a prepared statement in support of the Proposed Power Plant (attachment #61).

Marilyn Mastrianni, 8980 Bayview, Onekama - Ms. Mastranni is a Heavy Industrial Carpenter and spoke of the places she worked at, the standards of the trade and the pride in her work. She expressed her concerns that Manistee is a dying City and does not want dirty water or a coal plant. She said that the Planning Commission should demand what is expects from a company. The coal could be contained with a retaining wall and asked the Planning Commission to do their homework. She is proud to be a carpenter and wants a young vivacious community even if there is a coal plant in it.

Kristine Harvey, 728 Fourth Street, Arcadia - Read a prepared statement in opposition to the proposed power plant (attachment #62).

Louis Blourn, 441 ½ Eighth Street, Traverse City - Member of the Sweetwater Alliance and read a prepared statement in opposition to the proposed power plant (attachment #63).

Frank Hayward, 10527 Erdman Road, Onekama - Read a prepared statement in support of the proposed power plant (attachment #64).

Tim Joseph, 11171 Kerry Road, Brethren - Mr. Joseph handed in a prepared statement including a Resolution from Brown Township in opposition to the proposed power plant. Mr. Joseph showed colored photographs of pollution from the PCA Pipeline into Lake Michigan, Brown #19 and Brown #7 in Brown Township (on file at City Hall). He spoke of the pollution left behind when a use is

abandoned and of a site that was sold and the new owners do not maintain it properly. He spoke of the DEQ and how he feels they do not guarantee a clean environment, follow up on permits and that they do not do their job. Mr. Joseph opposes the proposed power plant (attachment #65).

Kirsten Armstutz - 298 Third Avenue, Manistee - Ms. Armstutz is a teacher and spoke of moving to Manistee and how she loves the area. She spoke of the retirees, tourists, service industry and her concerns about the future of Manistee. She is opposed to the proposed power plant and spoke of the permit standards. She stated that schools must be "mercury free" by 2005 and how the proposed power plant would produce coal.

J. Scott Wing, 811 Mee Street, Filer City - Read a prepared statement in favor of the proposed power plant (attachment #66).

Mark Dougher, 266 Freemont, Manistee - Mr. Dougher gave a power point presentation regarding Brownfields which include Mason Run Housing Development in Monroe Michigan, Brownfields to Parks, and the Fletcher Paper Mill in Alpena. Mr. Dougher submitted a copy of the text from the presentation to the Recording Secretary (attachment #67).

Jan Gavlinski, 2218 Hill Road, Manistee - Spoke of growing up in Manistee and moving back, serving on the Planning Commission, City Council then moving to Manistee Township. She said that she has gone from not caring about the proposed plant, to that it may be ok, to becoming strongly opposed to the project. She said that communities in other states are facing the same issue. The Planning Commission needs to slow down and make sure this is the right decision for us. She has not hear one good reason for the plant to be here. She spoke of being and environmental cancer survivor, she lost her brother to an environmental cancer, and her sister is currently surviving an environmental cancer. Also has five friends she grew up with who have been dealing with environmental cancer. She spoke of legal issues that will arise from the decision and that the Planning Commission should be prepared for them.

Ken Dumas, 4503 Cedar Street, Portage - not in attendance.

Alice Mummey, 12332 Smith Street, Bear Lake - Read a prepared statement in opposition to the proposed power plant (attachment #68).

Tim Granger, 238 West Kott Road, Manistee - Member of Manistee County Audubon Society - Read portions of a Resolution of Opposition to the proposed power plant (attachment #69).

Brad Kolk, 486 Fourth Street, Manistee - Not in attendance. Prepared Statement in support of project left with the Recording Secretary (attachment #70).

Luke Schafer, 4171 Bluegrass, Mt. Pleasant - not in attendance.

Dana Schindler, 2005 Merkey, Manistee - Read a prepared statement in opposition to proposed project (attachment #71).

Robert Powell, 3125 South Ortonville Road, Clarkston - Read a prepared statement in opposition to the project (attachment #72).

Megan Allehin, 623 W, Eighth Street, Traverse City - Has attended the last two hearings and has been impressed with the attendance. She feels that the application submitted is vague. Expressed concerns about clean up, coal piles, environmental issues. She felt the Planning Commission has a role in managing the growth and change in the community.

Bill Rastetter, 420 W. Front Street, Traverse City - Attorney for Citizens for Responsible Development (CFRD) told the Planning Commission to think about the magnitude of the project. Spoke of the information that was not submitted by Tondu. Spoke of the amount of coal, ash, amount of water used, and wastewater. Expressed concerns for the people who live near coal plants, the amount of ash, ship traffic, bridge operation, amount of coal storage necessary. Asked if they have planned for a disaster? Spoke of the ordinance conditions, the application, issues that were not true, the fact that municipal ownership was not disclosed.

Frank Beaver, Manistee - not in attendance. Prepared statement was left with the Recording Secretary on February 26, 2004 (attachment #50).

Amanda Campbell, Beulah - not in attendance.

Doreen Smith, 11912 Chicago Avenue, Wellston - Stated her opposition to the proposed power plant. Spoke of friends who have cancer and the ratio of Manistee residents who go to Munson Hospital in Traverse City for treatment. She feels the environment in our area creates these statistics. She sees lots of activity at the site and is concerned about the amount of mercury and toxins that effect not only Manistee but the world. She knows about the promise of jobs and the need for electricity. Why aren't existing sites such as Tippy Dam used to send electricity downstate? Spoke of her fear to eat fish, frogs and turtles from the area because of contaminates. Hopes this is not a done deal.

Patricia Didion, 88 Greenbush Street, Manistee - Ms. Didion is a Registered Nurse. She spoke of the health care professionals who have spoke in opposition of the project. She said there is no such thing as clean coal or no safe amount of mercury. Tondu is not the only people who can clean up this site other Cities have cleaned up contaminated sites. Spoke of the impact the plant would have on the community and the tax history Tondu has with Filer City. We need jobs but not at the expense of health.

Mary Kate Shrir, 224 W. Eighth Street, Traverse City - not in attendance.

Christopher Shrir, 224 W. Eighth Street, Traverse City - not in attendance.

Sarah Davis, Cedar - not in attendance.

Steve Thorp, 515 Fourth Street, Manistee - not in attendance.

Bill Brooks, 385 ½ River Street, Manistee - Mr. Brooks is an attorney for the Little River Band of Ottawa Indians with a background in Environmental Science. Ths project is one of the most important decisions that we have faced in decades. Spoke of the standards of the permit. Expressed his concerns

that the applicant has not provided all the information needed. Most of the technical information has been provided by citizens not the applicant. Spoke of the Community Service fee and the amounts that other communities receive vs the amount that Tondu has spoke of paying. The need for impacts studies and brownfield contamination.

Gordon McLellan, 8 Oxford Court, Manistee - Spoke of his choice to live in Manistee because of the natural beauty, river, and two lakes. Manistee is unique, preserve your city. He has heard about the poisons associated with the project. Poison is poison it harms and kills that is simple. Do not elect to put more poison in Manistee. Demand information, deliberate this matter take weeks months if needed this is nothing compared to the time the plant would be here. Chemists, Doctors, and Scientists spoke because they care about Manistee. What about the thermal pollution? How much can Manistee Lake take until it is dead, then moves up the channel to Lake Michigan? His favorite place used to be Fifth Avenue Beach, then they cut in the channel for Harbor Village to build houses. Harbor Village is a positive benefit to Manistee. A coal plant would to benefit manistee, they will not pay a lot of tax. Please deny application.

Attachments were left with the Recording Secretary not listed above.

~~Tom Boensch, Secretary/Treasurer~~, Jeff Cole, Field Representative for the Michigan State Building and Construction Trades Council (attachment #73)

Matthew Posner & Marian Kromkowski, 3500 Putnam, Suttons Bay (attachment #74)

Adam Eckerson, 219 North Snyder Road, Wellston (attachment #75)

Brethren Student (attachment #76)

Mr. McLellan's was the last signature on the February 19, 2004 Sign in Sheet.

Chairman Yoder called the Public Hearing closed at 10:04 p.m.

MANISTEE PLANNING COMMISSION

Denise J. Blakeslee, Recording Secretary

Good for Manistee – Construction

- Local contractors used for construction to the greatest extent possible
  - Job opportunities for Manistee's wealth of skilled tradespeople
  - $130 million construction labor payroll
- Increased opportunities for local businesses

Northland Lights

Existing Site

Northland Lights

Good for Manistee – New Jobs

- Generate 50-60 high-paying, permanent jobs for the local community
- Infusion of more than $4 million in annual local payroll and benefits

Northland Lights

Site Remediation

- Transform an unsightly, contaminated site into an economically productive, attractive, and environmentally sound industrial property
- Building removal with asbestos abatement
- Baseline Environmental Assessment
- Remediation according to MDEQ cleanup standards for an industrial site
- Rehabilitate docking facility
- Improve shoreline and holding ponds to contain property, coal pile, and to protect Lake Manistee

Northland Lights

Good for Manistee – Economic Boost

- $20 million annual operating, maintenance & services budget
- Property taxes/Community Services Fee increase revenues for local public services by at least 20% over the current city budget
- Increased revenues for local businesses

Northland Lights

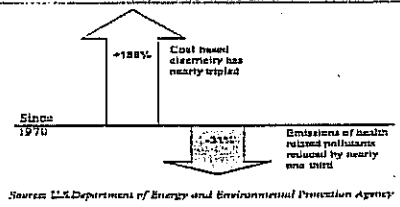
Good for Manistee – A Liability becomes an Asset

- Transforms a dilapidated site into a productive asset
- Approximately $10 million in site improvements
- Reconstruction of crumbling sea wall to protect Manistee Lake and contain runoff

Northland Lights

(Attachment #1)

Environmental Trends in Coal



Source: U.S. Department of Energy and Environmental Protection Agency

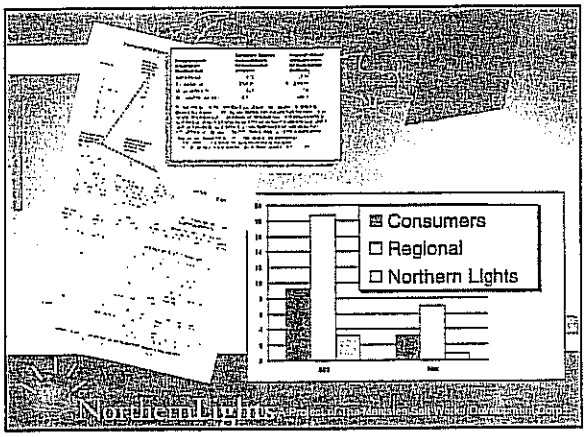
The result – the cleanest coal plant ever built in Michigan

Northern Lights

Air Permit Presentation

Del Rector, Senior V.P.
NTH Consultants

Northern Lights



Northern Lights

Air Permit

MDEQ

- Is the authority to evaluate project and issue permits
- Determines whether standards for environmental and public health protections are met
- Public comment

Northern Lights

The Permitting Process

- Michigan Dept. of Environmental Quality
  — Air Permit
- City of Manistee Planning Commission
  — Special Use Permit

Northern Lights

Air Permit

- MDEQ will only issue permit if it:
  - Meets the most restrictive of all state and federal regulations
  - Includes control technology requirements:
    - Best Available Control Technology (BACT)
    - Maximum Achievable Control Technology (MACT)
  - Meets public health requirements

Northern Lights

(Attachment #1)

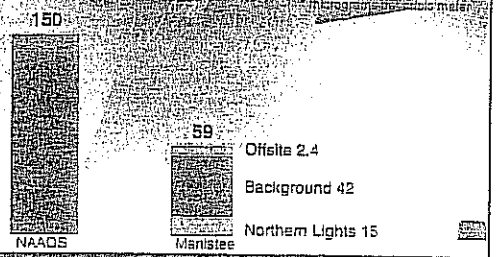
Control Technology for the Cleanest Coal Power Plant in Michigan

- Low sulfur, low chlorine, low mercury fuel
- Selective Catalytic Reduction System for Nitrogen Oxides
- Dry Lime Scrubber for Sulfur Dioxide
- High efficiency fabric filter
- SCR/FGD/FF for Mercury
- Extensive Dust Control Program

Northern Lights

Particulate (PM/PM10)

micrograms per cubic meter



Northern Lights

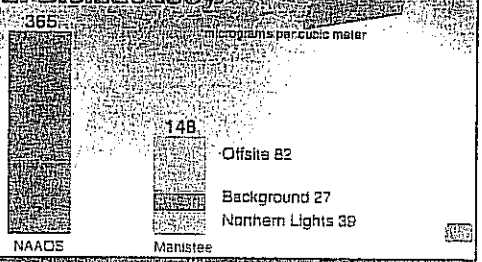
Public Health Protections

- National Ambient Air Quality Standards
- Prevention of Significant Deterioration Increments
- MDEQ screening levels for Toxic Air Contaminants

Northern Lights

Sulfur Dioxide (SO_2)

micrograms per cubic meter



Northern Lights

Protected Air Quality — Total Facility

Compounds	Northern Lights	Federal Standards
PM/PM10	15	150
SO2	39	365
NOx	2	100
CO	<500	10,000

* micrograms per cubic meter

Northern Lights

Mercury Emissions

- Control Technology — MACT
- Proposed MACT — less than 80lbs/year
- Environmental cycle
- MDEQ Evaluation

Northern Lights

(Attachment #1)

Manistee Planning Commission

Does it comply with local zoning ordinance for I-2 Lakefront Industrial District?

Compliance

- Compliance testing
- Continuous Emissions Monitoring Systems (CEMS)
- Extensive record-keeping and reporting to MDEQ and EPA
- Five year operating permit renewal

Manistee Planning Commission

- Does it comply with local zoning ordinance for I-2 Lakefront Industrial District?

  - Yes, the zoning specifically allows electrical generators.

Manistee Planning Commission

- Is the project consistent with City of Manistee 2002 Master Plan?

Manistee Planning Commission

- The project requires Special Use Permit for:
  - Activities outside enclosed building
  - Potential discharge of treated wastewater to Manistee Lake
  - Alteration to Manistee Lake shoreline

City of Manistee Master Plan

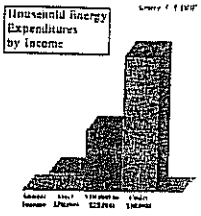
Yes, the Northern Lights project complies with City of Manistee 2002 Master Plan.

Industrial development on Manistee Lake is *"...consistent with the existing character of the lake's industrial use."*

(Attachment #1)

Michigan's Energy Crossroads

- Michigan needs affordable and reliable power to compete for business and jobs
- Energy independence will protect consumers from national blackouts and dramatic price spikes
- Who pays the most? Low income, fixed income, and seniors



Northern Lights

How is it used?

- Energy powers our growth — business, manufacturing, schools, and homes
- Electricity and food are the two largest consumer goods in America
- Reliable energy allows us to enjoy the highest standard of living in the world

Northern Lights

Where will our energy come from?

"...coal will continue to be the leading energy source used for generating electricity..."

U.S. Energy Information Administration

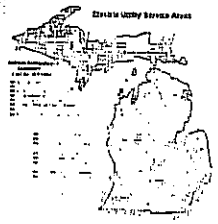
Northern Lights

The Manistee Advantage

- Port
- Water
- Transmission grid
- Large industrial site
- Skilled labor

Northern Lights

Where does it go?



- Energy is generated by a diverse set of plants
- Energy is pooled in the "grid" and transferred to local distribution systems
- Local distribution systems deliver the power to your home or business

This system ensures that the power is there when you need it!

Northern Lights

The Northern Lights Project

- $700 million investment in Manistee
- Energy for more than 300,000 homes
- Create good jobs and economic prosperity
- Will be the cleanest coal-fueled power plant ever built in Michigan

Northern Lights

(Attachment #1)

Powering our daily lives

Northern Lights

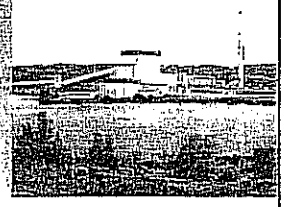
Why Northern Lights?

- Michigan's Growing Energy Needs
- Clean, Affordable and Reliable Energy
- The Manistee Advantage

Northern Lights

Economic Energizer for Manistee

Clean, affordable and reliable energy



Michigan

Northern Lights

Michigan's Energy Economics

- Michigan is dependent on out-of-state energy
- 13th largest energy consumer in the U.S.
- Among the most expensive energy in the Midwest
- Prices are 14% higher than the national average
- 15% of Michigan's peak time electricity is generated out-of-state

Northern Lights

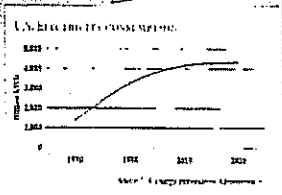
Tonight's Agenda

- Why Northern Lights?
- The Permitting Process

Northern Lights

Michigan's Growing Demand for Energy

- Michigan's energy consumption grew by more than 130% from 1970 to 1990
- Demand will increase by 40% from 2000 to 2020
- By 2020 Michigan and US energy demand will be triple that of 1970



Northern Lights

(Attachment #1)

Northern Lights

- An economic boost for Manistee
- Affordable and reliable electricity
- Environmentally responsible

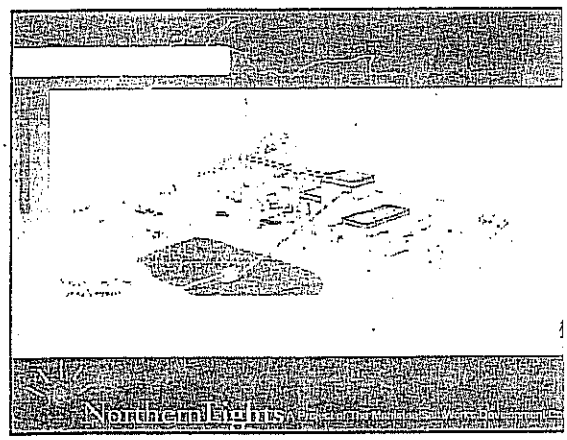
Northern Lights and Manistee — A Winning Partnership

Northern Lights

Water Discharge

- Discharge meets MDEQ standards
  - May go to Manistee Wastewater Treatment Plant (WWTP), or
  - Treated on-site by self-contained WWTP before discharge
  - Only 10% of the site's current permitted level
- Discharge will be safe for fish & aquatic life

Northern Lights

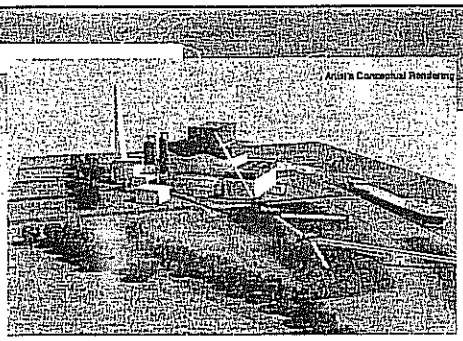


Northern Lights

Improvements to Manistee Lakeshore

- Rebuild seawall and stabilize shoreline
- Protect lake from current runoff
- Impede current leaching of contaminated groundwater
- Prevent future erosion

Northern Lights



Northern Lights

Permitting Summary

- Will meet all stringent air quality requirements
- Will meet all water quality requirements during construction and operation
- Will remediate the existing site

Northern Lights

(Attachment #1)

(Attachment #1)

(Attachment #2)

Great Lakes Environmental Center

Applied Environmental Sciences
www.glec-online.com

Traverse City Operations
739 Hastings St.
Traverse City
MI 49686

231 941-2230
231 941-2240 fax

Columbus Operations
1295 King Ave.
Columbus
OH 43212

614 487-1040
614 487-1920 fax

February 19, 2004

Manistee Planning Commission
70 Maple Street
P.O. Box 358
Manistee, MI 49660

To the members of the Manistee Planning Commission:

I am the director and Senior Research Scientist at Great Lakes Environmental Center, Inc. (GLEC) 739 Hastings Street, Traverse City, Michigan.
I hold a bachelors and masters of science degrees from Eastern Michigan University, and a Ph.D in Zoology from the University of Wyoming. My curriculum vitae is attached to this testimony (Attachment 1).

I am the founder of Great Lakes Environmental Center (GLEC) in Traverse City, Michigan and Columbus, Ohio. I am a senior aquatic biologist/toxicologist, and am responsible for managing GLEC. My day-to-day responsibilities include: acting as Program Manager for three of GLEC's level of effort contracts with EPA, supervising aquatic research and problem solving in environmental toxicology and water quality, project management, technical direction, business development, administrative management and client interaction.

Great Lakes Environmental Center (GLEC) is a private consulting firm with expertise in water quality issues. Our clients include industrial and government entities nationwide. GLEC has experience in water quality regulation from both perspectives: the regulatory community as well as the regulated entities. GLEC has a considerable amount of experience with effluent discharges and issues involving power production, including coal powered facilities and their impacts on water quality and natural resources.

I would like to offer the following testimony to be filed with the public comments for this hearing in regards to the proposed "Northern Lights Project" Special Use Permit for Manistee Saltworks Development Corporation.

I am sure the Planning Commission is aware of the citizens of Manistee's concern for water quality in the Manistee River/Manistee Lake, which was illustrated recently when the Packaging Corporation of America (PCA) proposed to discharge their effluent to the shipping channel connecting Manistee Lake to Lake Michigan. The citizens expressed great concern over this issue, and convinced PCA and the State of Michigan that discharging this effluent to the shipping channel canal was not a viable option. In this particular instance, the only potential water quality problem expected from PCA's effluent was the addition of dark color. PCA's effluent is not toxic to fish, and GLEC demonstrated that migratory fish would not be affected in their passage up the river to spawn. With this in mind, I would like you to consider the following facts about coal fired power plants, especially in regards to toxic contaminants, water quality, local resource impacts and potential damage to the local sports fishing industry.

Many of GLEC's clients include power producers, including coal powered plants. This type of energy production requires vast quantities of water to cool these systems. For Michigan, the water is obtained either from the Great Lakes, or large rivers. I would like the commission to consider 1) how water will be obtained; 2) what quantity will be used by the "Northern Lights Project": and 3) what will be the impacts to the local resources. Because the related impacts of cooling systems for coal fired plants have the potential to be devastating to local environments, the guidance document for the Clean Water Act for newly constructed cooling water intakes recommends at minimum of a three year biological study be conducted to determine impacts. Information on the cooling system, including the volume of water used for water cooling and where this water will be obtained is vital information that should have been provided in the site plan for this project so the Planning Commission can have adequate information to base their decision on granting the Special Use Permit. A detailed site plan is required in your by-laws and should have been provided to you.

Fish mortality data from coal fired plant cooling system intakes is extensive for the great lakes. This data indicates that there is death to tens of millions of fish, crustaceans and other aquatic life by water intakes for cooling systems of coal power plants in Michigan. Fish are entrained (or drawn into) the cooling systems, and then released back into the environment along with the heated water. Recent studies have shown the death rate of entrained fish, which are mostly fish eggs and larvae can be as high as 97 percent. These larval fish and eggs are killed by shearing forces of the water velocity and mechanical forces of the pumping systems. Large fish near the intakes are often impinged (or retained) by screens placed in the intakes and are killed by the force of the water crushing them against the screens. For example, the Detroit Edison plant in Monroe, Michigan killed 1.1 million fish (82,187 lbs) in a one year period in their cooling water intakes, while the plant was not operating at full capacity. The Ontario Hydro Lambton coal fired power plant on the St. Clair River killed 92,000 pounds of fish over a six week period, and 584,687 fish were killed at the Palisades plant on Lake Michigan in a one year period (Attachment 2). These numbers don't include the larval

fish and eggs, only the large fish impinged or entraped by the cooling water intakes.

The water that is to be returned to Manistee Lake from the cooling system will be heated water. Heated water has a detrimental effect on all exposed aquatic life resulting from temperature shock and creating conditions that stress the fish and other organisms. Heated discharges also change the behaviors of fish, and the ecological balance between the food supply and fish. Trout and salmon are especially sensitive to thermal changes, and their migratory patterns may be adversely affected.

Zebra mussel control chemicals will be added to the cooling water intakes to prevent zebra mussels from accumulating and blocking the intakes. These chemicals are designed to be toxic to mussels, and they also affect many other organisms which live in the lake and serve as important food sources for fish, birds and other animals.

Another important consideration for the Commission relates to the dredging of the lake which will be necessary to provide access to the coal barges. Since the sediments in the Lake are already known to be heavily contaminated, dredging will re-suspend contaminants to the surface waters that had been stable to some degree in the sediments.

There are other water quality and fishery impact considerations with coal plants. The coal piles that will be stored onsite until they can be burned are known sources of contaminants, including suspended solids and heavy metals which will be released when it rains. In addition, when coal is combusted, a large amount of fly ash and bottom ash are generated. Even if these hazardous waste products are to be trucked off-site, power plants have settling ponds and other shorter term storage areas where these products are held onsite until there is sufficient accumulation to be transported off-site. The fly ash is washed off the scrubbers as it is collected in the smokestack during the coal burning process, while the bottom ash is the ash that is not airborne. GLEC has worked with a number of power companies to determine the toxicity and environmental impacts from ash storage sites at coal burning facilities. In our experience, some of the ash piles stored at coal sites have been washed into nearby water bodies by rain events and incorrectly constructed storage ponds, causing deleterious environmental effects such as smothering the lake bottom with ash and particulates, impacting the bottom dwelling organisms.

Toxic contaminants observed in fly ash and coal storage areas that GLEC has had experience with include: hexavalent chromium, manganese, iron, selenium, boron, sulfates, aluminum and total suspended solids. Many of these contaminants were observed at levels that were potentially toxic to aquatic life. This list is also typical of the types of contaminants recorded by other studies at fly ash storage sites. Although coal burning plants are regulated through the National Pollutant Discharge Elimination System (NPDES), many exceed permit limits for a variety of toxic contaminants

(Attachment #2)

(Attachment 3). It is important for the commission to recognize that because an industry is regulated, it does not mean the industry can meet the standards. For example, for three ash storage sites we studied, the permit levels for ten metals exceeded the permitted limits. The permit limits for some of the metals were exceeded greater than 50 percent of the time. Some of the exceedences were 30 times higher than the allowed, or the permitted level. Permit levels for mercury, which is a bioconcentratable substance, were exceeded 27.8 percent of the time at one site, 30 percent at another monitoring site and 17.4 percent of the time at a third monitoring site. Manganese, nickel and cadmium limits were exceeded over 50 percent of the time for the three monitoring sites. Because an industry has a permit limit does not mean the industry is able to meet the criteria.

Best Available Technologies are also established for the operation of coal powered facilities, but they are not always practical, or enforceable. Recent relaxations in environmental regulations at the Federal level leave us in a precarious position with industries like coal power plants, which have the potential to impact the natural resources on a local and regional scale.

In Michigan, besides the releases of pollutants directly to air and soil, water pollutant releases reported from coal fired plants in 1999, amounted to 30 tons of arsenic, 179 tons of chromium and 185 tons of nickel discharged to water bodies according to the Environmental Release Profile for 1998 (Attachment 4). This does not include the 18 million tons of air pollution discharges, or the 6,000 tons of pollutants discharged on lands in Michigan.

In summary, the "Northern Lights Project" will result in significant pollutant releases to the Manistee River System in the form of heavy metals, sulfates, chemical additives and particulates. The thermal pollution and massive water withdrawals necessary to operate the cooling systems could be devastating to the trout and salmon fishery. Leachates from the storage of fly ash and coal could contaminate groundwater and surface water, even if the storage is temporary. Best available technologies and NPDES permitting do not guarantee protection of the local resources or that the contractor will implement them correctly. Dredging lake bottom sediments during construction will release contaminants to Manistee Lake.

Water quality is important to your constituents. There are no impact-free coal powered facilities. The environmental burden on a small river like the Manistee, and on a small town to support the second largest coal fired plant in the state could be devastating to the natural resources of an already stressed area. The sports fishing industry is essential to northern Michigan; why risk this resource when the power generated will not even be for the citizens of Manistee? Other alternatives exist for energy generation, like wind power, which do not exact the environmental and aesthetic toll that a coal power facility will have on the natural resources of the entire region.

Understanding the magnitude of these impacts cannot be accomplished without a detailed site plan that addresses aspects of the design of the facility, including water withdrawal, cooling tower locations and designs.

Dr. Mick DeGraeve, President
Great Lakes Environmental Center
739 Hastings Street
Traverse City, MI 49686
(231) 941-2230
mick@GLEC-TC.com

(Attachment #2)

ATTACHMENT 1

(Attachment #2)

G. MICHAEL DEGRAEVE

President
Great Lakes Environmental Center

Education and Affiliations

Eastern Michigan University	Ypsilanti, Michigan	B.S.	1968	Biology
Eastern Michigan University	Ypsilanti, Michigan	M.S.	1970	Biology
University of Wyoming	Laramie, Wyoming	Ph.D.	1979	Zoology

Qualifications

Dr. DeGraeve is the founder of Great Lakes Environmental Center (GLEC) in Traverse City, Michigan and Columbus, Ohio. He is a senior aquatic biologist/toxicologist, and is responsible for managing GLEC. His day-to-day responsibilities include: acting as Program Manager for two of GLEC's level of effort contracts with EPA; supervising aquatic research and problem solving for programs involving environmental toxicology and water quality; project management for both government and commercial clients; business development; administrative management and client interaction.

He has established aquatic toxicology facilities at five different locations in the United States and Canada. For the past 31 years, he has supervised government and private sector research programs directed environmental planning and at solving existing problems in water pollution/aquatic toxicology. Over the course of Dr. DeGraeve's career, he has interacted regularly with professionals in other disciplines and with representatives of industry, government, and academia. He specializes in helping to bring groups with diverse environmental needs and interests (such as regulators and the regulated community) together to reach a consensus perspective that meets the needs of all affected parties.

Dr. DeGraeve has been managing EPA Office of Water level of effort contracts for GLEC for over eight years. Over that period, he has had responsibility for the technical and financial oversight of five EPA Office of Water contracts; two for the Health and Ecological Criteria Division, two for the Standards and Health Protection Division, and one for the Office of Ground Water and Drinking Water's Technical Support Center. He has managed over 100 Work Assignments throughout the course of these contracts (three of which are ongoing), and Dr. DeGraeve has emphasized maintaining effective and efficient working relationships with the EPA Project Officers and Contracting Officers for each of these contracts. The combined value of these EPA contracts is approximately $19 million, and a total of 15 subcontractors have been on GLEC's teams and therefore managed by Dr. DeGraeve in the course of performing the work under these contracts.

Dr.DeGraeve's specific projects over the course of his career have included managing a program to review EPA's Aquatic Life Criteria Guidelines and to identify priority research needs to update the Guidelines; developing a guidance manual for developing site-specific water quality criteria for the State of California; managing reviews of toxicological literature, researching the effects of pesticides on fish in the Great Lakes; studying the effects of several sewage effluent disinfectants on freshwater fish and invertebrates; determining the toxic components in process waters produced from coal gasification, oil shale extraction, and tar sands extraction; identifying sources of contamination from mining operations; determining bioaccumulation and biomagnifying characteristics of insecticides used to control forest pests, determining long-term bioaccumulation, survival and growth effects of dioxins and dibenzofurans; evaluating short-term chronic tests used by the U.S. EPA to test complex effluent toxicity; performing toxicity source identification and toxicity reduction evaluations for complex industrial and municipal effluents; assessing the chemical, toxicological, and ecological effects in the field and in the laboratory of contaminated lake sediments; development of laboratory procedures to evaluate toxicity persistence in complex effluent/receiving water mixtures; developing watershed management plans to address non-point source pollution; refinement and validation of the U.S. EPA-developed methods to detect, identify, and quantify bioconcentratable compounds in effluents, tissues and sediments; managing field programs to collect ecological data for hydropower relicensing; and development of Criteria Documents for the EPA's Criteria and Standards Division. Dr. DeGraeve has also served as the project manager in a number of applied field programs, including biological monitoring to determine effects of base metal and potash mining operations, installing and operating counting fences to monitor fish populations for a comprehensive study of the effects of acidic precipitation on a river in Nova Scotia, Canada, evaluating the decay of chlorine in a five mile long municipal effluent discharge tunnel and sampling and analysis of surface water, municipal effluent and combined sewer overflows for the New York/New Jersey Harbor Estuary Program.

Dr. Degraeve works directly with the GLEC Management Team to oversee the day-to-day activities of GLEC. In addition, he is currently responsible for leading research programs in: determining the effectiveness of the Conservation Reserve Enhancement Program for the State of Michigan through field assessments, managing an effluent toxicity identification/reduction program and performing site-specific water quality and biological assessments.

Research and Professional Experience

Michigan Department of Environmental Quality. Dr. DeGraeve is the Program Manager responsible for technical and financial performance of a four-year level-of-effort contract awarded to GLEC by the Michigan Department of Environmental Quality to monitor and assess the quality of Michigan's surface waters. Under this contract, 51 Work Assignments have been received since August 2001 to assist the state in implementing Michigan's Strategic Water Quality Monitoring Program , which GLEC is performing in conjunction with two subcontractors.

New York/New Jersey Harbor Estuary Program. Dr. DeGraeve is the Program Manager and technical leader for a program in which GLEC represents the 11 member New Jersey Harbor Discharger's Group (NJHDG) in the Harbor Estuary Program. In this role, he is responsible for technical direction, coordination of subcontractors, client interaction and regulatory interaction. He regularly meets with NJHDG members, the States of New Jersey and New York, and EPA in coordinating NJHDG's sampling, analysis and interpretation efforts in the Harbor Estuary Program.

Whole Effluent Toxicity Survey. Dr. DeGraeve was the Program Manager for a study sponsored by the Water Environmental Research Foundation. The focus of this study was to survey of the regulatory community and municipal wastewater treatment plants throughout the U.S. to determine the implementation status and effectiveness of EPA's whole effluent toxicity program. Dr. DeGraeve was primarily responsible for study design, planning, interpretation of results, and client interaction.

(Attachment #2)

Bioconcentration Method Validation. Dr. DeGraeve was the program manager for a study to perform field and inter-/intralaboratory validations of the U.S. EPA-developed procedures to identify bioconcentratable contaminants in effluents, tissues, and sediments. He was responsible for coordinating interactions between GLEC, the U.S. EPA-Duluth, the U.S. EPA Region V and the U.S. EPA Headquarters.

Watershed Management Planning. Dr. DeGraeve was the study director for a recently-completed program to develop a long-range watershed management plan for Grand Traverse Bay, Lake Michigan. This responsibility involved technical direction of non-point source research, and coordination of inputs from a variety of state and local agencies and individuals.

Toxicity Testing Methods Research. Dr. DeGraeve was the Project Manager responsible for all technical considerations and for client interactions on a laboratory study funded by the American Petroleum Institute, National Council of the Paper Industry for Air and Stream Improvement, and Electric Power Research Institute. This project was designed to evaluate the validity of several EPA-developed short-term chronic toxicity testing procedures. This program evaluated these procedures, and measured their inter- and intralaboratory variability to determine their utility to the regulated community.

Toxicity of Hazardous Aquatic Contaminants. Dr. DeGraeve managed several projects for both industrial and government sponsors which addressed the toxicity and bioaccumulation of 2,3,7,8 tetrachloro-p-dioxin and 2,3,7,8 tetrachloro-p-dibenzofuran. Acute and chronic toxicity effects plus bioaccumulation potential were evaluated in static and flow-through exposure systems. He was responsible for coordinating the studies, for facility design, and for interactions with clients.

Toxicity Persistence in Effluents. Dr. DeGraeve led an effort, which was funded by the U.S. EPA-Duluth, to develop a bench-scale approach for predicting and understanding the persistence/degradation of toxicity in effluent-receiving water mixtures. This project involved environmental chemistry, environmental microbiology and hydrology; he was responsible for coordinating inputs from all disciplines, including input from the U.S. EPA-Duluth scientists.

Toxicity Identification/Reduction Evaluations. Dr. DeGraeve has been, and continues to be, the Project Manager for a number of toxicity identification/reduction evaluations for military facilities, industries and municipalities. In that role he is responsible for technical direction, client and regulatory interaction, and interactions with other TI/RE team members.

Project Supervisor. While at the Montreal Engineering Company, he was responsible for all biological projects in the Company's Fredericton, New Brunswick Office. The position involved proposal preparation, project management, business development and client interactions. He managed field and laboratory projects assessing the effects of environmental stresses on aquatic and terrestrial ecosystems.

Laboratory Supervision. While at the University of Wyoming, he supervised research in an aquatic toxicology laboratory primarily designed to determine the effects on aquatic organisms of effluents produced by newly developed fossil fuel technologies. Dr. DeGraeve supervised technical staff, interacted with Department of Energy personnel, and analyzed and interpreted data.

Laboratory Supervisor. While at Grand Valley State College he worked through the U.S. EPA funded grant to supervise a laboratory designed to determine the disinfection efficiency and toxicity of several sewage effluent disinfectants. This position required construction and set-up of two laboratories, technical supervision, State of Michigan interactions, and data analysis and interpretation.

Field Studies. While at the U.S. Fish and Wildlife Service he conducted field programs on the Great Lakes, including evaluations of pesticide effects, and fish and zooplankton stock assessments.

Professional Recognition and Affiliations

Best Student Paper Award, American Fisheries Society; 1979
Member, Sigma Xi
Member, Publications Committee for Society of Environmental Toxicology and Chemistry; 1983-1986
Program Chairman, Meeting of the Society of Environmental Toxicology and Chemistry; 1984
Board of Directors - Society of Environmental Toxicology and Chemistry; 1985-1987
Fellowship Committee Chairman - Society of Environmental Toxicology and Chemistry; 1985-1986
Coordinating Committee-SETAC Pellston Workshop on Whole Effluent Toxicity; 1995
Member, Water Quality Monitoring Advisory Board , Appointed by the Governor of Michigan, 2001-2003
Founding member of the Grand Traverse Bay Watershed Initiative

Selected Publications and Reports

DeGraeve, G.M., Three types of burrowing behavior of the Brook Stickleback, *Culaea inconstans*. Transactions of the American Fisheries Society, 99(2):433. 1970.

DeGraeve, G.M., and Reynolds, J.B., Feeding behavior and light and temperature tolerance of *Mysis relicta* in the laboratory. Trans-actions of the American Fisheries Society, 104(2):394-397. 1975.

DeGraeve, G.M., and Ward, R.W., Acclimation of fathead minnows (*Pimephales promelas*) and lake trout (*Salvelinus namaycush*) to residual chlorine and bromine chloride in secondary effluent. Journal Water Pollution Control, 49(10):2171-2178. 1977.

DeGraeve, G.M., Cruzan, T., and Ward, R.W., Chamber for holding aquatic macroinvertebrates during toxicity tests in a flow-through diluter system. The Progressive Fish-Culturist, 39(2):100-101. 1977.

Ward, R.W., and DeGraeve, G.M., Residual toxicity of several disinfectants in domestic wastewater. Journal Water Pollution Control, 50(1):46-60. 1978.

Anderson, A.D., Lebsack, M.E., DeGraeve, G.M., Farrier, D.S., and Bergman, H.L., Toxicity of an *in situ* oil shale process water to rainbow trout and fathead minnows. Arch. Environ. Contam. and Tox., 9:171-179. 1980.

DeGraeve, G.M., Geiger, D.L., Meyer, J.S., and Bergman, H.L., Acute and embryo-larval toxicity of phenolic compounds to aquatic biota. Arch. Environ. Contam. and Tox., 9:557-568. 1980.

DeGraeve, G.M., Overcast, R.L., and Bergman, H.L., Toxicity of underground coal gasification condenser water and selected constituents to aquatic biota. Arch. Environ. Contam. and Tox., 9:543-555. 1980.

DeGraeve, G.M., Elder, R.L ., Woods, D.C., and Bergman, H.L., Effects of naphthalene and benzene on fathead minnows and rainbow trout. Arch. Environ. Contam. and Tox., 11:487-490. 1982.

DeGraeve, G.M., Avoidance response of rainbow trout to phenol. The Progressive Fish-Culturist, 44(2):82-87. 1981.

DeGraeve, G.M., and Peterson, R.H., Hydrologic and land use surveys of the Westfield River watershed. Canadian Technical Report of Fisheries and Aquatic Sciences, No. 1095., 13 pp. 1982.

Dean, J.H., and DeGraeve, G.M., A screen device to eliminate "floaters" in *Daphnia magna* toxicity tests. 5(112:1055-1057. 1986.

Adams, W.J., DeGraeve, G.M., Sabourin, T.D., and Cooney, J.D., Toxicity and bioconcentration of 2,3,7,8-TCDD to fathead minnows (*Pimephales promelas*). 153:1503-1511. 1986.

DeGraeve, G.M., and Cooney, J.D., *Ceriodaphnia*: An update on effluent toxicity testing and research needs. Environ. Toxicol. Chem. 6:331-333. 1987.

Edit, D.C., Bacon, G.B., DeGraeve, G.M., and Mallet, V.N., Partitioning and short-term persistence of aminocarb compared with fenitrothion in a New Brunswick head water stream. Accepted for publication in Arch. Environ. Contam. and Tox. 1988.

DeGraeve, G.M., Clement, W.H., Arthur, M.F., Gillespie, R.B., Coyle, J.J., and O'Brien, G.K., Laboratory and field investigations of toxicity persistence/degradation in complex effluent-receiving water mixtures. Proceedings of the Tenth Annual Symposium on Aquatic Toxicology, Amer. Soc. Testing and Materials, New Orleans, Louisiana. ASTM Special Technical Publication. 1988.

Mehrle, P.M., Buckler, D.R., Little, E.E., Smith, L.M., Petty, J.D., Peterman, P.H., Stalling, J.D., DeGraeve, G.M., Coyle, J.J., and Adams, W.J., Toxicity and bioconcentration of 2,3,7,8-tetrachloro-dibenzo-dioxin and 2,3,7,8-tetrachlorodibenzo-furan in rainbow trout. Environ. Toxicol. Chem. 7:47-62. 1988.

DeGraeve, G.M., Environmental Awareness: Taking Responsibility. J. Wat. Poll. Control Fed. 61(4): 430-433. 1989.

(Attachment #2)

DeGraeve, G.M., J.D. Cooney, D.O. McIntyre, T.L. Pollock, N.G. Reichenbach, J.H. Dean and Marcus, M.D., Variability in the performance of the seven-day fathead minnow larval survival and growth test: an intra- and interlaboratory study. Environ. Toxicol. Chem. 10:1189-1203. 1991

Carr, R.S., M.E. Barrows, N.G. Reichenbach, G.M. DeGraeve, T.L. Pollock, J.A. Fava and A.H. Glickman. Investigation of preference-avoidance responses to an oil refinery effluent with stripped bass and steelhead trout. Environ. Toxicol. Chem. 9:1513-1522. 1990

DeGraeve, G.M., Clement, W.H., and Arthur, M.F., Development of a laboratory procedure for simulating toxicity persistence/degradation in complex effluents: Field validations using chronic toxicity in a municipal effluent. (In Preparation)

Cooney, J.D., G.M. DeGraeve, E.L. Moore, W.D. Palmer, and T.L. Pollock. 1992. Effects of Food and Water Quality on culturing of *Ceriodaphnia dubia*. Environ. Toxicol. Chem. 11:823-837.

Cooney, J.D., G.M. DeGraeve, E.L. Moore, B.J. Lenoble, T.L. Pollock, and G.J. Smith. 1992. Effects of Environmental and Experimental Design Factors on Culturing and Toxicity Testing of *Ceriodaphnia dubia*. Environ. Toxicol. Chem. 11:839-850.

DeGraeve, G.M., J.D. Cooney, B.H. Marsh, T.L. Pollock, and N.G. Reichenbach. 1992. Variability in the Performance of the seven-day *Ceriodaphnia dubia* survival and reproduction test: An Intra- and Interlaboratory Study. Environ. Toxicol. Chem. 11:851-866.

Burkhard, L.P., B.R. Sheedy, D.J. McCauley, and G.M. DeGraeve. 1996. Bioaccumulation Factors for Chlorinated Benzenes, Chlorinated Butadienes, and Hexachloroethane. Environ. Toxicol. Chem. 16:1677-1686.

Ong, S.K., G.M. Degraeve, R.A. Silva-Wilkinson, J.W. McCabe, and W.L. Smith. 1996. Toxicity and Bioconcentration Potential of Adsorbable Organic Halides from Bleached Laundering in Municipal Wastewater. Environ. Toxicol. Chem. 15:138-143.

Silva-Wilkinson, R.A., L.P. Burkhard, B.R. Sheedy and G.M. DeGraeve. 1999. A Simple Comparison of Mass Spectral Search Results and Implications for Environmental Screening Analyses. Arch. Environ. Contam. And Tox. 36 (2).

Silva-Wilkinson, R.A., G.M. DeGraeve, L.P. Burkhard, D.W. Tholen, and B.R. Sheedy. 2000. Results of an Interlaboratory Evaluation of an Analytical Screening Method for Assessing Persistent Bioaccumulative Toxic Chemicals in Sediment Samples. Environ. Toxicol. Chem. 19:2218-2223.

McCauley, D.J., G.M. DeGraeve and T.K. Linton. 2000. Sediment Quality Guidelines and Assessment: Overview and Research Needs. Env. Sci. and Policy. 3: 22-5144.

Selected Presentations

DeGraeve, G.M. 1974. Effects of wastewater disinfectants on fathead minnow egg production and egg hatchability. Presented at the Wyoming Workshop on Disinfection of Wastewater and Its Effects on Aquatic Life, October 30-31, 1974, Wyoming, Michigan.

DeGraeve, G.M. 1977. Acclimation of fathead minnows (*Pimephales promelas*) and lake trout (*Salvelinus namaycush*) to residual chlorine and bromine chloride in secondary effluent. Presented at the American Association for the Advancement of Science National Meeting, February 20-25, 1977, Denver, Colorado.

DeGraeve, G.M., R.L. Overcast, and H.L. Bergman. 1978. Toxicity of *in situ* coal gasification condenser water and its constituents. Presented at the American Fisheries Society National Meeting, August 20- 25, 1978, Kingston, Rhode Island.

DeGraeve, G.M. and H.L. Bergman. 1979. Aquatic effects of effluents produced from *in situ* recovery of shale oil and coal. Presented at the Joint Meeting of the Southwestern Division of the American Association for the Advancement of Science and the Colorado-Wyoming Academy of Science, April 25-28, 1979, Durango, Colorado.

DeGraeve, G.M. 1982. Land usage in the Westfield River drainage, Nova Scotia. Presented at the Workshop on Acid Rain, March 2, 1982, St. Andrews, New Brunswick.

DeGraeve, G.M. 1984. Toxicity testing methodology overview. Presented to General Electric Environmental Protection Seminar, April 25-27, 1984, Philadelphia, Pennsylvania.

DeGraeve, G.M. and J.D. Cooney. Methods and theory of effluent toxicity testing. An invited presentation to the 3rd Annual Indiana, Kentucky and Ohio Regional Society of Environmental Toxicology and Chemistry Meeting, July 10, 1985, Greenfield, Indiana.

DeGraeve, G.M. and J. J. Coyle. Current issues in toxicity of inorganics. An invited presentation to the American Fisheries Society, September 9, 1985, Sun Valley, Idaho.

DeGraeve, G.M., W.H. Clement, M.F. Arthur, R.B. Gillespie, J.J. Coyle, and G.K. O'Brien. Laboratory and field investigations of toxicity persistence/degradation in complex effluent-receiving water mixtures. Presented at the ASTM 10th Annual Symposium on Aquatic Toxicology and Hazard Assessment, May 4-6, 1986, New Orleans, Louisiana.

DeGraeve, G.M. and J.D. Cooney. Practical considerations in conducting toxicity tests with complex effluents. Presented at a Post-Conference Workshop on Biological Toxicity Testing: Practical Aspects; Water Pollution Control Federation's 59th Annual Conference, October 5-10, 1986, Los Angeles, California.

DeGraeve, G.M. and J.D. Cooney. Inter- and intralaboratory evaluation of the seven-day fathead minnow survival and growth test. Part one - Background, experimental design and performance.

Presented at the 7th Annual Meeting of the Society of Environmental Toxicology and Chemistry, November 2-5, 1986, Alexandria, Virginia.

DeGraeve, G.M., J.D. Cooney, J.A. Fava, W.H. Clement, and D.I. Mount. Understanding the Complexities of Complex Effluent Testing. Presented at the Twelfth Symposium on Aquatic Toxicology and Hazard Assessment, April 24-26, 1988. Sparks, Nevada.

DeGraeve, G.M. A review of effluent toxicity testing procedures. Presented to the Michigan Water Pollution Control Association, June 19, 1988. Boyne Mountain, Michigan.

DeGraeve, G.M., J.D. Cooney, and B.H. Marsh. Inter- and intralaboratory evaluation of the seven-day *Ceriodaphnia dubia* survival and reproduction test part I: Background, experimental design, and performance. Annual Meeting of the Society of Environmental Toxicology and Chemistry, November 13-17, 1988. Arlington, Virginia.

DeGraeve, G.M. and W.H. Clement. Toxicity Reduction Evaluation Industrial Protocol and Case Examples. Presented at U.S. the U.S. EPA's Toxicity Reduction Evaluation Workshop, November 30, 1988. Sturbridge, Massachusetts.

DeGraeve, G.M. and W.H. Clement. Toxicity Reduction Evaluation Industrial Protocol and Case Examples. Presented at the U.S. EPA's Toxicity Reduction Evaluation Workshop, October 17, 1989. Seattle, Washington.

DeGraeve, G.M. Toxicity Identification and Reduction Evaluations to control Toxic Agents in Effluents. Presented at a Seminar on the Control of Toxic Agents in Industrial Effluents, March 12-15, 1990. Sao Paulo, Brazil.
DeGraeve, G.M. and K.L. Dickson. Interactions of Universities and Private Organizations with Regulatory Agencies. Presented at a Seminar on the Control of Toxic Agents in Industrial Effluents. March 12-15, 1990. Sao Paulo, Brazil.

DeGraeve, G.M. Field Validation of the U.S. EPA's Effluent Bioconcentration Protocol. Presented in a Pre-Conference Workshop at the Society of Environmental Toxicology and Chemistry Annual Meeting, November 11-15, 1990. Arlington, Virginia.

Brandes, W.F., E.P. Burkhard, G.M. DeGraeve, B.R. Sheedy, R.A. Silva-Wilkinson, and N.A. Thomas. Current Status of the U.S. EPA's Developing Program for Controlling Bioconcentratable Contaminants in Surface Water. Presented at the Society of Environmental Toxicology and Chemistry Annual Meeting, November 3-7, 1992. Seattle, Washington.

DeGraeve, G.M., W.H. Clement, and R.A. Silva-Wilkinson. Novel Applications of the U.S. EPA's Analytical Bioconcentration Procedures. Presented at the 13th Annual Meeting of the Society of Environmental Toxicology and Chemistry, November 8-13, 1992, Cincinnati, Ohio.

Silva-Wilkinson, R.A., G.M. DeGraeve, L. Burkhard, and B. Sheedy. Preliminary Findings from the Inter- and Intralaboratory Study of the U.S. EPA's Bioconcentration Procedures. Presented at the 13th Annual Meeting of the Society of Environmental Toxicology and Chemistry, November 8-13, 1992, Cincinnati, Ohio.

(Attachment #2)

Burkhard, L.P., B. Sheedy, G.M. DeGraeve, and R.A. Silva-Wilkinson. Status of EPA's Draft Guidance, Assessment and Control of Bioconcentratable Chemicals in Surface Water. Presented at the 14th Annual Meeting of the Society of Environmental Toxicology and Chemistry. November 14-18, 1993, Houston, Texas.

Silva-Wilkinson, R.A., G.M. DeGraeve, B. Scott, G. Saalfeld and C. Waggoner. Assessing Bioconcentratable Contaminants in Select Lake Michigan Tributaries. Annual Meeting of the Society of Environmental Toxicology and Chemistry. November 14-18, 1993, Houston, Texas.

Smith, G.J., W.H. Clement and G.M. DeGraeve. Toxicity Identification/Reduction Evaluation for a Metal Finishing Wastewater Treatment Plant Final Effluent. Annual Meeting of the Society of Environmental Toxicology and Chemistry. November 14-18, 1993, Houston, Texas.

Giere, M.A., W.H. Clement and G.M. DeGraeve. A Toxicity Reduction Evaluation Conducted at an Army Arsenal. 15th Annual Meeting of the Society of Environmental Toxicology and Chemistry. October 30-November 03, 1994, Denver, Colorado.

Forgette, T.A., J.E. Navarro, and G.M. DeGraeve. The Use of Pore-Water Toxicity Tests to Evaluate Potential Contaminated Groundwater Intrusion Areas. 15th Annual Meeting of the Society of Environmental Toxicology and Chemistry. October 30-November 03, 1994, Denver, Colorado.

McIntyre, D.O. and G.M. DeGraeve. EPA's Interim Guidance on Water-Effect Ratios for Metals. 15th Annual Meeting of the Society of Environmental Toxicology and Chemistry. October 30-November 03, 1994, Denver, Colorado.

Giere, M. A., G. M. DeGraeve, and D. O. McIntyre. Development of Site-specific Water Quality Criteria for copper. Presented at the 16th Annual Meeting of the Society of Environmental Toxicology and Chemistry. November 5-9, 1995, Vancouver, British Columbia.

DeGraeve, G. M., D. O. McIntyre, R. A. Silva-Wilkinson, and D. Subock. A Workshop on Utility Industry Options for Addressing Water Quality-Based Chemical Limits in Effluent Discharge Permits. Presented to the Electric Power Research Institute. May 23, 1996. Washington, D.C.

DeGraeve, G. M., D. O. McIntyre, R. A. Silva-Wilkinson, and W. Clement. Presentation of the Options for Addressing Water Quality-Based Limits in Effluent Discharge Permits. Presented at the 17th Annual Meeting of the Society of Environmental Toxicology and Chemistry. November 17-21, 1996, Washington, D.C.

DeGraeve, G.M., and W.H. Clement. TIE Conducted on a Complex Municipal Effluent with a High Degree of Quantitative and Qualitative Variability. ASTM Seventh Symposium on Environmental Toxicology and Risk Assessment. April 7-10, 1997. St. Louis, Missouri.

Smith, G., M. DeGraeve, W. Clement D. McIntyre and T. Forgette. Assessing the Applications and Benefits of Whole Effluent Toxicity Testing. Presented at the 18th Annual Meeting of the

Society of Environmental Toxicology and Chemistry. November 16-20, 1997, San Francisco, California.

Sheedy, B. R., R. Silva-Wilkinson, L.P. Burkhard, G.M. DeGraeve and W.J. Morrow. Round Robin Study Results: Sediment Analysis Using a Bioconcentration Screening Method. Presented at the 19th Annual Meeting of the Society of Environmental Toxicology and Chemistry. November 15-19, 1998, Charlotte, North Carolina.

McCauley, D.J., G.M. DeGraeve and J.P. Stricko. Toxicity of Ammonia to *Hyalella* at Six Test Temperatures. Presented at the 21st Annual Meeting of the Society of Environmental Toxicology and Chemistry. November 12-16, 2000. Nashville, Tennessee.

Pecchioli, J.A., T.P. Wilson, G. Korfiatis, M. Bruno, S. Glenn, R. Chant, M. DeGraeve and W.S. Douglas. Sources of Polluting Organic Chemicals in the New York-New Jersey Harbor: Initial Data and Preliminary Interpretations. Presented at the 22nd Annual Meeting of the Society of Environmental Toxicology and Chemistry. November 11-15 2001, Baltimore, Maryland.

DeGraeve,M., B. McKenna, D. McCauley, P. Nogueira and G. Durell. Collection and Analysis of Samples for Trace Contaminants from Point Sources Entering the NY-NJ Harbor. Presented at the 22nd Annual Meeting of the Society of Environmental Toxicology and Chemistry. November 11-15 2001, Baltimore, Maryland.

(Attachment #2)

(Attachment #2)

ATTACHMENT 2

(DRAFT)

GUIDANCE

FOR EVALUATING THE

ADVERSE IMPACT OF COOLING WATER
INTAKE STRUCTURES ON THE AQUATIC ENVIRONMENT:

SECTION 316(b) P.L. 92-500

U.S. Environmental Protection Agency
Office of Water Enforcement
Permits Division
Industrial Permits Branch
Washington, D.C.

May 1, 1977

Disclaimer: Please note that this version of the document has been converted from hard copy to an electronic file in PDF format. Therefore, this document may not match exactly the format of hard copies which have been distributed by EPA staff in the past.

The data presently available on the magnitude of entrainment losses at existing electric generating stations, although just beginning to accumulate, reveals very large numbers of fish passing through some facilities. Results of one of these studies, conducted at the Detroit Edison plant on Lake Erie near Monroe, Michigan, indicate that 400-800 million fish larvae may have passed through that plant during April - August 1974. The fate of these larvae has not yet been determined, but the data from previous years indicate that some may have disintegrated during passage through the plant.

Other studies have shown that mortality may be high among fish larvae that pass through plant cooling systems[4, 38] due mainly to mechanical damage or shearing forces.[2,5] The circulating pump has been identified as the most likely site for mechanical damage.[4,5] Coutant and Kedl[39] in a simulation study have demonstrated that the condenser tubes are an unlikely site for mechanical damage to occur.

A large amount of data are available on the magnitude of entrapment-impingement losses at cooling water intakes. The data available on fish losses at Great Lakes cooling water intakes have been summarized by Edsall.[40] He reported the following losses:

> About 92,000 pounds of gizzard shad at the Ontario Hydro Lambton plant on the St. Clair River in 6 weeks during December 1971 - January 1972; 82,187 pounds (nearly 1.1 million individuals) at the Detroit Edison Company's plant on Lake Erie near Monroe, Michigan between April 1972 and March 1973, when the plant was operating at less than maximum capacity; 36,631 pounds (584,687 fish) at the Consumers Power Company's Palisades plant on Lake Michigan between July 1972 and June 1973, when the plant was operating at about 68 percent of its total capacity (the plant is now closed cycle); an estimated 1.2 million fish (no weight data given) at Commonwealth Edison's Waukegan (Illinois) plant on Lake Michigan between June 1972 and June 1973; 150,000 pounds of fish at the Ontario Hydro Pickering plant on Lake Ontario in April- June 1973; 659,000 fish (weight unavailable) at the Nine Mile Point plant generating unit number one on Lake Ontario during intermittent sampling from January - December 1973, representing an estimated total of about 5 million fish at unit one for that period; and about 67,950 pounds (929,000 fish) at Commonwealth Edison's Zion plant near Zion, Illinois, on Lake Michigan during September - December 1973 and March - June 1974 when the monthly cooling water flow averaged only about 45 percent of the maximum capacity.

Approximately 14,000 fish of 44 species were impinged in 1974 at the Northern States Power Prairie Island Plant on the Mississippi River.[41] The Commonwealth Edison Company's Quad Cities Plant, also on the Mississippi River, impinged an estimated 1.8 million fish during 1974.[42]

The extent of fish losses of any given quantity needs to be considered on a plant-by-plant basis, in that the language of section 316(b) of P.L. 92-500 requires cooling water intakes to "minimize adverse environmental impact." Regulatory agencies should clearly recognize that some level of intake damage can be acceptable if that damage represents a minimization of environmental impact.

(Attachment #2)

(Attachment #2)

ENTRAPMENT-IMPINGEMENT LOSSES AT COOLING WATER INTAKES ON THE GREAT LAKES AND MISSISSIPPI RIVER

Ontario Hydro Lambton	St. Clair River	6 weeks	92,000 lbs of gizzard shad
Detroit Edison- not at max operating capacity.	Monroe, MI	April 1972 &1973	1.1 million fish 82,187 lbs
Consumer Power Company	Palisades (at 68% capacity)	July 1972 & June 1973	36,631 lbs or 584,687 fish
Commonwealth Edison	Waukegan (IL)	June 1972-June 1973	1.2 million fish
Ontario Hydro	Pickering Plant (Lake Ontario)	April-June 1973	150,000lbs
	Nine Mile Point Plant	January-December 1973 (intermittent sampling)	659,000 fish
Commonwealth Edison	Zion Plant, Zion, IL on Lake Michigan (45% capacity)	September-December 1973 March-June 1974	67,950 lbs 929,000 fish
Commonwealth Edison	Quad Cities Plant Mississippi River	1974	1.8 million fish
Northern States Power	Prairie Island Plant Mississippi River		14,000 fish (44 species)

- DATA AVAILABLE ON FISH LOSSES AT COOLING WATER INTAKES SHOW MORTALITY IS HIGH AMONG FISH LARVAE THAT PASS THROUGH THE PLANT COOLING SYSTEMS DUE MAINLY TO MECHANICAL DAMAGE OR SHEARING FORCES FROM THE CIRCULATION PUMPS
- DETROIT EDISON COMPANY PLANT NEAR MONROE, MI OVER 1.1 MILLION FISH WERE KILLED- PLANT WAS OPERATING AT LESS THAN CAPACITY
- ACCORDING TO 316b cwa REGULATION FOR NEW INTAKES 3 YEARS OF STUDY IS RECOMMENDED FOR BIOLOGICAL STUDY TO ADEQUATELY ADDRESS SEASONALY AND YEARLY VARIATIONS, MIGRATORY SPECIES, THERMAL IMPACTS

39 Coutant, C.C. and R.J. Kedl. 1975. Survival of Larval Striped Bass Exposed to Fluid-Induced and Thermal Stresses in a Simulated Condenser Tube. Environmental Sciences Division Publication No.637. Oak Ridge National Laboratory, Oak Ridge, Tennessee. 37 p.

40. Edsall, T.A. Electric Power Generation and Its Influence on Great Lakes Fish. (Presented at Second ICMSE Conference on the Great Lakes. Argonne National Laboratory, Argonne, Illinois. March 25, 1975.)

41. Andersen, R.A. 1974. Fish Study, Impingement of Fishes and Other Organisms on the Prairie Island Plant Intake Traveling Screens. Environmental Monitoring and Ecological Studies Program, 1974 Annual Report, Volume 2 for the Prairie Island Nuclear Generating Plant near Red Wine. Minnesota. Northern States Power Company, Minneapolis, Minnesota. 755-824b.

42. Latviatis, B., H.F. Bernhard, D.B. McDonald. 1976. Impingement Studies at Quad-Cities Station, Mississippi River. (Presented at the Third National Workshop on Entrainment and Impingement - New York)

43. Fish Impingement Studies at the E. D. Edwards Power Plant, July 1974- June 1975. (Submitted to Central Illinois-Light Company. Peoria, Illinois.) Wapora, Inc.

44. Meyers, C.D. and K.E. Bremer. 1975. Statement of Concerns and Suggested Ecological Research, Report No. 1 of the Lake Michigan Cooling Water Studies Panel. EPA 905/3-75/001. --- United States Environmental Protection Agency. November 1975. 387 p.

45. Lake Michigan Cooling Water Intake Technical Committee. Lake Michigan Intakes: Report on the Best Technology Available.- 1973. Chicago, Illinois. United States Environmental Protection Agency. August 19, 1973. 148 p.

46. Lloyd, M., J.H. Zar and J.R. Karr. 1968. On the Calculation of Information -Theoretical Measures of Diversity. Am.-Midl. Nat. 79(2): 257-272.

47. Development Document for Best Technology Available for the Location, Design, Construction and Capacity of Cooling Water Intake Structures for Minimizing Adverse Environmental Impact. United States Environmental Protection Agency. Washington, D.C. EPA 440/1-76/015-a. April 1976. 263 p.

TABLE 16

OUTFALL 002
PROBLEM PARAMETERS - RELATIVE TO EXISTING PERMIT LIMITS AND THE NEW WATER QUALITY STANDARDS
(OUTLIERS REMOVED FROM HISTORICAL DATA BASE)

Existing Permit Limits						New Water Quality Standards					
Parameter	Limit	No. of Exceedances	Range of Exceedances	Avg. of Range	Probability of Exceed.	Parameter	Standard	No. of Exceedances	Range of Exceedances	Avg. of Range	Probability of Exceed.
Mn	1 mg/L	6	1.03-1.39	1.2	11.1%	Mn	1.0 mg/L	6	1.03-1.39	1.2	11.1%
Cd	1 µg/L	10	1.2-5.4	3.2	48%	Cd	3.36 µg/L*	4	4-5.4	4.8	5.5%
Cu	6 µg/L	12	6.4-14	10.5	8.8%	Hg	0.012 µg/L	32	0.1-0.5	0.3	30%
Pb	0.241 µg/L	22	0.6-11.4	3.1	55%	Se	5 µg/L	3	6-8.6	8.0	3.6%
Hg	0.012 µg/L	32	0.1-0.5	0.3	30%						
Ni	26 µg/L	14	26.2-49.2	34.2	13.6%						
Se	5 µg/L	3	6-8.6	8.0	3.6%						
Zn	40 µg/L	40	41.7-92	56	39%						

* Based on a hardness of 400 mg/L as $CaCO_3$

A:\TSK-1D\TBL-002

ATTACHMENT 3

(Attachment #2)

TABLE 17

OUTFALL 009
PROBLEM PARAMETERS - RELATIVE TO EXISTING PERMIT LIMITS AND THE NEW WATER QUALITY STANDARDS
(OUTLIERS REMOVED FROM HISTORICAL DATA BASE)

Existing Permit Limits						New Water Quality Standards					
Parameter	Limit	No. of Exceedances	Range of Exceedances	Avg. of Range	Probability of Exceed.	Parameter	Standard	No. of Exceedances	Range of Exceedances	Avg. of Range	Probability of Exceed.
TSS	50 mg/L	0	NA	NA	2%	TSS	50 mg/L	0	NA	NA	2%
Fe	1.5 mg/L	34	1.55-33	5.8	42.5%	Fe	1.5 mg/L	34	1.55-33	5.8	42.5%
Mn	1 mg/L	89	1.36-29.6	8.8	>50%	Mn	1.0 mg/L	89	1.36-29.6	8.8	>50%
Cd	1 µg/L	15	1.2-3.6	2.1	20.3%	Hg	0.012 µg/L	25	0.1-0.4	0.2	27.8%
Cu	6 µg/L	5	6.4-9	7.7	6.7%	Se	5 µg/L	18	5.2-17.3	10.1	14.2%
Pb	0.241 µg/L	32	0.4-26	5.6	35.6%						
Hg	0.012 µg/L	25	0.1-0.4	0.2	27.8%						
Ni	26 µg/L	66	28.6-122	60	>50%						
Se	5 µg/L	18	5.2-17.3	10.1	14.2%						
Ag	1 µg/L	6	1.2-2.6	2.1	2.9%						
Zn	40 µg/L	58	41.4-120	70	39%						

* Based on a hardness of 400 mg/L as $CaCO_3$

A:\TSK-1B\TBL-009

TABLE 16-A

OUTFALL 002
PROBLEM PARAMETERS - RELATIVE TO EXISTING PERMIT LIMITS AND THE NEW WATER QUALITY STANDARDS OR REGION VI MQLs*
(OUTLIERS REMOVED FROM HISTORICAL DATA BASE)

Existing Permit Limits						New Water Quality Standards					
Parameter	Limit or MQL	No. of Exceedances	Range of Exceedances	Avg. of Range	Probability of Exceed.	Parameter	Standard	No. of Exceedances	Range of Exceedances	Avg. of Range	Probability of Exceed.
Mn	1 mg/L	6	1.03-1.39	1.2	11.1%	Mn	1.0 mg/L	6	1.03-1.39	1.2	11.1%
Cd	1 µg/L	10	1.2-5.4	3.2	48%	Cd	3.36 µg/L*	4	4-5.4	4.8	5.5%
Cu	10 µg/L	3	10.6-14	12.2	2.2%	Hg	0.2 µg/L	15	0.3-0.5	0.4	17.4%
Pb	5 µg/L	3	6.2-11.4	8.1	7.7%	Se	5 µg/L	3	6-8.6	8.0	3.6%
Hg	0.2 µg/L	15	0.3-0.5	0.4	17.4%						
Ni	40 µg/L	2	43.2-49.2	46.2	7.8%						
Se	5 µg/L	3	6-8.6	8.0	3.6%						
Zn	40 µg/L	40	41.7-92	56	39%						

* Existing Permit Limit was replaced with U.S. EPA Region VI Method Quantitation Limit (MQL) when the MQL was greater than the permit limit.

* Based on a hardness of 400 mg/L as $CaCO_3$

A:\TSK-1B\TBL-002A

(Attachment #2)

Environmental Release Profile

Air Releases are for 2000

Land and Water Releases are for 1998

Michigan

Air Releases (tons except where noted)

Land Waste in Tons (on site (off site))

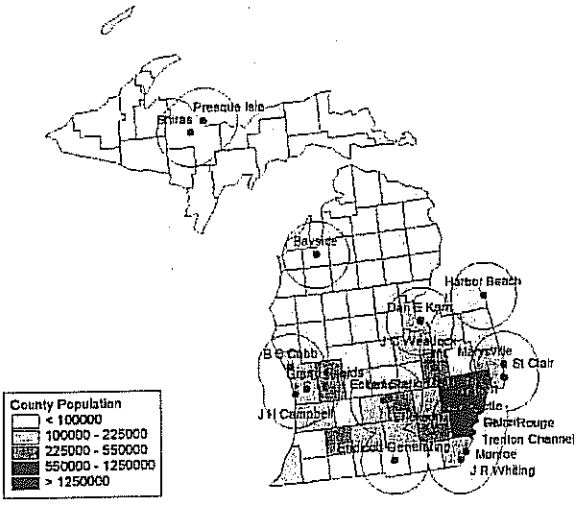
Plant Name	County	Total Reported Air Releases	NOx	SO2	CO2	PM2.5	PM10	VOCs	Acid Gases	Mercury (lbs)	Total Reported Land releases	Arsenic	Chromium	Nickel	Total Reported Water Releases
B C Cobb	Muskegon	2,586,713	4,387	19,091	2,565,690	147	213	34	316	129	119	0 (0)	0 (4)	- (-)	6
Belle River	St. Clair	10,890,209	14,201	29,357	10,845,777	335	486	160	226	189	591	6 (0)	10 (0)	8 (0)	23
Dan E Karn	Bay	4,985,691	8,625	23,678	4,950,903	231	467	103	2,115	186	351	0 (0)	22 (0)	18 (0)	27
Eckert Station	Ingham	2,129,371	3,933	6,676	2,117,620	85	187	29	925	123	262	0 (0)	0 (0)	- (-)	12
Endicott Generating	Hillsdale	413,722	802	785	412,121	18	39	4	0	12		0 (0)	0 (0)	- (-)	0
Erickson	Eaton	976,110	1,973	6,504	967,202	38	84	11	336	47	36	0 (0)	0 (0)	- (-)	0
Harbor Beach	Huron	344,743	1,535	2,246	340,766	12	25	4	164	12	21	0 (0)	0 (0)	- (-)	0
J B Sims	Ottawa	399,108	750	626	397,682	20	44	5	0	15		0 (0)	0 (0)	- (-)	0
J C Weadock	Bay	2,435,984	3,608	9,614	2,420,670	120	265	32	1,785	110	351	0 (0)	22 (0)	18 (0)	27
J H Campbell	Ottawa	8,808,913	21,266	40,762	8,743,339	398	877	102	2,567	325	470	0 (0)	27 (0)	22 (0)	9
J R Whiting	Monroe	2,414,862	3,609	10,376	2,399,410	131	289	27	1,151	102	76	0 (0)	10 (0)	8 (0)	0
James De Young	Ottawa	231,512	456	1,438	229,461	15	29	4	111	20		0 (0)	0 (0)	- (-)	1
Marysville	St. Clair	246,727	617	1,474	244,462	10	20	3	151	8		0 (0)	0 (0)	- (-)	0
Monroe	Monroe	18,240,563	47,086	107,542	18,080,981	762	1,110	233	3,612	651	2,269	18 (0)	75 (0)	95 (0)	6
Presque Isle	Marquette	4,190,608	12,661	18,844	4,156,469	617	1,295	61	676	156	116	0 (0)	0 (0)	7 (0)	0
River Rouge	Wayne	2,834,020	5,576	12,488	2,815,041	123	210	35	669	126	252	0 (0)	2 (5)	2 (8)	3
Shiras	Marquette	406,177	355	356	405,442	12	19	6	0	9	92	0 (0)	0 (0)	- (-)	0
St Clair	St. Clair	8,250,835	19,131	50,327	8,180,019	309	452	124	782	216	787	6 (0)	12 (0)	7 (0)	3
Trenton Channel	Wayne	4,372,668	7,610	27,758	4,336,479	178	259	56	706	185	392	0 (0)	2 (9)	2 (11)	9
Wyandotte	Wayne	428,957	832	1,760	426,323	17	36	6	0			0 (0)	0 (0)	0 (0)	0
Total		75,587,293	159,025	368,664	75,035,849	3,578	6,408	1,040	16,306	2,624	6,184	30 (0)	179 (20)	185 (19)	126

Notes and Sources: All releases are given in tons per year except for mercury which is given in pounds per year. Total air releases is the sum of NOx, SO2, CO2, PM10, VOCs, acid gases, and mercury (PM2.5 is included in PM10). The specific land waste metals were chosen due to their potential to contaminate groundwater. Metals listed include metals and their compounds. The Total Reported Land Releases column does not reflect all solid waste generated from coal-fired power plants. Water releases include total releases from the Toxics Release Inventory (TRI). SO2, NOx, and CO2 emissions come from the EPA's Continuous Emissions Monitoring System data for 2000. Mercury is calculated by applying the mercury emission rates developed in "Mercury Falling" (Environmental Working Group, Clean Air Network, and NRDC, 1999) to the heat input reported in the EPA CEMS data for 2000. PM2.5, PM10, VOCs, and acid gas emission rates were calculated based on the Clean Air Network's data for 1998 emissions. The emission rates were applied to the heat input for 2000. All other data came from the Clean Air Network 1998 data. All calculations were done by MSB Energy Associates for the Clean Air Task Force.

ATTACHMENT 4

(Attachment #2)

Michigan State Profile of Exposure to Coal-Fired Power Plants



Map Legend

Circles Represent a Thirty Mile Radius around Power Plants

Major Cities are Shown

State Profile

Total Number of Power Plants	20
Total Reported Releases	
Air	75,587,293
Land	6,184
Water	126
Total Lake Acres/River Miles under Mercury Fish Advisory	887,019 / 139
Total Ozone Non-Attainment Areas	0

Exposure Within 30 Mile Radius

Total Population	7,525,865
Total Number of Children	1,929,662
Total Number of Children in Poverty	404,408
Total Number of Children With Asthma	106,194

Michigan Exposure Profile for Children Within 30 Miles of a Coal-Fired Power Plant

Data Sources: U.S. Census Population Estimates for 1997; "Estimated Prevalence and Incidence of Lung Disease by Lung Association Territory," American Lung Association, 2001 (data is for 1998).

Exposure from Plants in State

Plant	State	County	Exposed Population	Children Under 18	Children in Poverty	Pediatric Asthma
B C Cobb	MI	Muskegon	400,721	104,815	19,270	6,131
Dan E Karn	MI	Bay	505,714	136,600	31,280	7,171
J H Campbell	MI	Ottawa	858,010	224,203	33,635	13,114
J C Weadock	MI	Bay	512,006	138,338	31,751	7,262
J R Whiting	MI	Monroe	444,761	117,641	26,899	6,396
Harbor Beach	MI	Huron	59,886	15,928	3,072	865
Marysville	MI	St. Clair	320,963	79,929	11,304	4,561
Monroe	MI	Monroe	941,812	252,170	72,449	13,486
River Rouge	MI	Wayne	3,905,677	1,002,506	247,736	54,159
St Clair	MI	St. Clair	663,813	159,720	19,907	9,005
Trenton Channel	MI	Wayne	3,178,848	834,916	230,791	44,751
Presque Isle	MI	Marquette	74,404	21,808	3,167	1,018
James De Young	MI	Ottawa	1,018,020	266,104	40,007	15,535
Eckert Station	MI	Ingham	668,858	167,485	27,971	9,264
Erickson	MI	Eaton	650,753	162,897	27,445	9,008
Wyandotte	MI	Wayne	4,215,133	1,071,834	255,038	58,197
Belle River	MI	St. Clair	673,425	161,706	19,570	9,132

(Attachment #2)

Manistee County Board of Commissioners

Manistee County Courthouse • 415 Third Street • Manistee, Michigan 49660

CHAIRPERSON
Sharlene Wild
VICE-CHAIRPERSON
Carl Rutske

David McNeilly
Carl Mezeske
Ervin Kowalski
John Ham
Allan O'Shea

CLERK
Marilyn Kliber
(231) 723-3331
CONTROLLER/ADMINISTRATOR
Thomas Kaminski
(231) 398-3500

February 18, 2004

COMMUNITY DEVELOPMENT
BUILDING DEPT.
FEB 19 2004
CITY OF MANISTEE

Mr. Roger Yoder, Chair
Manistee City Planning Commission
70 Maple Street
Manistee, MI 49660

RE: NORTHERN LIGHTS PROJECT

Dear Mr. Yoder:

At its February 17, 2004 meeting, the Manistee County Board of Commissioners discussed the proposed Northern Lights Coal Fired Power Plant. In a previous letter to you, the Board of Commissioners expressed support for the project. Since that time, the Board has studied the project carefully, and has reconsidered its position on the Northern Lights project.

The Board of Commissioners asks that the City Planning Commission carefully consider the economic implications of the plant, including the plant's ownership by a group of municipalities which would make the plant tax exempt. While the employment opportunities offered by the plant are encouraging, these must be offset by the negative implications of the loss of tax revenue.

The Board also is concerned about the environment in Manistee County. The Board's desire is that an impartial environmental and economic impact analysis of the project be conducted. We urge the City Planning Commission to consider such independent analysis prior to the issuance of any special use permit.

The Manistee County Board of Commissioners supports economic growth and development throughout the County. However, the advantages and disadvantages of any project must be considered. We ask the Planning Commission to consider the impact of the Northern Lights project on this generation and future generations of Manistee County residents.

Thank you for your consideration of these matters.

Very truly yours,

Carl Rutske

Carl Rutske, Vice-Chairperson
Manistee County Board of Commissioners

CR/bb

(Attachment #3)

(Attachment #4)

I am George Wagoner, a retired, board certified obstetrician gynecologist and a fellow of the American College of obstetrics and gynecology.

I have lived in Harbor Village in Manistee for 8 years.

I am opposed to the coal-fueled power plant proposed by the Tondu Corporation of Houston, Texas.

According to the Special Use Permit Standards, the proposed use must be "…reasonable and designed to protect the health safety and welfare of the community."

I wish to speak to only one of the many health hazards to be imposed on this community if the proposed plant is built; MERCURY CONTAMINATION of our air, water, food supply, young women of childbearing age and children including infants and the unborn.

The EPA has determined that coal fired power plants are the major source of mercury contamination in this country. It has further determined that mercury emissions from coal-fired power plants pose significant hazards to public health. The proposed Tondu facility, by some estimates, would release 200-400 more pounds of mercury into the air annually. The existing Filer City T.E.S. Tondu plant already releases 137 pounds into the air. Most falls on Manistee although some may be carried hundreds of miles.

Mercury contaminates Manistee Lake, the air we breathe, and even falls on our vegetable gardens. This contamination affects all of our health but most importantly the most vulnerable among us, young children, babies and the unborn.

During fetal and infant development, rapidly dividing cells found in growing tissues are particularly vulnerable to toxic insults. The brain, endocrine, reproductive and immune systems are uniquely susceptible to damage that can be permanent. Very small exposure can be devastating.

Mercury is one of the persistent bioaccumulative toxins. Bioaccumulation begins when small organisms absorb the toxins that are then eaten by small fish. The food chain continues with larger fish, birds, reptiles and mammals including humans. The toxins accumulate in these organisms and with each elevation in the food chain the effect is multiplied.

This threat is not theoretical. The Centers for Disease Control recently reported that 8 percent of American women of childbearing age already have more mercury in their bodies than the National Academy of Sciences considers safe for the developing fetus.

Two weeks ago an international group of researchers reported in the Journal of pediatrics that children can suffer irreparable brain damage before birth if their mothers eat seafood high in mercury during pregnancy.

10 days ago in Washington, DC, an Institute of Medicine panel heard testimony suggesting a link between minute quantities of mercury compounds, formerly used as a preservative in vaccines, and autism, a severe and incapacitating form of mental retardation.

No one knows the minimum amount of mercury required to cause neuralgic damage but evidence suggests that that there is no safe limit. Effects maybe as

subtle as a lowering of the IQ, decreased electrical activity in the brain and poorer system control of heart function and heart rate variability which is the primary modality measured by fetal monitors to asses fetal well-being during late pregnancy and labor.

This is an emotional issue for me. I have always believed that one should do whatever one believes in with a passion. For many years I directed that passion toward guiding young mothers through pregnancy in a manner that could be reasonably expected to allow the birth of healthy children who could reach their full biologically determined intellectual potential.

It saddens me greatly that a project that has the potential to do the exact opposite must even be considered.

I urge you to not approve the application before you because it does not adequately protect the health, safety and welfare of this community.

George F Wagoner MD
3 Cottage Ln
Manistee

(Attachment #4)

INDUSTRIAL DEVELOPMENT CORPORATION
OF MANISTEE COUNTY
11 CYPRESS STREET • MANISTEE, MI 49660

November 19, 2003

The Planning Commission
City of Manistee
70 Maple Street
Manistee, Michigan

Re: Northern Lights Project

The Industrial Development Corporation, Manistee, Michigan, is in favor of the concept of the Northern Lights Project as proposed by Tondu Corp./Manistee Salt Works Development Corp. The City of Manistee's master plan recognizes the important role lakefront industry plays in the City's economic well-being. The General Chemical site has historically been industrial for over 100 years, and only a project of this size and magnitude can finance the clean up and demolition required for that site. All of these aspects are important to Manistee. This project should be given favorable consideration.

Sincerely,

Thomas Kubanek
Executive Director
Industrial Development Corporation

(Attachment #5)

PHONE: (231) 723-4325

Bernard Ware, Jr
9094 Alkire Road
Bear Lake, MI 49614
231 864 3242

I am grateful for this opportunity to speak. I first of all want to compliment the city of Manistee for their hard work on this project. I heard a story the other day about a 12-foot stack of paper. From my perspective, city government has maintained very high standards. You have established a decorum in these meetings that is exemplary. You have facilitated and maintained a democratic process.

I have spoken several times to this issue; from different perspectives. The first time I addressed you in November I spoke about mercury from the perspective of an organic farmer and food processor. In December's meeting the applicant made a statement directed to the organic farmer from Bear Lake. He said "there is mercury in everything. Mercury is like aspirin – you take one it's ok, you take a hundred its poison". Since that meeting I have spent countless hours studying mercury and its effects. I have directly questioned scientists and other professionals. To equate mercury with aspirin is reckless and ludicrous. I am submitting for evidence a newsletter from the Harvard School of Public Health, dated February 6, 2004. This article tells of two studies in the current Journal of Pediatrics. These studies indicated that mercury exposure in the womb could cause heart damage along with the well-known brain related impairments of mobility, vision, memory and learning. The study was *unable to establish a threshold of exposure below which no harm occurred.* I'm quoting the senior author "The current focus on protecting pregnant women against this neurotoxin should be expanded to cover children and adolescents as well."

I am opposed to the proposed coal fueled plant advanced by the Tondu Corporation of Houston, Texas. My reason for this is that information weighing risks of this project from a public health aspect is non existent.

It is the primary purpose of the government to promote and protect the health safety and welfare of its citizens.

From the perspective of the applicant it is most cost effective to minimize political and environmental questions regarding this application. Does it serve our community to not ask the questions?

Since Decembers meeting I have asked you to evaluate the information supplied to you. In this venue and others I have pleaded for independent economic analysis and an environmental impact statement. Two weeks ago I asked you to form a citizen committee to represent factions involved with this issue.

Everyone in this room wants what they perceive is best for our community – we have a great opportunity to move forward with a vision that will honor the past and the future of our community.

I want to leave you with these questions:

Should our definition of community include land air and water?

Should our definition of community include all creatures?

As citizens do we have a responsibility to be a steward of our community?

I invite all to rest with the silence that precedes the answers to these questions..... because sometimes the silence will teach more than the answers.

(Attachment #6)

Prenatal Exposure to Mercury From a Maternal Diet High in Seafood Can Irreversibly Impair Certain Brain Functions in Children

For immediate release: Friday, February 6, 2004

Boston, MA— With methylmercury a worldwide contaminant of seafood and freshwater fish and known to produce adverse nervous system effects, especially during brain development, researchers from the Harvard School of Public Health and institutions in Japan, Denmark and the Faroe Islands undertook an assessment of possible brain function impairment in adolescent children due to prenatal exposure to mercury when the mothers'diet was high in seafood. The authors found that high levels of mercury passed from mother to child in utero produced irreversible impairment to specific brain functions in the children. The study was carried out in the Faroe Islands and appears in the February issue of *The Journal of Pediatrics.*

Mercury exposures among the children in the study were assessed through analyses of cord blood samples at birth and hair samples taken at ages 7 and 14. Some 1,022 mothers and their children from the Faroe Islands participated in the research. The mothers' hair mercury levels at childbirth in most cases exceeded 1 microgram per gram, the exposure limit recommended by the National Research Council and the U.S. Environmental Protection Agency (EPA). Follow-up testing of the children showed much lower exposure levels. At the most recent follow-up, more than 850 14 year-olds participated in the study.

The Faroe Islands are located in the North Atlantic Ocean between Norway and Iceland. The islands' economy is centered on the fishing industry and fish processing. The diet of the inhabitants includes high intake of seafood and whale meat.

To assess the impact of the exposure to mercury, brainstem auditory evoked potentials (BAEP) were recorded using surface electrodes placed on the skull. At two different sound frequencies, the researchers measured the transmission of electrical signals in the brain from the acoustic nerve, via the pons (connecting the medulla oblongata to the thalamus) to the midbrain. The latency of the electrical transmission from the acoustic nerve to the pons was significantly increased at higher intrauterine exposure to mercury. This observation was found to be true both at 7 years and at 14 years, suggesting that this effect is lasting.

Prolonged latencies of the electrical signals to the midbrain among the 14 year-olds was linked to the current mercury exposure and therefore suggested that postnatal mercury exposure may damage brain functions that are different from those that are sensitive to mercury during fetal development. Although hearing loss has been observed in severe mercury poisoning cases in adults, the mercury levels among the children in the study was not associated with detectable hearing loss. The authors did not find a link between simultaneous prenatal exposure to PCBs and electrical signal latencies.

A second paper in *The Journal of Pediatrics* by the same authors reports that the neurological changes are also linked to decreased nervous system control of the heart function. At higher mercury exposures, the children were less capable of maintaining the normal variability of the heart rate necessary to secure proper oxygen supply to the body.

"We found that both prenatal and postnatal mercury exposure affects brain functions and that they seem to affect different targets in the brain. The fact that the current exposure has an additional effect, despite the low mercury concentrations is worrisome, especially for communities where seafood constitutes an important part of the diet," said Philippe Grandjean, senior author of the study and adjunct professor in the Department of Environmental Health at the Harvard School of Public Health. He added, "The current focus on protecting pregnant women against this neurotoxin should be expanded to cover children and adolescents as well. Seafood is an important part of a healthy diet, and consumers should choose species low in the food chain caught in waters without mercury pollution." He added, "In this country we need to set uniform mercury exposure levels. The children in the study had average exposure levels that are similar to the current limit used by the U.S. Environmental Protection Agency, and 95 percent of them were below the current limit used by the Food and Drug Administration."

The research was supported by grants from the National Institute of Environmental Health Sciences, the Danish Medical Research Council and the Nissan Science Foundation

Statement from Manistee Citizens for Responsible Development, Public Hearing 2/19/04

I'M Jim Sluyter, a farmer from Onekama Township. I am speaking for the Board of Manistee Citizens for Responsible Development—or Manistee See Forward—as its vice president.

I heard it suggested at one of the past meetings that Manistee cannot be economically viable as a tourist and retirement destination alone, that business and industry are the equally important legs of a metaphorical stool. That makes sense. But a project like the one advanced by Tondu Corporation of Houston Texas, with immense negative impacts and inadequate benefits does not have a leg to stand on. We must be-ware of a high-impact, low yield project that can jeopardize both of the other legs of this economic triangle.

We have been hearing from people who moved here because they believed in Manistee's revitalized image as a desirable tourist and retirement community. Some of these people have expressed their intent to move away if this project goes forward. Others are reconsidering their plans to move here at all. These are economic implications that you may not have considered.

The message that the Board of Manistee See Forward wants you to hear tonight is this: You are the guardians of our health and our safety, the guardians of the character of our community; you are the guardians against strains on public services. You have the authority to act on these issues.

Manistee has applied for designation as a cool city. We think that is great. Governor Granholm says that this is about creating hot jobs in cool neighborhoods, attracting and encouraging young people to live, work and shop in the cool cities they help create. Communities selected for the cool cities program will place a high value on protection of their natural resources and quality of life.

Let's face it: A 25 story coal fired electric generating plant is not cool.

I want to tell you some of the things we have done over the past week. We contacted many of the 600 people who signed our petitions last December opposing this project. They have not changed their minds.

We have canvassed Manistee and her business community and we were frankly surprised. Some of us believed Tondu's assertion as reported to the City of Holland that this community was supportive of the coal plant, and some of us suspected that the business community supported it as well. What we found was overwhelming and consistent. The people of Manistee and the business community do not want a coal plant. Many are not impressed with the thin promise of economic benefits, some oppose it on environmental grounds. Many are concerned about their health and the health of their families and others express concern over city services. Many—especially after the tax tribunal decision for Filer City—simply do not trust this Houston based corporation to act in anyone's best interests but their own. In short, there are lots of reasons to be against this project.

We at Manistee See Forward have learned a lot in the last couple of months. As have you. Our name includes 'Responsible Development.' We stand ready to lend our considerable energy and newly-found skills to help Manistee find responsible, clean and vital businesses and industries for our beautiful and, --I would not have said this only a few years ago--progressive city.

There is a cynical view out there that we have heard time and again: that this is a done deal, the decision has been made to approve the project and all ***this*** is a formality. You have told us that this is not so, and I believe you. By denying approval of this application, you stand with your community, with your business people, with the leadership and people of the surrounding region. I invite you to stand with us, and make a decision that you will look back on with pride.

Thank you

Jim Sluyter
3480 Potter Rd
Bear Lake, MI 49614
889-3216

Manistee Citizens for Responsible Development
PO Box 283
Manistee, MI 49660

Comments to City of Manistee Planning Commission
Concerning the Coal-fired Electric Plant
Being Proposed by the Houston Texas Tondu Corporation

Glenn T. Lottie
11579 River Rd.
Brethren, MI 49619

I am here first to represent the Spirit of the Woods Conservation Club and secondly to express my personal concerns about this proposed coal-fired electric plant by the Tondu Corporation of Houston, Texas.

The folder, that I have given you, contains a resolution from the Spirit of the Woods Conservation Club opposing this plant. However, it mainly contains a resolution for the Michigan United Conservation Clubs. This same resolution was unanimously approved by representatives of twenty-six conservation clubs at the MUCC Region 2 meeting. At the MUCC State Convention in June, 2004 duplicate folder will be presented to the delegates. We fully expect the resolution to be approved.

Now I would like to express my own opinion.
Everyone in this room is a concerned citizen. All of us want a clean environment to live in. We chose this area because of its beauty and the outdoors activities that are available here. Just think of what we have here. We have the National Forest. We have the Little Manistee River and the big Manistee River. We have Bear Creek and the Pine River. We have Lake Michigan and numerous small lakes. All of these are majestic rivers and lakes. People come from all over to enjoy them. Why in the world would we want to harm them?

Supposedly we have one of the best fisheries in the U. S. However, we are warned by the Government not to eat the fish; this warning especially applies to children and women of child-bearing age. Why aren't we supposed to eat the fish? Because they are contaminated with mercury; the same deadly pollutant that this proposed plant will be emitting. Why in the world would we want to add to this problem?

Some people have said that "The Solution to Pollution is Dilution". A more sensible statement is **"The Solution to Pollution is to Stop Polluting"!** We do not stand a chance of ever cleaning up our lakes and rivers if we keep adding to the pollution. For our own sakes and for our descendants we must stop this vicious cycle.

Florida has reduced the mercury in their fishery by putting tight restrictions on the emissions from power plants. Since they have done this, the mercury levels have gone down in the fish. We can do the same thing if we reject this coal-fired plant and take a strong stand against pollution from here and other areas.

It would be wonderful if the Manistee area could be the leader for the cleanup of the Great Lakes.

2-19-2004

(Attachment #8)

PROPOSED

MUCC RESOLUTION

OPPOSING

THE "NORTHERN LIGHTS"

COAL-FIRED ELECTRIC PLANT

AT MANISTEE, MICHIGAN

Spirit of the Woods Conservation Club
Glenn T. Lottie Treasurer
(231) 477-5627

7 February, 2004

(Attachment #8)

RESOLUTION CONCERNING NORTHERN LIGHTS PROJECT IN MANISTEE

Whereas, the Michigan United Conservation Clubs (MUCC) is a conservation-based organization, and

Whereas, its oath specifies that it is sworn to protect from waste the natural resources of our country, and

Whereas, the proposed Northern Lights Project (coal-fired electric plant) in Manistee will emit airborne pollutants of sulfur dioxide, nitrogen oxide, mercury, carbon dioxide, particulate matter, etc., and

Whereas, these airborne pollutants have been found to cause acid rain/ respiratory problems/asthma attacks/heart attacks(sulfur dioxide and nitrogen oxide), neurological damage- especially in small children and fetuses (mercury), greenhouse gases/global warming (carbon dioxide), and

Whereas, the warm water output from the plant into Manistee Lake will interfere with the fish spawning runs and migrations, and

Whereas, these contaminants will affect the wild life and the natural resources within a 600 mile radius, now

Therefore be it resolved that the Michigan United Conservation Clubs be on record as opposing the construction of the coal-fired electric plant (Northern Lights Project) in Manistee Michigan.

Approved by the Board of Directors, Spirit of the Woods Conservation Club, at the January 20, 2004 General Meeting.

Glenn T. Lottie, Treasurer

Resolutions from Other Organizations

1. Spirit of the Woods Conservation Club
2. American Lung Association
3. Brown Township
4. Pine River Chapter of Trout Unlimited
5. Manistee Conservation District
6. Little River Band of Ottawa Indians
7. Traverse City Chapter of Sierra Club
8. Chippewa Ottawa Resource Authority
9. Portage Lake Environmental Association
10. Manistee County Democrats
11. Pleasanton Township
12. Bear Lake Township

Guarding The Future Since 1939

Mail Address: 3470 Rose Road — Brethren MI 49619
Phone: (231) 477-5692

(Attachment #8)

Spirit of the Woods Conservation Club Board of Directors vote on proposed power plant project... January 10, 2004

The Spirit of the Woods Conservation Club Board of Directors is strongly in opposition to the proposed coal burning power plant in Manistee because of its dangerous threat to our natural environment.

Passed unanimously January 10-1004 June Rose, secy.

June Rose Spirit of the Woods Conservation Club Secretary

Guarding The Future Since 1939

Mail Address: 3470 Rose Road — Brethren MI 49619
Phone: (231) 477-5692

January 10, 2004

Manistee News Advocate
75 Maple St.
Manistee, MI 49660

Dear Editor:

Several years ago I happened to look out our north window and saw billows of dark smoke racing east up Bear Creek valley which borders our property on the north. My mind raced back to when a child, I had seen several wild fires burning over land near ours. Some of these fires were set by individuals who knew this was the best way to get a good crop of wild blueberries!

I saw no close flames and assumed it might be possible that one of my distant neighbor houses was on fire. I jumped in my car and drove to find the source of the smoke rolling by. I was amazed to discover that the smoke was coming from a controlled burn along the northeast shore of Manistee Lake. The Smoke had traveled approximately 14 miles when it got to my house, and probably made a few miles more before it finally dissipated.

I remember this experience when I hear of the proposed power plant to be built by Manistee Lake. No matter how tall the smoke stack, or how careful the burn, a huge quantity of dangerous elements are destined to be emitted. These will not be readily visible as was the smoke from the controlled burn, but under certain atmospheric conditions, and pressure direction, these can be freely distributed throughout Manistee County.

We will be the first to be affected by excessive amounts of dangerous pollutants...through the air we breathe, the food we consume, and the water we drink.

How can anyone—other that those destined to reap thouand of dollar$—support this project?

Virgil Rose

Virgil Rose SOTW CC Registered Agent

(Attachment #8)

Resolution of Opposition
Manistee Saltworks Coal Plant in the City of Manistee

Whereas, the American Lung Association of Michigan, which is dedicated to the prevention of lung disease and the promotion of lung health, has grave concerns regarding the plans of the Tondu Corporation, aka Manistee Saltworks, to build a 425 megawatt coal burning electrical generating plant in the City of Manistee; and

Whereas, realizing the impacts that the 450 tons of ash, generated daily that will be disposed of in the landfill; and

Whereas, being deeply concerned with the unavoidable emissions of nitrogen oxides, carbon dioxide greenhouse gases, airborne lead, particulate matter, sulfur dioxides, and their direct link to ground level ozone or smog and their proven hazardous health effects and relationship to chronic lung diseases such as asthma and emphysema; and

Whereas, according the United States Environmental Protection Agency, coal plants are responsible for nearly 60% of PM10 emissions (particles 10 microns or less in diameter), and

Whereas, The United States EPA finds the smallest of these particles, 2.5 microns or less in diameter, caused by burning fossil fuels and the chemical reactions of nitrogen oxides and sulfur dioxides emitted by coal plants, to be the most dangerous to lung health; and

Whereas, over 15% of the population of Manistee County are currently diagnosed with some form of lung disease which may be exasperated by exposure to emissions from the proposed coal burning plant; and

Whereas, neighboring counties have been designated as non-attainment by the EPA's 8-hour ozone standards while Manistee County currently fails to monitor their air quality, Manistee County should be designated as non-attainment and monitors should be installed to ensure standards are measured; and

Whereas, any air quality permitting in Manistee County must conform to the non-attainment area air quality permitting process for nitrogen oxides and volatile organic compounds, including requirements for Lowest Achievable Emission Rates and NOX/VOC emissions offsets; and

Whereas, new sources of energy are a necessity for a growing population, however, resources for cleaner, more efficient production methods are available; and

Whereas, the American Lung Association of Michigan, seeks to protect the lung health of all citizens of the great state of Michigan.

THEREBY BE IT RESOLVED, that the American Lung Association of Michigan hereby opposes the construction of the proposed coal burning plant by the Tondu Corporation and hereby urges the City of Manistee to reject this project until it can be assured that air quality attainment standards have been met in the county and a thorough review of alternate energy sources has occurred.

Brown Township
Manistee County, Michigan

Date: December 15, 2003
To: Manistee City Planning Commission
Re: Proposed Tondu coal-fired electric plant

We, the Brown Township Board of Trustees make the following request of the members of the Manistee City Planning Commission as they review the application for the proposed Tondu coal-fired electric plant:

That careful consideration be given to the effects of air pollution on the people who live down wind of the proposed plant as well as the effects of potential pollution on the land, lakes, rivers, fish and wildlife in surrounding areas;

That the commission seek out qualified, independent sources of information in order to obtain objective answers to these concerns; and

That in its deliberations, the commission members do not rely solely upon information supplied by the applicant to determine potential harm to the surrounding communities.

Thank you for your consideration.

Brown Township Board

Pamela Tompke
Clerk

CC: Manistee City Council
Manistee County Board of Commissioners

COMMUNITY DEVELOPMENT BUILDING DEPT.
DEC 18 2003
CITY OF MANISTEE

(Attachment #8)

Pine River Area Chapter

City of Manistee
70 Maple St.
Manistee, MI 49660

December 19, 2003

Dear Council Members,

The Pine River Area Chapter of Trout Unlimited is adamantly opposed to the construction of a new coal burning electricity plant by TONDU in our area.

This plant will have detrimental effects on not only the local fisheries but affecting all fisheries of Michigan, Ontario and the entire US. Coal burning power plants release tons of harmful chemicals; a 500 megawatt plant produces 3,700,000 tons of carbon dioxide, 10,200 tons of nitrogen oxide, 10,000 tons of sulfur dioxide, 700 tons of carbon monoxide. Coal burning plants also produce mercury and arsenic that are very harmful to people. The DNR releases a fish advisory every year to warn against the consumption of fish containing mercury. Mercury is so poisonous that 1/70th of a teaspoon can make fish in a 25 acre lake unsafe to eat. The mercury that could be produced from TONDU at this facility could be over 200 lbs a year and virtually make all of Michigan's best fishing lakes useless.

The emission of chemicals is not the only problem. Coal burning plants produce warm water discharge into lakes and rivers. TONDU is proposing to build this plant right next to the single most important steelhead egg taking facility in the US. The DNR weir on the Little Manistee supports all the state of Michigan with steelhead eggs. Not only does this facility supply Michigan but it also supplies Indiana, Illinois and Ohio with eggs from this facility. The steelhead industry relies on these eggs, otherwise the fishery would not exist. Steelhead start their life in streams for one year then they move (Smolt) out into the great lakes for their adult life returning to spawn in the fall. The facility by TONDU would interrupt this cycle by emitting warm water into Manistee Lake. Steelhead need coldwater to survive and the emission from the plant would be catastrophic to the steelhead fishery, not only locally but state and nation wide would feel the effects.

Michigan is one of the most polluted states in the nation. We have some of the world's largest pollution producing plants and the number one pollution plant is on our border, the St. Mary's Paper Mill in Sault Ste. Marie. Michigan does not need another large coal burning plant on our waters. The time has come for our elected officials to look to the future, their decisions are long term. I would hate to be the individual responsible for the destruction of our states natural resources, and that could be you.

Sincerely,

Patrick Kochanny
President
Pine River Area Chapter of Trout Unlimited
23297 Mackinaw Tr.
Tustin, MI 49688

cc: Tom Kaminski, Manistee County Commissioners
Manistee City Planning Commission

COMMUNITY DEVELOPMENT BUILDING DEPT.
DEC 23 2003
CITY OF MANISTEE

Manistee Conservation District
8840 Chippewa Highway (U.S. 31)
Bear Lake, Michigan 49614-9400
(616) 889-4761 Fax (616) 889-4020

December 17, 2003

City of Manistee
Attention: Jon Rose, Community Development Officer
550 Maple Street
Manistee, Michigan 49660

Dear Mr. Rose:

I would like to inform you that the Manistee Conservation District has adopted a resolution regarding the purposed Northern Lights Project in the City of Manistee. The enclosed resolution was adopted by the Board of Director's of the Manistee Conservation District on December 17, 2003.

It is the desire of the Manistee Conservation District's Board to inform the City of Manistee's, City Council and City Planning Commission of the District's resolution at their next scheduled meeting. If for some reason the City Council and/or the City Planning Commission will not be informed of this resolution please advise me of that. If you need any further clarification or additional information please contact me.

Sincerely,

Jay Raupp
Administrator

enclosure (1)

COMMUNITY DEVELOPMENT
BUILDING DEPT.
DEC 19 2003
CITY OF MANISTEE

(Attachment #8)

Managing Our Natural Resources

All Conservation District programs and services are offered on a nondiscriminatory basis without regard to race, color, national origin, religion, sex, age, marital status, handicap, height or weight.

ManisteeConservation District Resolution of Concern Regarding the Northern Lights Project (the proposed coal fired electric facility on Manistee Lake)

We value progress that strengthens our communities and our farms.

We value stewardship of our natural environment, on which current and future generations rely.

We value clean water, both on the surface as lakes, streams, ponds and wetlands and subsurface as groundwater.

We value land that is uncontaminated and productive.

We value air that is clean and unpolluted.

We support economic development that does not threaten these values.

We believe that the discharge of mercury, lead and other heavy metals from coal fired electric facilities is a threat to these values.

We believe that emissions of sulfur dioxide and nitrogen oxide, major causes of acid rain, from coal fired electric facilities are a threat to these values.

We are concerned about carbon dioxide emissions, a leading cause of global climate instability, from coal fired electric facilities.

We believe that an environmental assessment produced by the developer of the Northern Lights Project is inadequate to identify the environmental implications of the project and that an Environmental Impact Statement (EIS) should be required.

Because of the potential threats to our values, we hereby express our concern about the Northern Lights Project and urge preparation of an EIS prior to the issuance of a Special Use Permit by the City of Manistee, Air Quality Permits by state and/or federal agencies, and other permits that would allow construction of the proposed Northern Lights Project. Upon review of an EIS we would reconsider this resolution.

I hereby certify that this is a true copy of a resolution adopted by the Manistee Conservation District at the December 17, 2003 Board of Directors Meeting

Jeanne Crampton, Secretary

December 17, 2003

Little River Band of Ottawa Indians
375 River Street
Manistee, MI 49660
(231) 723-8288

Resolution # 03-1015-351

Expressing Opposition to Construction of the Northern Lights Project

WHEREAS, the status of the *Gaá Čhing Zíibi Daáwaa Aníšhinaábek* (Little River Band of Ottawa Indians) as a sovereign and Treaty-making power is confirmed in numerous treaties, from agreements with the initial colonial powers on this land, to various treaties with the United States; and

WHEREAS, the Little River Band of Ottawa Indians (Tribe) is descended from, and is the political successor to, the Grand River Ottawa Bands, signatories of the 1836 Treaty of Washington (7 Stat. 491) with the United States, as reaffirmed by federal law in P.L. 103-324, enacted in 1994; and

WHEREAS, the Tribe adopted a new Constitution, pursuant to a vote of the membership on May 27, 1998, which Constitution became effective upon its approval by the Assistant Secretary-Indian Affairs on July 10, 1998; and

WHEREAS, the Tribal Council is authorized under Article IV, Section 7(a) to provide for the public health, peace, morals, education and general welfare of the Little River Band and its members; and

WHEREAS, the Tribal Council has determined that federal laws support Tribal government's sovereign authority to legislate strict air and water quality standards that exceed state and federal standards in order to protect the natural resources of the Tribe for the benefit of the Tribe and its members; and

WHEREAS, the Tribal Council has been notified of the development of the Northern Lights Project by the Tondu Corporation on the current sight of the General Chemical Plant which is located off Manistee Lake; and

WHEREAS, the Tribal Council has received reports from the Conservation Department which identifies the rehabilitation of the Sturgeon species into Manistee River and ultimately Manistee Lake in recent years; and

WHEREAS, the Tribal Council has approved actions, and received federal grant funds, to re-introduce wild rice plants into Manistee Lake which plantings are taking root and improving; and

(Attachment #8)

WHEREAS, the Tribal Council has approved actions, and received federal grant funds, to monitor the fish and amphibian populations and plant life in the Manistee River and Lake; and

WHEREAS, the Little River Band of Ottawa Indians has an interest in maintaining and improving plant, fish, and wildlife populations within the Tribe's Reservation and Ceded Territories and has worked cooperatively with local governments in order to promote this interest, developed a Conservation Department with the necessary technical expertise to promote this interest, and created a Natural Resource Commission to monitor and report to the Tribal Council regarding these interests; and

WHEREAS, the Tribal Council believes that changes to the waste discharge into Manistee Lake and River systems will detrimentally affect the rehabilitated Sturgeon population and re-introduced plant life;

NOW THEREFORE IT IS RESOLVED THAT the Tribal Council of the Little River Band of Ottawa Indians hereby adopts this resolution opposing the issuance of a Special Use Permit by the City of Manistee, Air Quality Permits by state and/or federal agencies, and other permits that would allow construction of the proposed Northern Lights Project.

IT IS FURTHER RESOLVED THAT the Tribal Council hereby directs the Conservation Department to develop the necessary technical papers which would identify the effects of this proposed project on the Manistee Lake and River systems.

CERTIFICATE OF ADOPTION

I do hereby certify that the foregoing resolution was duly presented and adopted by the Tribal Council with 7 FOR, 0 AGAINST, 0 ABSTAINING, and 2 ABSENT, at a Regular Session of the Little River Band of Ottawa Indians Tribal Council held on October 15, 2003, at the Little River Band's Community Center in Manistee, Michigan, with a quorum being present for such vote.

Janine M. Sam, Council Recorder

Stephen Parsons, Council Speaker

Attest:

Distribution: Council Records
Tribal Ogema
Tribal Court
Legal Department

SIERRA CLUB
FOUNDED 1892

COMMUNITY DEVELOPMENT
BUILDING DEPT.
DEC 23 2003
CITY OF MANISTEE

City of Manistee Planning Commission
70 Maple Street
Manistee, Michigan 49660

December 22, 2003

Dear Commissioners,

On behalf of the Traverse Group of the Sierra Club and our 730 members, including those who reside in Manistee County, I submit into official record a resolution to oppose the "Northern Lights" coal plant, passed unanimously by our Executive Committee.

This resolution lists only a few of our concerns regarding the proposed plant and its impacts on the environment and the residents of Manistee County, as well as the residents of Norhtern Michigan and Canada. Other concerns, too numerous to mention, include the impact from noise and light pollution, the fact that the Tondu Corporation's application meets only minimum environmental standards, the unanswered questions regarding the actual brown field clean-up, and the issue of environmental justice, which is one of the Sierra Club's top campaigns in this state and nationwide, as this plant is proposed for a low-income area of Manistee.
The promise of new jobs is a tactic that is both misleading and insulting, as the majority of the new jobs that the Tondu Corporation is promising will likely be given to those currently employed by the corporation and brought in from other locations.

Please file this resolution into all files and records pertaining to the Tondu Corporation's request to build a coal burning plant in the City of Manistee.

Thank you,

Monica Evans

Monica Evans, Chair
Traverse Group of the Sierra Club
3840 Blueberry Lane
Honor, Michigan 49640

(Attachment #8)

SIERRA CLUB
FOUNDED 1892

Resolution of opposition
Manistee Saltworks Coal Plant in the City of Manistee

Whereas, the Traverse Group of the Sierra Club has grave concerns regarding the plans of the Tondu Corporation, aka Manistee Saltworks, to build a 425 megawatt coal burning electrical generating plant in the City of Manistee; and

Whereas, realizing the impacts that the 450 tons of ash, generated daily that will be disposed of in an area landfill; and

Whereas, being deeply concerned with the unavoidable emissions of nitrogen oxides, carbon dioxide greenhouse gases, airborne lead, particulate matter, sulfur dioxides, and their direct link to ground level ozone or smog, acid rain, and their proven hazardous health effects such as asthma, heart and lung disease; and

Whereas, according the United States Environmental Protection Agency, coal plants are responsible for nearly 60% of PM10 emissions (particles 10 microns or less in diameter), and Whereas, The United States EPA finds the smallest of these particles, 2.5 microns or less in diameter, caused by burning fossil fuels and the chemical reactions of nitrogen oxides and sulfur dioxides emitted by coal plants, to be the most dangerous to human health; and

Whereas, contamination of lakes and streams due to mercury from coal burning plants is known to be, as a result of many coal burning plants in this country, at levels sufficient to concentrate (and contaminate) in the food chain and cause brain damage in children; and

Whereas, being fully aware of the environmental impacts that the proposed plant's warm water discharge would have on the water quality, fish and aquatic species and habitats of Lake Manistee; and

Whereas, in addition to the impacts on Lake Manistee, the Traverse Group of the Sierra Club realizes the additional environmental impacts of said water discharge in to Lake Michigan from Lake Manistee; and

Whereas, acknowledging that the Tondu Corporation has already proven itself to be poor stewards of the environment and untruthful to the residents of Manistee County regarding their already-operating co-generation plant in neighboring Filer City; and

Whereas, the Traverse Group of the Sierra Club, whose mission is to protect and preserve the environment, including our water, air, soil, wildlife and their habitats, and thereby protecting the health and well-being of citizens, not only in Northern Michigan but the environment of the United States of America, Canada and the entire planet and all of its people as well,

RESOLVED, that the Traverse Group of the Sierra Club hereby opposes the construction of the proposed coal burning plant by the Tondu Corporation and hereby urges the City of Manistee to reject this project.

Chippewa Ottawa Resource Authority
179 W. Three Mile Road
Sault Ste. Marie, MI 49783
Ph: 906-632-0043
Fax: 906-632-1141

December 29, 2003

COMMUNITY DEVELOPMENT
BUILDING DEPT.
JAN 2 2003
CITY OF MANISTEE

Mr. John Rose - Staff Liaison
Manistee City Planning Commission
P.O. Box 358
Manistee, MI 49660

Re: Proposal for Power Plant Construction.

Dear Mr. Rose:

On behalf of the Chippewa Ottawa Resource Authority (CORA), I am writing to express our concern over the proposal by the Manistee Salt Works Corporation (MSWC) to construct a 425 megawatt coal-fired power plant on Manistee Lake. Our concerns are not only regarding the health and natural resources of the Little River Band of Ottawa Indians but also for the Great Lakes and inland ecosystems upon which all of our people depend in Northern Michigan.

CORA represents five tribes in Michigan with regard to the tribes' commercial and subsistence fisheries in the 1836 treaty-ceded waters of Lakes Huron, Michigan and Superior. The tribes which are party to the 1836 Treaty are the Bay Mills Indian Community, Grand Traverse Band of Ottawa and Chippewa Indians, Little River Band of Ottawa Indians, Little Traverse Bay Bands of Odawa Indians and Sault Ste. Marie Tribe of Chippewa Indians.

In particular, CORA has the following concerns related to construction and operation of such a large coal fired power plant on Manistee Lake:

- EPA and other entities studying air deposition of pollutants, indicate that the majority of mercury emissions in the United States result from the combustion of fossil fuels and especially coal for electricity generation. CORA is particularly concerned about increased mercury deposition in the 1836 treaty area. Although levels of mercury found in our fish currently harvested from the Great Lakes, including Lake Michigan, have not approached FDA action levels, a nationwide and worldwide increase in the number of coal fired power plants is currently taking place which would suggest that mercury levels will be increasing. Fish advisories due to mercury are already negatively impacting fish

(Attachment #8)

City of Manistee
December 29, 2003
Page 2

sales and lead to a public perception that all Great Lakes fish have high mercury levels. MSWC and Tondu Corporation have stated that they intend to include the latest technology to reduce pollutants emitted from the stacks however, we are not aware of any technology currently available that can remove mercury from coal combustion. For your information, even small amounts of mercury can completely contaminate a lake and the fish in it.

- There will be many pounds of nitrogen oxides and sulfur dioxides emitted every day by the proposed plant should it be constructed. These chemicals combine with the atmosphere and precipitation to form acid rain. The devastation caused by acid rain in other parts of the country and the world is well known and well documented. So far, the 1836 treaty area resources have been spared this destruction however, there is no doubt that operation of such a large plant will have a negative impact on our shared inland resources. Many of our tribal members fish for subsistence in inland lakes which are particularly vulnerable to destruction from acid rain. Many tribal members collect medicines, plants for cultural purposes and game from Northern Michigan forests which are also vulnerable to destruction by acid rain.

- There will be large amounts of particulates and other combustive wastes released every day by the power plant despite the best available technologies that can be implemented. These wastes will combine in the atmosphere to produce ozone and smog in our region. Currently, our tribal members and larger community enjoy relatively clean air and few if any smog alerts although ozone damage to plant resources in the treaty area has been documented. It is probably true that by constructing the proposed power plants with taller smoke stacks, it will be possible to avoid most of this pollution in your immediate community, however, it is not possible to build smoke stacks tall enough to avoid smog and pollution in the 1836 treaty area. As a result, it is likely that the health of our tribal members will be put at risk, our children and elderly will be forced to stay indoors on smog alert days and respiratory diseases such as asthma will increase.

- Operation of such a large coal fired power plant will require massive amounts of water. We are concerned that, should a pipeline be constructed to take water from Lake Michigan, this will have a negative impact on the Lake Michigan fishery which is utilized by CORA tribal fishers. Information that I have seen indicates that millions of gallons per day would be required to operate such a large power plant. A pipeline taking that much water from Lake Michigan will no doubt be entraining and destroying large numbers of whitefish fry and other fish species. In addition, there are very important concerns regarding the discharge water which is proposed to be discharged into Lake Manistee. This water, which will be warmer than the ambient lake temperature will further disrupt and degrade the fishery of Lake Manistee and the Manistee River further damaging the recreational fishery of the community at large and the subsistence fishery of the Little River Band of Ottawa Indians.

In closing, it is our sincere wish, that you will give serious consideration to rejecting the proposal for a coal fired power plant and commit instead, to an alternative energy generation which is less harmful to people's health and the environment. If you have any questions or comments, please do not hesitate to contact me or Jane TenEyck at (906) 632-0043 or via email mripley@sault.com .

Sincerely,

Mike Ripley

Mike Ripley
Environmental Coordinator
Inter-Tribal Fisheries and Assessment Program
Chippewa Ottawa Resource Authority

cc: Jane TenEyck, Interim Director, CORA
CORA Board
Stephanie Ogren, Little River Band of Ottawa Indians
Jennifer Manville, Tribal Liaison, USEPA
Steve Chester, Director, MDEQ
Patricia Spitzley, Tribal Liaison, MDEQ
John Bial, MDEQ

(Attachment #8)

Manistee City Planning Commission

Dear Members,

The Portage Lake Environmental Association is an organization whose purpose is to promote sound environmental programs for the conservation, protection and preservation of Portage Lake and its environs from environmental degradation and impairment, and to stimulate the public interest in environmental matters.

We are against the proposed new Manistee coal burning power plant.

The harm from particulants released into the air and the mercury released into the water from the plant, with their impact on local farming, on the fishing business, on tourist boating and recreational activities vastly outweighs the minimal job creation of this proposed power plant.

We urge the Manistee Planning Commission to reject this proposal.

Thank you for your consideration.

Robert Malhiot

Robert Malhiot, Director
Portage Lake Environmental Association
P. O. Box 67
Onekama, MI 49675

COMMUNITY DEVELOPMENT
BUILDING DEPT.
JAN 5 2004
CITY OF MANISTEE

Manistee County Democratic Party

January 7, 2004

City of Manistee Planning Commission
c/o Mr. Jon Rose
70 Maple Street
Manistee, MI 49660

Dear Mr. Rose:

At a December 30 2003 meeting of the Executive Committee of the Manistee County Democratic Party, and after heated debate, members in attendance unanimously adopted the following resolution:

Based on the available evidence of the negative impact on the health and safety of the public and the environment, the un-reimbursed burden that the project would place on the local infrastructure, and the vague and ambivalent evidence of a gain in quality jobs,

The Executive Committee of the Manistee County Democratic Party has resolved to oppose the construction of the Northern Lights Coal Burning Power Plant.

We further encourage an independent environmental impact study *that will present to the public a more definitive explanation of the total effect on the local and surrounding communities. Should such a study indicate that the fears were unfounded, we will reconsider our action.*

Sincerely,

Tim Joseph

Tim Joseph
Party Chairman

COMMUNITY DEVELOPMENT
BUILDING DEPT.
JAN 8 2004
CITY OF MANISTEE

P.O. Box 65 Manistee, MI 49660 Phone (231) 477-5381 or (231) 398-9367

(Attachment #8)

PLEASANTON TOWNSHIP, MANISTEE COUNTY, MICHIGAN

RESOLUTION CONCERNING NORTHERN LIGHTS PROJECT

WHEREAS, the primary functions of local government are to serve community by promoting and protecting the health, safety and welfare of its citizens;

WHEREAS, the primary functions of corporations are to grow and show a profit to its shareholders;

WHEREAS, in democracy it is imperative to have unbiased information to enable local officials the opportunity to fully execute their responsibility to separate and prioritize the facts and make a fully informed decision;

NOW THEREFORE IT IS HEREBY RESOLVED that a decision to issue a special use permit at this time is premature and has an appearance of placing corporate goals above that of community well being, and;

BE IT FURTHER RESOLVED that Pleasanton Township is against the issuance of a special use permit to Manistee Saltworks Development Corporation, Northern Lights Project until an independent economic assessment and an environmental impact statement have been completed and analyzed.

The foregoing resolution was adopted on January 12, 2004
By Pleasanton Township

Fred Alkire Supv
Fred Alkire Pleasanton Township Supervisor

Connie Ledford Clerk
Connie Ledford Pleasanton Township Clerk

(Attachment #8)

BEAR LAKE TOWNSHIP, MANISTEE COUNTY, MICHIGAN

RESOLUTION CONCERNING NORTHERN LIGHTS PROJECT

WHEREAS, the primary functions of local government are to serve community by promoting and protecting the health, safety and welfare of its citizens;

WHEREAS, the primary functions of corporations are to grow and show a profit to its shareholders;

WHEREAS, in democracy it is imperative to have unbiased information to enable local officials the opportunity to fully execute their responsibility to separate and prioritize the facts and make a fully informed decision;

NOW THEREFORE IT IS HEREBY RESOLVED that a decision to issue a special use permit at this time is premature, and;

BE IT FURTHER RESOLVED that Bear Lake Township is against the issuance of a special use permit to Manistee Saltworks Development Corporation, Northern Lights Project until an independent economic assessment and an environmental impact statement have been completed and analyzed.

The foregoing resolution was adopted on January 20, 2004
By Bear Lake Township

Leslie K Smith

Leslie Smith Bear Lake Township Supervisor

Deanna Pattison

Deanna Pattison Bear Lake Township Clerk

Manistee Citizens for Responsible Development

Mission Statement

MCFRD is a community organization working cooperatively to improve the economic climate and the land, air, and water quality of Manistee and the surrounding area. Our primary objective is to create a healthy and viable future, based on a sustainable relationship with our natural environment.

MCFRD is committed to Manistee and the surrounding area through responsible development and to promoting a greater awareness of the dependent relationship that exists between us and our natural environment.

We will build partnerships with other individuals, groups, agencies, and organizations in developing and implementing cooperative solutions to present and future economic challenges and concerns while being ever mindful of the environmental impact these changes may present.

To achieve these ends, we will nurture and promote the intellectual idealism of individuals and to channel that into a group opportunity for its transformation into direct local action and impact. It is our belief, that as a collective and diverse group, we have more power to enact and effect change, than on an individual basis.

Let this mission statement serve as the foundation upon which we build our future. Through this organization we will create a set of goals and ideals for the common vision we hold.

(Attachment #8)

MANISTEE CITIZENS FOR RESPONSIBLE DEVELOPMENT
POSITION PAPER
NEW MANISTEE COAL BURNING POWER PLANT

The Tondu Corporation is proposing to build a 425-megawatt coal burning power plant on the shores of Manistee Lake. The power will be produced by burning 1,800,000 tons of coal per year. Manistee Citizens For Responsible Development opposes the construction of this plant. There are several reasons for this opposition:

...Coal burning used to produce electrical power is not safe as the burning process adds waste and toxins to the air, water and land for hundreds of miles surrounding the source.

...These waste products and toxins will cause disease and disabilities in the humans, animals, fish, and plant life they come in contact with and in some cases will cause death to those contaminated.

...Manistee Lake and its shoreline is already polluted and does not need further degradation by new contaminates.

...The process of building the plant, dredging the waters for docking facilities and the new boat traffic will aggravate existing pollution problem.

...The stored coal used for burning will create pollution in the form of dust and contamination from rain and melting snow run off.

...The ash and other by-products of coal combustion will compromise the facilities in which they are dumped and cause further pollution during their transfer.

...There is significant potential for further contamination of the aquifer that supplies Manistee's water.

...Increased bridge openings due to boats supplying coal to the proposed plant will aggravate the wear and tear on both structures and compromise the availability of emergency responders such as ambulances, fire and police vehicles.

...An unbiased evaluation of the environmental consequences of the project is mandatory and asking the Tondu Corporation to do its own environmental assessment is not in the communities' best interest.

...The current level of late night and early morning noise and light pollution is disturbing; the idea of more noise and light pollution from a 200-foot tall building and a 400-foot tall smokestack is alarming.

...The governmental decision makers of Manistee must have a complete and reliable database upon which to make their decision and exhibit no conflict of interest. We are not sure either of these is true.

...Short-term construction jobs and poorly defined new jobs are not worth the significant long term environmental and health risks from air and water pollution. This is especially true in a project where the power produced will be exported and not remain in the community. The risk-reward balance greatly favors risk.

For information on MCFRD contact: Fred LaPoint, 231-723-5784 or Jim Sluyter 231-889-3216, or e-mail info@manisteecfrd.org

Manistee Citizens For Responsible Development
Purpose and Intent

The continued development of industries that produce high levels of atmospheric and land discharge pollutants, is threatening the health of citizens of northwest Michigan and the surrounding Great Lakes area. The level of contaminants in the air, ground, and water, from industrial sources, is increasing at an alarming rate,
and those already present persist in impacting the health of fish, wildlife and people.

Because the lure of anticipated development money to economic offices and governments of small communities, which have lost traditional manufacturing jobs in the past, is so compelling, the health, safety, long range tax implications and long term sustainability of the region may not receive the consideration they should. Also, often the economic development offices and government agencies are limited in staff and resources to conduct the research that is required to make a thorough evaluation before judgments can be made.

What is needed is a citizens group that can provide research skills and serve as a source of information, education and evaluation of any proposed industrial development that will have an impact on the quality of life of a community now and into the future. Such a group is also needed to objectively obtain citizen evaluation and comment on any proposed projects.

For these reasons, the Manistee Citizens For Responsible Development (MCFRD), a regional coalition, has been formed and is based in Manistee, Michigan. The mission of the organization is as follows:

> MCFRD is a community organization working cooperatively to improve the economic climate and the land, air and water quality of Manistee and the surrounding area. Our primary objective is to create a healthy and viable future, based on a sustainable relationship with our natural environment.
>
> MCFRD is committed to Manistee and the surrounding area through promoting responsible development and a greater awareness of the dependent relationship that exists between us and our natural environment.
>
> MCFRD will build partnerships with other individuals, groups, agencies and organizations in developing and implementing cooperative solutions to present and future economic challenges and concerns while being ever mindful of the environmental impact these changes present.

Manistee Citizens For Responsible Development
1606 Main Street, Manistee, MI 49660 telephone 231-723-5784
www.manisteecfrd.org

Manistee Citizens For Responsible Development
P.O. Box 283
Manistee, MI 49660

www.manisteecfrd.org

E-mail info@manisteecfrd.org for Information

Meetings

Every Tuesday 6:00 PM except the fourth Tuesday,
the meeting in the fourth week is on Wednesday

Dial-A-Ride Meeting Room
180 Memorial Drive
Manistee, MI

Officers

President	Fred LaPoint
Vice-president	Jim Sluyter
Secretary	Judy Cunningham
Treasurer	Alice Mummey
Board of Directors	Dan Behring
Board of Directors	Bill Kracht
Board of Directors	Hellen Ann Yunis

(Attachment #8)

Plant Location ,Details & Emissions Dispersion

1. Location and Details of the Proposed Plant
2. Background Information and Emissions & Ash Details
3. Area of Major Mercury Contamination
4. Contamination from Combustion Waste
5. Contamination Out to 600 Miles

(Attachment #8)

Location and Details of the Proposed "Northern Lights" Coal-fired Electric Plant

Proposed Location:

- The plant is to be located on the South end of Manistee Lake opposite from the mouth of the Little Manistee River.
- The site was the location of a brine salt company; the last owners were the American Chemical Company.
- The site abuts a residential area and is very close to the heart of Manistee city.

Site Condition:

- The site is a brownfield site.
- Manistee Lake at the site is contaminated with brine and other pollutants.

Proposed Plant Details:

- The buildings of the plant will be twenty stories high.
- It will have a 430 foot smoke to disperse the emissions.
- It will have a very large coal pile.
- It will be brightly lit.
- Noise and vibrations from the plant are expected to be very load.
- It will pump warm effluent into Manistee Lake
- It will create a very large amount of ash which will have to be trucked thru a residential area to a landfill.
- It is projected that the plant will require thirteen ships of coal per month. This will cause traffic interruptions due to frequent bridge openings and closings.

pglottie

From: "Daniel W. Behring" <portager@voyager.net>
To: "CFRP mailing list" <cfrd@yahoogroups.com>
Sent: Saturday, February 07, 2004 9:01 AM
Subject: [cfrd] request for information

Jim and others.
I have sent this summary to you several times Jim. I don't know if you have retrieved it as a file or not. Perhaps you could not. Therefore, I have pasted it right in this text. I hope if comes through well.
Dan
BRIEF SUMMARY OF CONDITIONS SURROUNDING THE PLAN TO BUILD A 425 MEGAWAT COAL FUELED GENERATING PLANT ON THE SHORES OF MANISTEE LAKE

There currently is a co-generation plant on Manistee Lake. It is called the TES Filer plant. It was constructed about 14 years ago and is jointly owned by the Tondu Corporation of Houston, Texas, several individuals and CMS energy.
The plant was built with incentives because of the commitment to use the wood chips from Packaging Corporation of America, sited next to the generating plant. The PCA makes paper. Since the TES Filer plant's construction, they have added chopped tire fuel to the mix (10%) and now have permission to burn oil coke (15%) as well. The emissions from this plant are supposed to be controlled by BACT standard. The plant has a capacity of 85 megawatts. The amount of lead, sulfuric acid and nitrogen oxide from this plant is what would be expected for a plant that size. You can find the exact amount of the pollutants in the air of Manistee county by going to the web site www.scorecard.org. The amount of mercury emitted by this plant, reported by the plant, is 137 pounds annually. According to scientific studies, approximately 74% of the mercury found within 1.5 miles of the smokestack of a plant comes from that plant. That means in the 14 years this plant has existed, as much as 1438 pounds of mercury could have settled into our streams, lakes and land. Mercury does not disappear, and it becomes a more toxic form, methyl mercury, when it enters the water. One 1/70 of a teaspoon of mercury can pollute a 25-acre lake. This plant was paid for entirely by the owners after 5 years of operation. According to recent court documents, resulting from a suit entered against Filer Township and Manistee County for tax relief, this plant earns the owners approximately $16,000,000 a year. The judge in this case threw out the Tondu suit calling the data provided by the corporation not credible.

The same corporation, Tondu Corporation, of Houston, Texas is now engaged in trying to erect another plant on Manistee Lake. This plant, if approved would generate 425 Megawatts of electricity. The facility would involve three cooling towers of massive proportion, two hundred foot high buildings and a smokestack that would reach 400 feet high in the hopes that pollutants would be broadly dispersed, according to the president of the Tondu Corporation, Joe Tondu. The emissions from this projected plant would add significant pollutants to the mix that already descends on Manistee County and surrounding area. Specifically, according to the documents submitted by the corporation here are some amounts.

Particulate matter	737 tons annually
Nitrogen Oxide	2,693 tons annually
Sulfur Dioxide	4,444 tons annually
Volatile Organic Compounds	60. 6 tons annually
Lead	832 pounds annually

The applicant, Manistee Saltworks Development Corporation/ Tondu Corporation indicated that the plant would also release 420 pounds of mercury into the atmosphere each year. If you add that to the mercury already coming from a Tondu plant in Manistee county, the total becomes 557 pounds. It may be, that the plant may only emit 400 pounds. That would mean 537 pounds of mercury into the

atmosphere around Manistee each year. Again, applying the 74% rule, that would mean that it is possible that 502 pounds would fall directly on our lakes and streams and land within 1.5 miles of the smokestack. The rest could travel as much as 600 miles from the site. To put this amount of mercury in a context, the mercury emitted from the Detroit Edison plant in Monroe is 746.7 pounds annually and the amount from the River Rouge plant is 100. The amount from the city of Holland's plant, the James DeYoung plant is 8 pounds. We would become the second most mercury polluted area from a coal-fueled power plant in Michigan according to figures released on coal plants by the Grand Rapids Press in November of 2003. (*Please note that since this summary was written, the developer of the plant said they will use MACT standards rather than BACT standards which they were following in their original proposal. I have not seen their new statements of expected pollutant releases to the environment under the new standard, but they are now talking about 80 pounds of mercury release a year. That would mean that in this geographical area, given the release from the developer's existing plant, there would be 217 pounds of mercury annually. Over a 10 year period, the mercury release from the new plant alone would be 800 pounds of mercury.)*

In addition to the toxins to the environment, the effluent from coal pile runoff and cooling chamber discharge would be discharged into Manistee lake at a significantly higher temperature than the lake. To put this in context, in the DEQ records it states that Manistee Lake is to be preserved for cold water fish and partial and full body recreation. The latter reserve has not been respected in the past and the lake bottom of Manistee Lake does have significant pollutants present and there is a plume of leached materials under the lake moving toward Lake Michigan from previous industrial use of the shoreline. This should not be the rationale to use the lake for more pollutants, stating it is okay because it is already polluted.

Additionally, the proposed plant will store on site, 17,000 gallons of ammonia, 15,000 gallons of 15% sodium hypochlorite, and 670,000 tons of coal in open coal piles.

There is some data already available about human health impacts from a study done in 2001 by the Manistee County Community Health Task Force. The report shows comparisons of deaths per 100,000 people in Manistee compared to the state average and deaths in Wayne County.

	Manistee Mich.	Average	Wayne
Cancer	274.7	199.0	209.0
Heart Disease	342.3	271.4	324.0
Respiratory	67.6	41.9	34.7

Another issue regarding the development of this plant is that they would have to redesign the shoreline along which the plant would be built to accommodate the large coal boats that would come to unload. It is expected that there would be 13-18 large coal boats a month. This redesign and development of the docking location would cause massive disturbance of the pollution that already exists on the bottom land of the lake and would disperse it throughout the lake and into Lake Michigan.

Given all of the above, one must ask why any city government would even consider such a development. Well, the Tondu Corporation, utilizing emotional ties to this area as the Tondu family is from Manistee County, suggested to the city and to the county that there would be a large tax base that would bring new revenue to their budgets. As a matter of fact it appeared that the revenue from a $550,000,000 tax base could be as high as 15 to 18 million dollars. They also promised to "create" 60 jobs, bring $100,000,000 in income during the construction phase and annually pump $11,000,000 dollars into the local economy because of payroll, services purchased, etc. The city and county officials understandably thought they had won the lottery and all of a sudden all projects that had been put on hold would have a possibility of being realized. As a matter of fact, the planning consultant to the city of Manistee used in his justification to approve the special use permit for the plant, the large tax base that would be realized. The other hook the Tondu Corporation used is that they said they would clean up the site on which they would locate the plant. They have actually stated in documents to the city that the city should be concerned that if their project is not approved there may be no way to clean up the

site. There are many ways to clean up this site. Actually Tondu Corporation plans to apply for a Brownfield development grant to do so and has set that figure at $10,000,000. He could apply for much more. If this was to occur, the city would have to pay part of whatever money he was granted because of recent administrative decisions on this fund made by the governor. So, the Tondu Corporation was also attractive to government officials because a bad site would be cleaned up on the lakeshore. The focus has always been on the cleanup by the Tondu Corporation and not the risks that their plant will bring. Sometimes their promotion as noted above bordered on unnecessary pressure by statements made. With repeated requests to the Tondu Corporation about what cleanup means, they have never given any specifics. It is possible that it could simply be capped so it is useable by the new facility.

But then in late November, the other shoe dropped. It became known that the Tondu Corporation, who local officials thought would own the plant as a private investor, had been negotiating for over 18 months with public energy pools in Michigan to be the owners of the plant. Specifically the pools involved were the Michigan Public Power Agency and the Southwest Michigan Power Agency. These agencies pay no taxes. Mr. Tondu, unknown to the city and county who were led to believe there would be a huge tax windfall, had set up a financial plan that these public power agencies would own 80% of the plant and the Manistee Saltworks Development Corporation, another corporation owned by Mr. Tondu, would own the other 20%. That means that the owner of the plant and thus the electricity would be cities such as Traverse City, Charlevoix, Petoskey, Grand Haven, Holland, Harbor Springs, Hillsdale, etc. It is said that Holland will be the largest owner and it has been reported that Hillsdale will own 3% of the plant and thus the electricity. In an article in the Hillsdale News in November of 2003, it describes how the residents of Hillsdale would see a reduction in their electricity bills because of their ownership of this plant. Holland already owns all or partial pieces of two plants and maybe more. It is known that Holland has already been selling excess electricity and bringing millions of dollars into their city and county budgets. These cities, which will pay no taxes, will own the electricity, which they will be able to use to reduce electricity bills or sell on the wholesale market. The Tondu Corporation has used the argument that this plant is needed for "base power" in Michigan. There is evidence to suggest that excess power has been available on the grid. As a matter of fact this is referenced in the report of the recent Tax Tribunal wherein the judgement was against the Tondu Corporation for providing information on appraisals and earnings that was not credible. It is known that the TES Filer plant has shut down for a month at a time to keep electricity off the grid.

The other complicating piece of the layered way in which the financing has been laid out for this project is that it is the Manistee Saltworks Development Corporation that owns the options to the land on which the plant would be built and it appears that it is the Manistee Saltworks Corporation that will own the 20% of the plant. It is now known that the way the Tondu Corporation comes into the picture is that they will be granted a 30 year "takeoff" agreement with the public power agencies to be able to get 200 megawatts of electricity annually. This will probably be at a set price. What is interesting about the way in which this has been set up, is that the Manistee Saltworks Development Corporation could sell out their ownership in the plant at any time and the Tondu Corporation will still have benefited. If the Manistee Saltworks Development Corporation sold the plant to one of the public agencies, there would be no tax base at all. It is interesting that at the present time, the Manistee Saltworks Development Corporation is negotiating with the City of Manistee, a service fee to be able to locate in the area rather than pay taxes. They have excluded the county from these negotiations and have been quoted as saying that they will negotiate a fee for service for locating here with the county after they have set a fee with the city. What is very interesting is that Mr. Tondu has stated that he cannot make a profit on the plant if he is taxed the way Michigan tax laws are now set up. Why should they not pay taxes like every other business in Manstee County? Wouldn't a local ice cream shop be able to make more profit if that shop did not have to pay the standard tax?

It should be recalled at this point that the Tondu Corporation lost a suit recently in which they tried to

(Attachment #8)

get a reimbursement paid to them by Filer Township because Tondu Corporation pleaded that their electricity was not a durable and therefore should not be taxed. It appears that they have this in the back of their mind as they are now trying to set a fee rather than pay taxes.

What is even more interesting, is that all this negotiation could be meaningless if the Manistee Saltworks negotiated a fee and then sold the plant to the public power agencies after one year. The negotiations would be fruitless as the public power agencies do not pay taxes, and Mr. Tondu, the Manistee Saltworks Development Corporation nor the Tondu Corporation can negotiate for the public power agencies.

It would probably not be wise to trust the intent of the Tondu Corporation in regard to their concern for the health, welfare and safety of the residents of this area. The suit against Filer Township is one indication, and the fact that the corporation has been negotiating with public power agencies for over a year and that Mr. Joe Tondu has been receiving fees during that time while leading the officials of the city and county of Manistee to believe that he was working with them in good faith is another.

The burden to the taxpayers of the city and county even looms larger than the poison to their environment and the change in their quality of life. With this plant will come large costs. They include loss of approximately 11 years in the capacity of the landfill because of the increased ash. Expansion of the waste water treatment plant if the DEQ does not permit discharge into Manistee Lake, repair of at least two bridge opening mechanisms which have reached their useful life according to city manager Deisch. Additionally there will be wear and tear on roads to and from the plant, probable discharge of foreign species in ballast water from the ships as they vary their ballast in the harbor, deterioration of the river channel from increased traffic and probable reduction in the number of people who will move and vacation in the area because of the plant. This does not factor in increased burden on health facilities because of increased health risks.

It should be pointed out that the Tondu Corporation has not offered and neither the city nor the county has requested that an environmental and an economic impact statement be prepared.

Let's turn to the jobs and other promises. Originally the Tondu Corporation stated that they would create 60 jobs. They now are talking about bringing 60 jobs to the job pool. It has become evident that in a plant such as this there is a requirement for supervisory personnel who have specialized training in power plant operation. They will not come from the Manistee area. The next level of skill required is Operator 1 and Operator 2 and then maintenance. Operator 1 and 2 require a level of skill that can be trained on the job before the plant opens. There has been no clarification as to how the plant would be staffed. The maintenance personnel could be hired from the area. This plant is not about bringing jobs to the community. That argument has been used as a hook to people's emotions because of the past history of job loss in Manistee County. Think for a moment how many jobs would be created by alternative clean industry that can be attracted to the area, or think about how many jobs are created by every 20 new families and entrepreneurs that move to the area because of it being a recreational destination point? One's suspicions should also be raised about the possible closure of the TES Filer plant. If that happened, there would be a source of trained operators. Why should one be suspicious about this? In the judgment statement prepared by Judge Southern in the TES Filer suit, Mr. Joe Tondu is quoted stating that the TES Filer plant is "an anachronistic plant form the 1980's." Statement like that should raise questions at least about plans for it in the future. Saying the new plant would create 60 jobs for the job pool may be close to a true statement, but it does not go on to say where they came from. What if they came from a closed TES Filer plant?

Let's consider the promised $100,000,000 windfall to the construction tradespeople that Tondu Corporation suggests will come to the three year period of construction. The plant is a power plant. The

(Attachment #8)

general contractor will be a specialist in this area and will come from the pool of specialists available globally. Once the contract is given to one of these specialists, that contractor will staff crews with skilled people in power plant construction first and then turn to local skilled trades. The Tondu Corporation has not certified how many local construction jobs there will be and has no control of that once the general contractor is hired. It is also remembered that whatever trades opportunities there are, they will dry up after three years and then what? We need to stabilize this economy for tradespeople by focusing on continued development of the city and county as a place to live, recreate and invest in entrepreneurial enterprise. That will keep contractors consistently busy. For example, think about what 20 new housing starts every year for three years would mean to tradespeople and think of the related services that would come with those 60 families. And this could go on indefinitely, each year geometrically increasing. That is stability of jobs and economic development.

Now turn to the promised $11,000,000 annual contribution to the economy. There is no documentation other than a statement that the payroll will be $4,000,000, but there is no documentation beyond that. At this time it is a groundless estimate. There is a proposed plan that has been submitted to the municipalities in which influx to the local economy is liste as 6.7 million. Again, as with other data provided by Tondu Corporation, the numbers are moving targets.

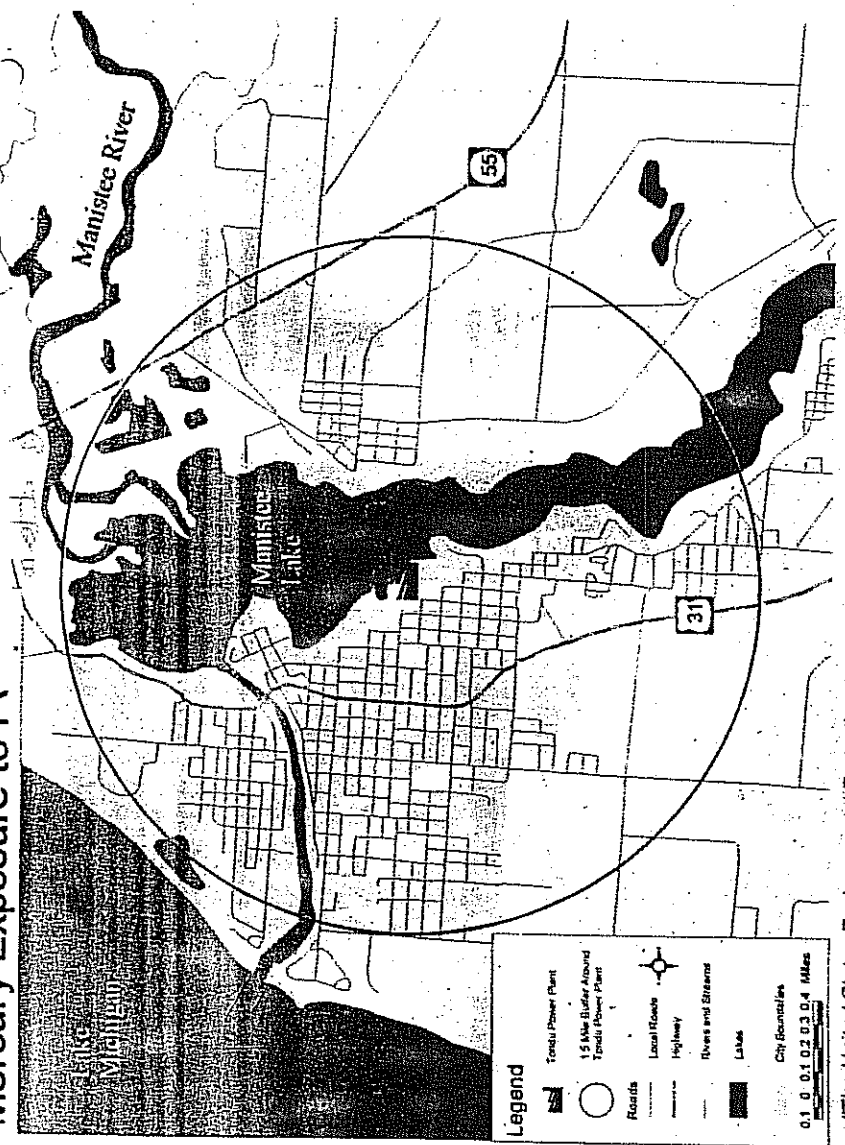
This is a story about energy pirates building a "merchant energy plant" in the city of Manistee and leaving the taxpayers of Manistee city and county with the burden of the costs to maintain the "merchant plant's" presence. Why should Manistee county residents be indentured for the rest of their lives to the Tondu Corporation and the cities who already are more economically well off than Manistee? Why suffer erosion of our environment and our health in this manner? There are so many other ways to build up this city and county without hurting ourselves and our neighbors to the North, South, East and West. The people of Manistee should grab the initiative to direct their own destiny. Cleaner electricity than what Tondu Corporation is proposing can be developed, and the electricity could be owned by Manistee and others. We don't need to produce electricity for Holland and others and get only their pollution.

Yahoo! Groups Links

- To visit your group on the web, go to:
  http://groups.yahoo.com/group/cfrd/
- To unsubscribe from this group, send an email to:
  cfrd-unsubscribe@yahoogroups.com
- Your use of Yahoo! Groups is subject to the Yahoo! Terms of Service.

Mercury Exposure to P

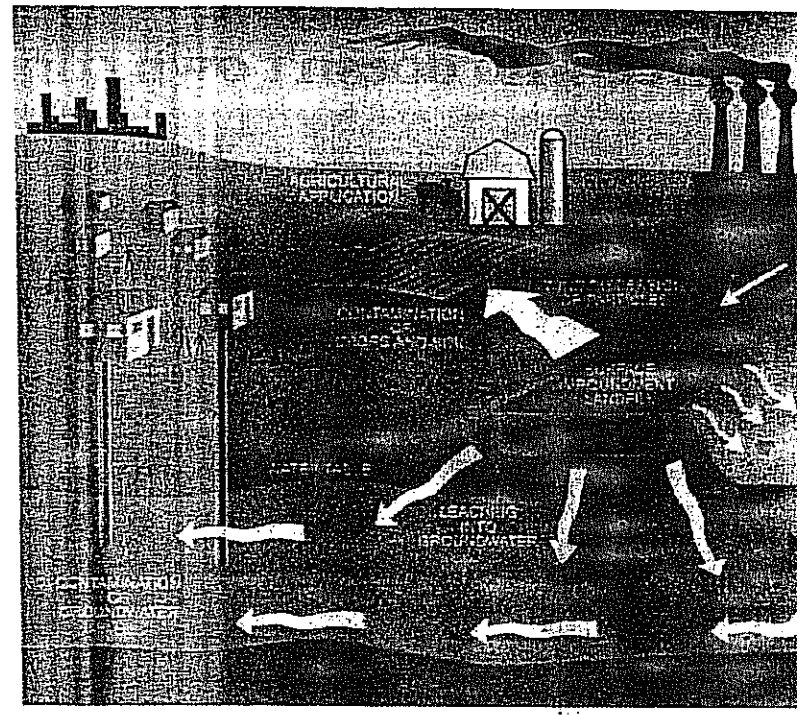
(Attachment #8)



"The United States Environmental Protection Agency found that up to 74% of the mercury exposure to people within 1.5 miles from a medium-sized 375-Megawatt plant came from that one power plant." National Wildlife Federation - *90% Reduction in Mercury Emmissions From Power Plants. May 28, 2003*

The proposed Tondu Power Plant is 425-Megawatts and could emit up to 400+ pounds of mercury annually.

How Power Plant Combustion Waste Contam



Local vs. Regional Mercury Deposition

Coal-Fired Power Plants	Distance from Plant (miles)	Humid Eastern Site % of Mercury Deposition		Arid Western Site % of Mercury Deposition	
		From Local Plant	From Regional Plant	From Local Plant	From Regional Plant
Large Facility	1.5	87	13	90	10
	5	56	44	75	25
(375 MW)	15	31	69	73	27
Medium Facility	1.5	74	26	84	16
	5	44	56	78	22
(375 MW)	15	27	73	70	30
Small Facility	1.5	41	59	74	26
	5	20	80	55	45

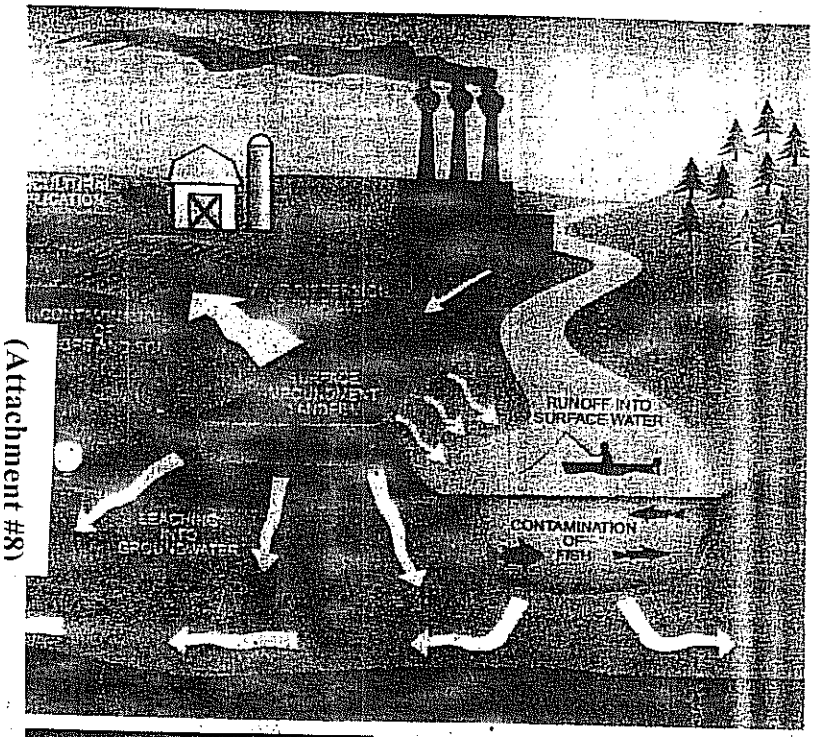
Sour

Coal-burning Power
53%
(251 ft)

December 4, 2003

(Attachment #8)

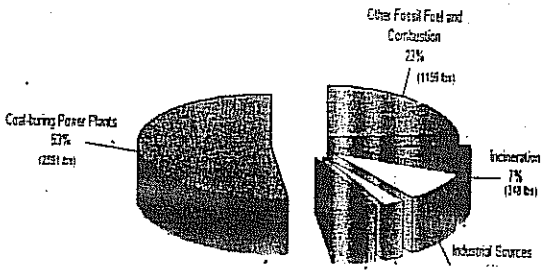
Combustion Waste Contaminates the Environment



...cury Deposition

Site	Arid Western Site % of Mercury Deposition	
Regional Plant	From Local Plant	From Regional Plant
13	90	10
44	75	25
[illegible]	73	27
25	84	16
56	78	22
73	70	30
59	74	26
[illegible]	[illegible]	[illegible]

Sources of Mercury Air Emissions in Michigan

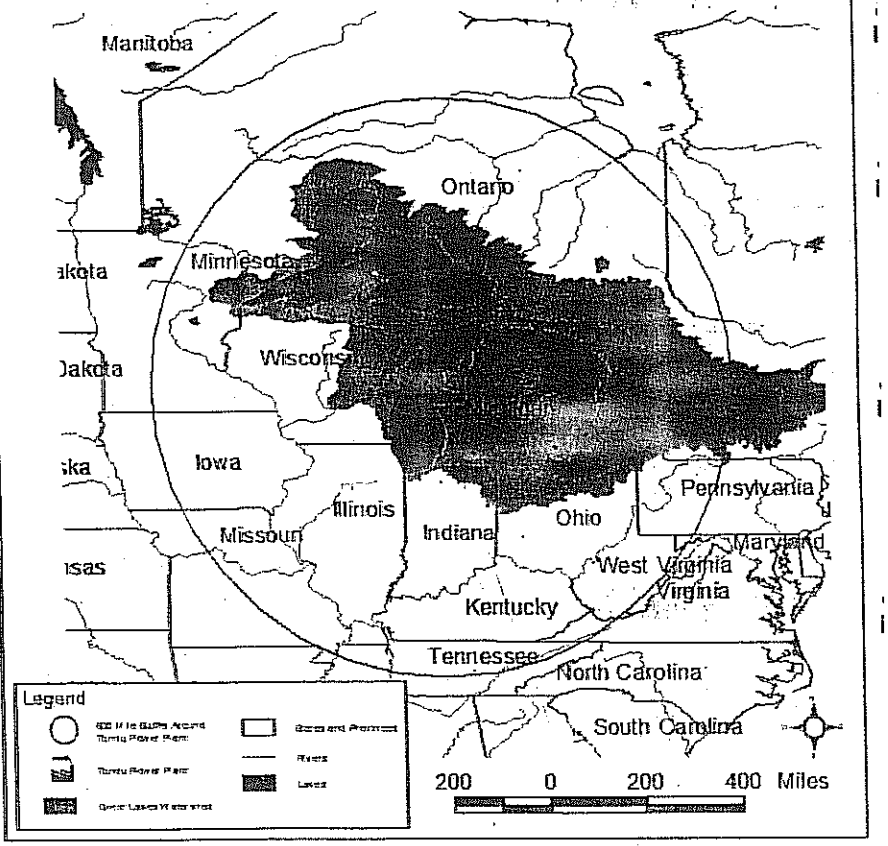


Source: *U. S. EPA 1998 Study of Hazardous Air Pollutant Emissions from Electric Utility Steam Generating Units* - Final Report to Congress

For more information please log on to:

www.epa.gov www.ccap.org
www.nwf.org www.nrdc.org

"50% of the mercury emitted from coal-fired power plants can travel up to 600 miles from the power plant." Center for Clean Air Policy, *Power Plant Emissions and Water Quality, October 1997, Part 1.*

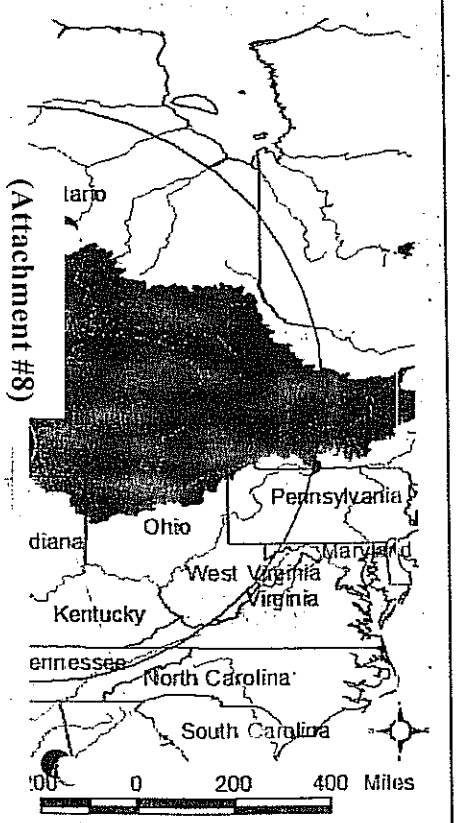


22 | 29 | 71

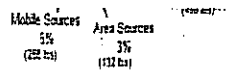
dous Air Pollutant Emissions from
it inal Report to Congress

on to:
/.ccap.org
/.nrdc.org

fired power plants can travel up to 600
Clean Air Policy, *Power Plant*
1997, Part 1.



(Attachment #8)



Health Effect of Power Plant Pollutants

Mercury: Causes neurological problems and developmental delays in children.

Sulfur dioxide: Is the primary cause of acid rain. It also reduces lung function, triggers asthma, causes low birth weights in infants, and is associated with premature deaths.

Nitrogen oxides: Is the primary cause of ozone smog. It also changes lung function&increases respiratory illness.

Particulate Matter: Causes asthma attacks, heart rate variability, heart attacks, cardiovascular disease, pneumonia, and chronic obstructive pulmonary disea Linked to at least 45,000 premature deaths annually.

This information is paid for by the Little River Band c Ottawa Indians after consulting with many area citizer

Health Effects

1. Cancer and Coal Plants
2. Waste and Coal Plants
3. Mercury and Coal Plants
4. Heart & Lungs and Coal Plants
5. Prenatal Exposure to Mercury
6. Bush Ignores Mercury Solution- Physicians for Social Responsibility
7. Mercury Pollution from Power Plants, Out of Control and Close to Home- Environmental Defense
8. Adverse Effects of Coal Burning Plants in Michigan- Jeff Wrisley

(Attachment #8)

CANCER and COAL PLANTS
FACT SHEET

1. Studies suggest an 18% increase in the risk of a childhood cancer for children living within a radius of 1.8 miles of a power station.
   Knox & Gilman, "Hazardous Proximities of Children Cancers in Great Britain from 1953-19980, J. Epidemiology and Community Health (1997); www.sierraclub.org
2. 10% of all lung cancers are probably due to air pollution
   "Outdoor Air pollution and Lung Cancer," Environmental Health Perspectives (8/2000)
3. Living in a polluted area can increase your risk for lung cancer between 12-37%.
   "Study Ties Pollution, Risk, and Lung Cancer Effect Similar to Secondhand Smoke," Washington Post (3/06/02), citing J. American Medical Assn.
4. Exposure to the tiny particles and sulfate pollutants of industrial emissions is comparable to breathing second-hand smoke from a cigarette.
   "Study Ties Pollution, Risk, and Lung Cancer Effect Similar to Secondhand Smoke," Washington Post (3/06/02), citing J. American Medical Assn.
5. A study of cancer statistics in 11 Michigan counties with coal fired power plants show that 6 of 11 counties exceeded the cancer cases diagnosed rates for the State of Michigan and 6 of 11 counties exceed the cancer related death rates for the State of Michigan.
   Michigan Dept of Community Health, "Responses To Frequently Asked Questions: Manistee Saltworks Development Corp Coal-Fired Power Plant (2003)
6. Nationwide as many as 31,000 deaths a year are related to power plants emissions as opposed to 16,000 killed in drunk-driving accidents and 17,000 homicide victims.
   "Study Ties Pollution, Risk, and Lung Cancer Effect Similar to Secondhand Smoke," Washington Post (3/06/02), citing J. American medical Assn.
7. Coal fired power plants emit multiple cancer causing agents including metals such as arsenic, chromium, nickel; radionuclides such as radon and uranium; sulfuric acid, aerosols and multiple particulates.
   Holmberg & Ahlberg, "Consensus Report: Mutagenicity and Carcinogenicity of Car Exhausts and Coal Combustion Emissions," 47 Environmental Health Perspectives 1 (1983); www.sierraclub.org
8. The more coal burned, the more carcinogens emitted and the greater the risk of disease.
9. There are at least 23 professionally-accepted studies showing that power plant pollution increases cancer, asthma, heart attacks and other health problems.
10. Dioxins, a known human carcinogen and probably the most toxic compound known to science, also are formed when coal is burned, since nearly all coal sources contain chlorine. Utility and industrial burning of coal is the 6th largest source of dioxin emissions to air in 1995.
    Center for Health, Environment, and Justice, "America's Choice: Children's Health or Corporate Profit" (1999)
11. It is a common fact that the burning of coal produces cadmium – a toxin known to be a human carcinogen – lead – a deadly heavy metal – and hexavalent chromium (CRVI) – among the strongest known causes of lung cancer.
    Harte, et al., Toxics A to Z: a Guide To Everyday Pollution Hazards (1991)
12. Reducing fine particle emissions from older coal plants in the USA would:
    - avoid 18,700 deaths per year
    - avoid 3 million lost work days per year
    - avoid 16 million restricted-activity days per year
13. Reducing emissions from 9 older coal plants in the mid-west would:
    - avoid 300 deaths
    - avoid 2,000 respiratory and cardiac hospital admissions
    - avoid 400,000 person-days of respiratory symptoms
14. Not having a local coal powered plant would eliminate most of these coal combustion related problems in this community.
    "Study Ties Pollution, Risk, and Lung Cancer Effect Similar to Secondhand Smoke," Washington Post (3/06/02), citing J. American Medical Assn.

WASTE and COAL PLANTS
FACT SHEET

1. A 500-megawatt coal plant typically produces 125,000 tons of ash and 193,000 tons of sludge from the smokestack scrubber each year, both of which have to be disposed of locally.
2. In an average year a typical coal plant generates:
   - 3,700,000 tons of carbon dioxide, the primary human cause of global warming,
   - 10,000 tons of sulfur dioxide, which causes acid rain that damages forest, lakes, streams, and buildings. It forms small airborne particles that can penetrate deep into lungs.
   - 500 tons of small airborne particles which can cause chronic bronchitis, aggravate asthma and cause premature death.
   - 10,200 tons of nitrogen oxide, leading to the formation of smog, which inflames the lungs. 500,000 late model cars would emit this much nitrogen oxide.
   - 700 tons of carbon monoxide, which aggravates heart disease and can cause death in high concentrations
   - 220 tons of hydrocarbons, which are volatile organic compounds that add to ozone levels
   - 170 pounds of mercury, of which 1/70th of a teaspoon can make the fish in 25-acre lake unsafe to eat
   - 225 lbs of arsenic, which can cause cancer when it contaminates groundwater
   - 114 pounds of lead, 4 pounds of cadmium and traces of radioactive uranium

   Union of Concerned Scientists, "Environmental Impacts of Coal Power Air Pollution"; www.ucsusa.com
3. If care is not taken to dispose of coal ash, runoff water may drain into surface or groundwater and pollute the waters with carcinogenic heavy metals.
4. The water leaving the cooling system of coal plant is warmer than the water taken in which may cause thermal pollution and increase the mortality of life forms in the local environment.
5. Chlorine is needed at coal plants to control algae growth in the water, and this may contaminate the local water.
   www.ucsusa.org
6. Every year, nearly 600 coal and oil-fired power plants produce over 100 million tons of sludge waste.
   Citizens Coal Council, Hoosier Environmental Council, Clean Air Task Force, "Laid to Waste: The Dirty Secret of Combustion Waste from America's Power Plants," February 2000
7. 40% percent of the coals waste landfills and 80% of the coal waste surface impoundments do not have liners, and less than half the landfills and only 1& of impoundment have groundwater monitors.
   "Fast Facts on Air," A Sourcebook for the Clean Air Advocate, Clean Air Network, 2000
8. Coal stockpiles have the potential to release contaminants, usually heavy metals such as arsenic, copper, nickel, lead, and zinc. These contaminants are mobilized in rainwater runoff. As a result, the pH of coal pile runoff is acidic, and may be similar in composition to acid mine drainage.

(Attachment #8)

MERCURY and COAL PLANTS
FACT SHEET

1. In 1990, coal-fired power plants emitted 46 tons of mercury, and mercury emissions are expected to climb to 60 tons, by 2010, yet coal plant emissions are the only major sources of mercury that remain unregulated.
   U.S. EPA, "Electric Utility Steam Generating Units Hazardous Air Pollutants Emission Study," Feb. 24, 1998 p.ES-6, Table ES-2; Report on "Adverse Effects of Coal Burning Power Plants in Michigan"; MSN Search: <EPA mercury>
2. The EPA has determined that mercury emissions from power plants pose significant hazards to public health and must be reduced. The Agency plans to propose regulations by 2003, and issue final regulations by 2004.
   U.S..EPA, "Mercury Web Site," www.epa.gov/mercury/information.htm; U.S. EPA, "Fact Sheet: EPA To Regulate Mercury and Other Air Toxics Emissions from Coal- and Oil-Fired Power Plants" 2000
3. Reliable mercury emission control technology does not currently exist for coal plants.
   Mercury Questions & Answers, www.we-energies.com
4. As little as 1 drop - 1/70th of a teaspoon of mercury can contaminate a 25-acre lake to the point where fish are unsafe to eat.
   National Wildlife Federation, "Clean the Rain, Clean the Lakes: Mercury in Rain is Polluting the Great Lakes," September 1999
5. The existing Filer City T.E.S. Tondu Plant already releases 137 pounds of mercury into the air.
   U.S. EPA: Releases: 2003 Facility Report; www.epa.gov
6. The proposed Tondu facility is estimated to release 200-400 more pounds of mercury into the air annually.
7. Fetuses, infants, and children are particularly susceptible to mercury poisoning. Mercury's effects are similar to lead toxicity in children, and include delayed development and cognitive deficits, convulsions, mental retardation, language difficulties, and problems with motor function, attention, and memory. Those with toxic levels of mercury also report memory loss and fatigue in their system. It is a relevant factor for ADD, ADHD, and the general physical and mental health of children and adults.
   Thompson, Toxic Metals', www.drdavidthompson.com/heavy_metal_toxicity.html; see also US EPA, "Mercury Study Report To Congress"
8. A 2000 National Academy of Sciences report noted that methylmercury exposure, from mothers eating mercury-contaminated fish, may cause brain damage in 60,000 to 375,000 children born in the U.S. each year.
   www.nhcnews.go.com/sections/DailyNews/mercury011.html
9. 1 in 12 – 8% - of women of childbearing age already have unsafe mercury levels and these rates are higher in more contaminated areas.
   U.S. EPA: "Mercury: Frequently Asked Questions."
10. Mercury can increase the chances of contaminated adults having heart attacks and hypertension.
    U.S. EPA: "Mercury: Frequently Asked Questions."
11. In additional to the adverse human heath impacts, mercury exposure also harms wildlife, with fish-eating birds and mammals receiving the highest exposures. Documented adverse effects in birds and mammals include reduced reproductive success, impaired growth and development, behavior abnormalities, and even death.
    US EPA, "Mercury Study Report To Congress"
12. 50% of the mercury emitted from coal-fired power plants can travel up to 600 miles from the power plant, and 74% of the mercury in an area 1.5 miles around a coal plant comes from that coal plant.
    Center for Clean Air Policy, "Power Plant Emissions and Water Quality," October 1997, Part I
13. Recently, a high school was shut down for days after a student removed mercury from a school laboratory and spread it around the school.
    "A Mercury Non-Policy," Washington Post, 12/30/03, www.washingtonpost.com
14. Air pollution is a considerable threat to Michigan's $9 billion tourism industry that is dependent upon clean water and a healthy fishery.
    Report on "Adverse Effects of Coal Burning Power Plants in Michigan"
15. Michigan Governor Granholm has proposed to eliminate mercury emissions in Michigan by the year 2020.
    Detroit Free Press, 12/09 03; www.freep.com

HEART & LUNGS and COAL PLANTS
FACT SHEET

1. When Nitrous Oxide (NOx) reacts with volatile organic compounds and sunlight, ground level ozone, or smog, forms. Power plants are second only to automobiles as the greatest source of NOx emissions. A UCLA School of Medicine study found that over time, repeated exposure to smog and other air pollutants can cause as much damage to the lungs as smoking a pack of cigarettes a day.
   Sierra Club, "Fact Sheet: Clean Air: Dirty Coal Power"; www.sierraclub.org
2. Smog irritates the linings of the air passages and lungs, eventually causing injury and spasticity. This increases the risks of pneumonia, emphysema, chronic bronchitis and asthma attacks. These risks are greatest among the very young and elderly, especially those with pre- existing lung disease.
   Sierra Club, "Dirty Coal Power"; www.sierraclub.org
3. Smog and soot cause tens of thousands of deaths per year, millions of asthma attacks per year and hundreds of thousands of admission s to the hospital plus uncountable missed days of work. The cost of this is billions of dollars per year.
4. Smog and other air pollutants can cause as much damage as smoking a pack of cigarettes per day.
5. Tens of thousands of elderly people die each year from exposure to ambient levels of fine particles. Breathing fine particles can hurt them with heart or lung disease, emphysema and chronic bronchitis.
   Amerteam Lung Association: :Facts about Fine Particle Air Pollution
6. While all of us are at risk from exposure to fine particles, the elderly people with respiratory disease and children are at greatest risk.
   Spengler, "Death, Disease and Dirty Power: Mortality and Health Damage Due to Air Pollution from Power Plants", Harvard School of Public Health, September 2000
7. Infants in high pollution areas are 40 percent more likely to die of respiratory causes.
   Spengler, "Death, Disease and Dirty Power: Mortality and Health Damage Due to Air Pollution from Power Plants", Harvard School of Public Health, September 2000
8. A recent study found a 26 percent increased risk for Sudden Infant Death Syndrome (SIDS) in cities with high levels of fine particle pollution.
   Spengler, "Death, Disease and Dirty Power: Mortality and Health Damage Due to Air Pollution from Power Plants", Harvard School of Public Health, September 2000); see also www.cleanheair.org
9. 5.5% of children living within 30 miles of a coal-powered plant have asthma. Michigan ranks 5th in the nation in this statistic.
   Michigan Environmental Council, "Nearly 2 Million Michigan Children Breath Pollution from Dirty Power Plants (2002);www.mecprotects.org
10. Out of the entire US electric industry, coal-fired power plants contribute 96% of SO2 emissions, 93% of NOx, 88% of CO2 and 99% of mercury emissions.
    Clean the Air, "Power Plant Air Pollution Problem," Fact sheet
11. Scientists increasingly believe that soot to be the most dangerous air pollutant, blaming it for 64,000 deaths per year in the U.S. – nearly twice the number of deaths due to auto crashes.
    Sierra Club, "Fact Sheet: Clean Air: Dirty Coal Power"; www.sierraclub.org
12. Fine particle emissions (soot) from U.S. coal-fired power plants are responsible for an estimated 30,000 deaths each year. Hundreds of thousands of Americans suffer from asthma attacks, cardiac problems and upper and lower-respiratory ailments associated with fine particles from power plants.
    Spengler, "Death, Disease and Dirty Power: Mortality and Health Damage Due to Air Pollution from Power Plants", Harvard School of Public Health (Sep. 2000); see also www.cleanheair.org

(Attachment #8)

pglottie

From: "Jimmie" <wolfclan@toast.net>
To: <cfrd@yahoogroups.com>
Sent: Friday, February 06, 2004 3:39 PM
Subject: [cfrd] Press Release

Prenatal Exposure to Mercury From a Maternal Diet High in Seafood Can Irreversibly Impair Certain Brain Functions in Children

For immediate release: Friday, February 6, 2004

Boston, MA— With methylmercury a worldwide contaminant of seafood and freshwater fish and known to produce adverse nervous system effects, especially during brain development, researchers from the Harvard School of Public Health and institutions in Japan, Denmark and the Faroe Islands undertook an assessment of possible brain function impairment in adolescent children due to prenatal exposure to mercury when the mothers'diet was high in seafood. The authors found that high levels of mercury passed from mother to child in utero produced irreversible impairment to specific brain functions in the children. The study was carried out in the Faroe Islands and appears in the February issue of *The Journal of Pediatrics.*

Mercury exposures among the children in the study were assessed through analyses of cord blood samples at birth and hair samples taken at ages 7 and 14. Some 1,022 mothers and their children from the Faroe Islands participated in the research. The mothers' hair mercury levels at childbirth in most cases exceeded 1 microgram per gram, the exposure limit recommended by the National Research Council and the U.S. Environmental Protection Agency (EPA). Follow-up testing of the children showed much lower exposure levels. At the most recent follow-up, more than 850 14 year-olds participated in the study.

The Faroe Islands are located in the North Atlantic Ocean between Norway and Iceland. The islands' economy is centered on the fishing industry and fish processing. The diet of the inhabitants includes high intake of seafood and whale meat.

To assess the impact of the exposure to mercury, brainstem auditory evoked potentials (BAEP) were recorded using surface electrodes placed on the skull. At two different sound frequencies, the researchers measured the transmission of electrical signals in the brain from the acoustic nerve, via the pons (connecting the medulla oblongata to the thalamus) to the midbrain. The latency of the electrical transmission from the acoustic nerve to the pons was significantly increased at higher intrauterine exposure to mercury. This observation was found to be true both at 7 years and at 14 years, suggesting that this effect is lasting.

Prolonged latencies of the electrical signals to the midbrain among the 14 year-olds was linked to the current mercury exposure and therefore suggested that postnatal mercury exposure may damage brain functions that are different from those that are sensitive to mercury during fetal development. Although hearing loss has been observed in severe mercury poisoning cases in adults, the mercury levels among the children in the study was not associated with detectable hearing loss. The authors did not find a link between simultaneous prenatal exposure to PCBs and electrical signal latencies.

A second paper in *The Journal of Pediatrics* by the same authors reports that the neurological changes are also linked to decreased nervous system control of the heart function. At higher mercury exposures, the children were less capable of maintaining the normal variability of the heart rate necessary to secure proper oxygen supply to the body.

"We found that both prenatal and postnatal mercury exposure affects brain functions and that they seem to affect different targets in the brain. The fact that the current exposure has an additional effect, despite the low mercury concentrations is worrisome, especially for communities where seafood constitutes an important part of the diet," said Philippe Grandjean, senior author of the study and adjunct professor in the Department of Environmental Health at the Harvard School of Public Health. He added, "The current focus on protecting pregnant women against this neurotoxin should be expanded to cover children and adolescents as well. Seafood is an important part of a healthy diet, and consumers should choose species low in the food chain caught in waters without mercury pollution." He added, "In this country we need to set uniform mercury exposure levels. The children in the study had average exposure levels that are similar to the current limit used by the U.S. Environmental Protection Agency, and 95 percent of them were below the current limit used by the Food and Drug Administration."

The research was supported by grants from the National Institute of Environmental Health Sciences, the Danish Medical Research Council and the Nissan Science Foundation

http://www.hsph.harvard.edu/press/releases/press02062004.html

Yahoo! Groups Sponsor
ADVERTISEMENT

Yahoo! Groups Links

- To visit your group on the web, go to: http://groups.yahoo.com/group/cfrd/
- To unsubscribe from this group, send an email to: cfrd-unsubscribe@yahoogroups.com
- Your use of Yahoo! Groups is subject to the Yahoo! Terms of Service.

---------- Yahoo! Groups Sponsor ---------->
Buy Ink Cartridges or Refill Kits for your HP, Epson, Canon or Lexmark Printer at MyInks.com. Free s/h on orders $50 or more to the US & Canada.
http://www.c1tracking.com/l.asp?cid=5511
http://us.click.yahoo.com/mOAaAA/3exGAA/qnsNAA/7gSolB/TM
---------->

Yahoo! Groups Links

<*> To visit your group on the web, go to:
http://groups.yahoo.com/group/cfrd/

<*> To unsubscribe from this group, send an email to:
cfrd-unsubscribe@yahoogroups.com

<*> Your use of Yahoo! Groups is subject to:
http://docs.yahoo.com/info/terms/

(Attachment #8)

Children's (Un)Healty Month: Bush Warns of Mercury Danger, Ignores Solution

PSR®
Physicians for Social Responsibility

Environment and Health Program: October 15, 2003 For Immediate Release
Contact James Snyder 202-667-4260 x215

Children's (Un)Healthy Month
Bush warns of mercury danger, ignores solution

WASHINGTON — During this third week of the President's Children's Health Month campaign, the Environmental Protection Agency (EPA) is urging parents to feed their children a healthy diet, and to take steps to reduce their families' exposure to pesticides and other contaminants in food. Today (October 15), EPA advises parents to ***"Protect Children from Contaminated Fish"*** by tracking local fish advisories for mercury and refraining from eating mercury-contaminated fish. Ironically, while EPA warns parents about the serious danger of mercury in fish, the White House is working to ensure that the #1 source of mercury can keep on polluting.

Coal-fired power plants spew hundreds of tons of mercury emissions into our nation's air every year. Once airborne, mercury drifts in the atmosphere but eventually deposits in water bodies. Mercury has contaminated 10.2 million acres of lakes, estuaries, and wetlands and 415,000 miles of stream, rivers, and coastline. Aquatic microorganisms convert the heavy metal into the organic form methylmercury, which accumulates in many edible fish species. Fish are a major source of mercury exposure in the U.S.

Exposures by pregnant women are of particular concern, because mercury can cross the placenta and enter the fetal brain. Children exposed to even low levels of mercury before birth can experience serious neurological and development impairment. Specific symptoms may include poor performance on tests of attention, fine motor function, language, visual-spatial abilities (e.g., drawing), and memory. According to the National Academy of Sciences (NAS), more than 60,000 children born each year may suffer from learning disabilities due to mercury exposure before birth.

"The Centers for Disease Control and Prevention have warned that one in 12 women of childbearing age carry levels of mercury in their bodies that are unsafe for a developing fetus," said Dr. Robert K. Musil, PSR's CEO and Executive Director. "With such widespread contamination and exposure, serious efforts to control mercury emissions should be a top priority."

Unfortunately, the Bush Administration shows no sign of letting up on the push to enact its so-called "Clear Skies" initiative. This legislation will undermine the Clean Air Act and delay badly needed reductions in power plant mercury emissions. The administration's polluter-friendly, 'go slow' approach to mercury regulation will place thousands of our nation's children at risk from unnecessary mercury exposure.

Power plants are currently the only unregulated source of mercury air emissions in the United States, producing one-third of all mercury air emissions. Compared with enforcement of the Clean Air Act, the President's plan would allow power plants to emit three times more mercury. By

Out of Control and Close to Home

MERCURY POLLUTION FROM POWER PLANTS

AUTHOR
Michael Shore

Mercury pollution from power plants is unregulated and generally uncontrolled. Local mercury emissions in the United States are important contributors to local mercury hot spots, leading to contaminated water, fish that is not healthy for consumption and brain damage in infants.

e
ENVIRONMENTAL DEFENSE
finding the ways that work

(Attachment #8)

contrast, vigorous enforcement of existing requirements will result in a 90 percent reduction in annual mercury emissions over the next five years.

"Given the weak mercury standards in the President's Clear Skies legislation," said Musil, "the administration's signature 'No Child Left Behind' rhetoric should be rewritten to read 'No Child Left Unexposed.'"

Congressional action on the Clear Skies Act has stalled since its introduction in both the House and Senate, where the bill has received mounting criticism from Republicans and Democrats alike. The Clear Skies Act will face its first legislative test in November when the Senate Environment and Public Works Subcommittee on Clean Air, Climate Change and Nuclear Safety is expected to vote on the bill.

The administration has actively opposed attempts by Senator Jeffords and others to develop multi-pollutant legislation that includes mercury emissions standards at least as rigorous as current law. Moreover, recent press reports suggest that EPA may duck its legal responsibility to enforce the existing Clean Air Act with new mercury air standards in place by 2007. One EPA official reportedly invited polluters to seek a year-long delay in the agency's rulemaking, undermining the administration's claims that it cares more about children's health than the polluting industries it serves. Recent statements by EPA officials indicate that the rule will likely set mercury emissions standards at a significantly higher level than either the administration's own Clear Skies legislation or the technology threshold known as 'maximum achievable control technology' (MACT) – the standard that EPA is legally required to impose.

Physicians available for comments and interviews, please contact James Snyder at 202-667-4260, ext. 215 or jsnyder@psr.org.

###

(Attachment #8)

Environmental Defense would like to acknowledge Paulette Middleton for her invaluable research and white paper on mercury pollution. Her report, "Mercury—A Local Concern, an International Issue," is available online at www.environmentaldefense.org/go/mercurylocalconcern.

The author would like to thank Vickie Patton, Kristen Thornburg, Amber Munger, Allison Cobb and Bonnie Greenfield, for their critical roles in the development and production of this report.

On the cover
Mercury spewed into the air from coal-burning power plants settles on bodies of water, accumulates in fish and poses a serious health hazard to young children. Smokestacks photo by Photodisk. Fish on plate photo by Tim Connor. Woman and child photo by Getty Images.

Our mission
Environmental Defense is dedicated to protecting the environmental rights of all people, including the right to clean air, clean water, healthy food and flourishing ecosystems. Guided by science, we work to create practical solutions that win lasting political, economic and social support because they are nonpartisan, cost-effective and fair.

©2003 Environmental Defense

Printed on 100% post-consumer recycled paper, 100% chlorine free.

The complete report is available online at www.environmentaldefense.org/go/mercurypowerplants. Questions and comments can be directed to Michael Shore at mshore@environmentaldefense.org.

Contents

Executive summary 4

Introduction 7

Public health threats of mercury 8

OUT OF CONTROL
Coal-fired power plants remain unregulated for mercury 9

CLOSE TO HOME
The significance of local mercury deposition 11

Recommendations 12

Conclusion 13

Notes 14

(Attachment #8)

Executive summary

Mercury is a highly toxic heavy metal that poses a major public health threat. Because mercury can interfere with development, fetuses and children are most at risk. The Centers for Disease Control and Prevention estimate that 8% of women of childbearing age in the United States have mercury levels in their blood above what the Environmental Protection Agency (EPA) considers safe. In other words, millions of American women who could be pregnant are exposed to dangerous levels of mercury each year, putting more than 300,000 newborns at risk of brain damage and learning disabilities.

Mercury is released into the air from power plant smokestacks and other sources. It can fall to the ground with rain (or without) and enter water bodies in a process known as deposition. People are most often exposed to mercury by eating contaminated fish. The problem of mercury-contaminated fish is widespread, with 43 states issuing advisories to limit consumption of mercury-laden fish. Coal-fired power plants account for about 40% of the mercury emissions in the United States—by far the largest single source. Despite this, no limits exist on mercury pollution from power plants.

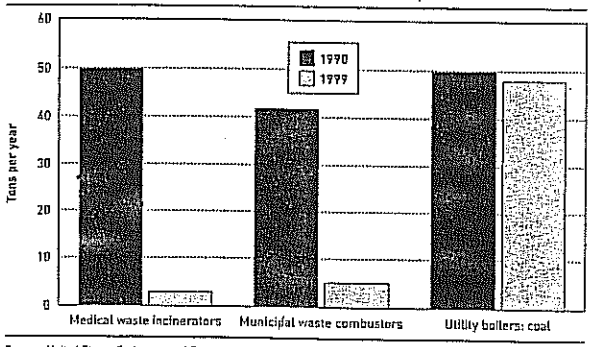
Findings

Analysis of emission trends and recent modeling of how mercury is transported and deposited into soil and water leads to three important findings that should influence how policy makers address mercury pollution:

FIGURE A

Mercury releases from major sectors in the United States

Emissions of mercury from electric utilities have remained static while other major sources of mercury have declined. Since 1990, national regulations have compelled municipal and medical waste incinerators to reduce emissions by over 90%.



Source: United States Environmental Protection Agency, Technology Transfer Network (TTN), Clearinghouse for Inventories and Emissions Factors, www.epa.gov/ttn/chief/.

OUT OF CONTROL

1. Mercury pollution from electric utilities remains completely unregulated. While other industries have achieved considerable reductions in mercury emissions, mercury pollution from electric utilities is predicted to increase with increased electrical demand. National policies have been successful at reducing mercury emissions from medical waste incinerators and municipal waste incinerators by over 90% since 1990 (See Figure A). These sectors provide a model for reductions that could be made in the power plant sector.

CLOSE TO HOME

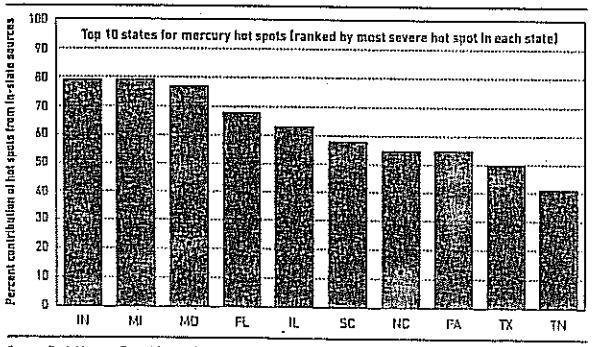
2. Mercury pollution within the United States puts fetuses and children at risk. Since mercury does not break down, it can travel a long way before it is deposited in the environment. However, modeling shows that significant amounts of mercury in waters across the nation come from pollution sources within the United States. Sources in the United States contribute to local mercury "hot spots" and add to global mercury pollution levels, leading to contaminated water, fish that is not healthy for consumption, and brain damage in infants.

3. Local sources can lead to local mercury "hot spots." Local emissions of mercury are largely responsible for mercury deposition hot spots (locations where mercury deposition is high), providing an excellent opportunity for effective reductions. Recent modeling suggests that at mercury hot spots pollution sources within the state can account for large portions of the deposition (Figure B). At hot spots across the United States, local sources often account for 50% to 80% of the mercury deposition. As shown in Figure B, for example, local pollution sources account for over 70% of the deposition in hot spots in Indiana, Michigan, and

FIGURE B

Local pollution sources predominate at mercury hot spots

EPA modeling shows that at mercury hot spots (locations where mercury deposition is highest), local emission sources within a state can be the dominant source of deposition. In-state sources contribute more than 50% of the pollution to sites in 9 of the 10 worst hot spot states.



Source: Draft Mercury Deposition Modeling Results, EPA Office of Water, 2003.

Maryland. In another recent analysis in south Florida, dramatic reductions in mercury pollution from local incinerators was accompanied by a lowering of mercury concentrations in large mouth bass by 60–75%, indicating the importance of controlling local sources to reduce local contamination.

Recommendations

Reducing power plant pollution is critical to lowering local mercury deposition and avoiding the dangerous contamination of fish, wildlife and people. EPA is required by the federal Clean Air Act to lower mercury air pollution from power plants. To protect public health and the environment from harmful mercury emissions, state and federal policy-makers should take the following steps:

- EPA should issue strong mercury standards for power plants to reduce mercury pollution from 48 tons today to about 5 tons, or a 90% reduction. These reductions are consistent with national standards for other source sectors and achievable through available pollution-control technology.

- States with mercury deposition hot spots should pursue their own mercury pollution standards to protect local water bodies and public health, and all states should press for rigorous national standards.

(Attachment #8)

Out of control and close to home

Introduction

Mercury is a highly toxic heavy metal that poses a major public health threat. It is released into the air from power plant smokestacks and other sources. It can fall to the ground with rain and enter water bodies in a process known as deposition. Mercury makes more surface waters in the United States unsafe for fishing than any other toxic contaminant, and people are most often exposed to mercury by eating contaminated fish (see Figure 1).

The form of mercury found in fish, methylmercury, is a neurotoxin that causes brain and nervous system damage. Even with fish-consumption advisories, exposure to mercury-contaminated fish is high.

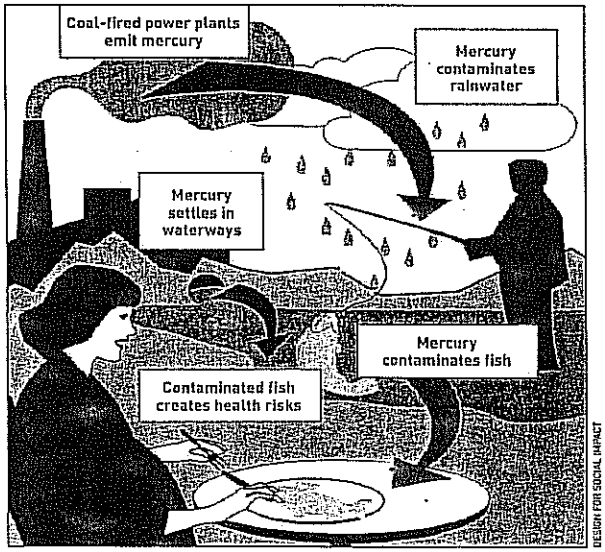
Although coal-fired power plants account for about 40% of mercury emissions in the United States—by far the largest source—mercury pollution from this sector remains completely uncontrolled.

The EPA is obligated to propose rules in December 2003, to be finalized one year later, to reduce mercury and other air toxics from power plants. Although

FIGURE 1

The toxic mercury cycle

Those most at risk from methylmercury are pregnant woman, their fetuses and young children. Even with fish-consumption advisories, exposure to mercury-contaminated fish is high.



other sectors, such as waste incinerators, have already reduced mercury pollution by 90%, power companies have called for much weaker standards. Some power companies argue that mercury pollution is a global problem and national standards would not significantly reduce deposition within the United States. Such an argument is based on averaging deposition across the entire nation, which can be misleading.

Along with reviewing health issues and emission trends, this report examines the available scientific evidence on the local deposition of mercury pollution. Cutting-edge scientific research shows that a significant portion of mercury pollution is deposited locally and regionally, which underscores the importance of strong national mercury standards for power plants.

Public health threats of mercury

Mercury is one of the most poisonous forms of air pollution. First emitted into the air as a metal, mercury settles in the beds of rivers, lakes and streams, where bacteria convert it to methylmercury, a highly toxic compound. Methylmercury builds up or bioaccumulates in the bodies of animals, so fish at the top of the aquatic food chain, such as pike, bass, shark and swordfish, may contain mercury concentrations 1 to 10 million times greater than the surrounding water.[1] People are exposed to unsafe levels of methylmercury by eating contaminated fish.

FIGURE 2

Fish consumption advisories for mercury

Currently, 43 states (those shaded on the map) warn against consuming several species of fish, such as pike, bass, shark, swordfish and mackerel. Source: U.S. EPA, State Fish Advisories web site: www.epa.gov/ost/fish.

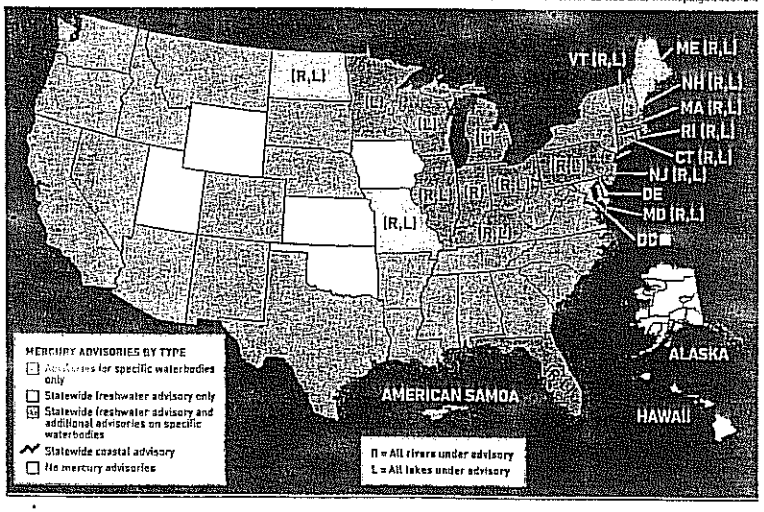
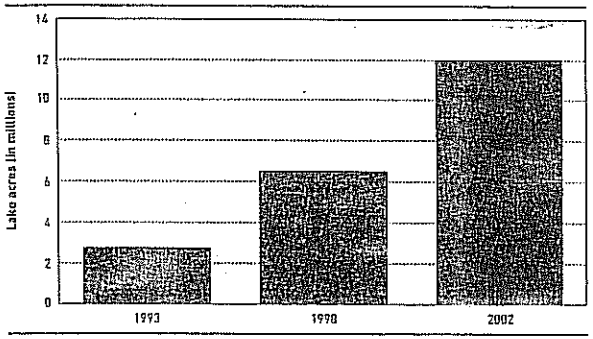


FIGURE 3

Trends in numbers of lakes under advisory for mercury

The increase in fish advisories is not necessarily an indication that the problem of mercury-contaminated fish is worsening, but the increase does reflect that scientists and public health officials have gained an increased understanding of the severity of the mercury-deposition problem.



Source: U.S. EPA, State Fish Advisories web site: www.epa.gov/ost/fish.

Pregnant women, women of childbearing age, children, subsistence fishers, recreational anglers and Native Americans who consume large amounts of fish are most at risk for health problems caused by mercury exposure. Pregnant and nursing women who eat mercury-contaminated fish place their fetuses at risk for brain damage or other birth defects. The Centers for Disease Control estimate that 8% of women of childbearing age nationally have mercury in their blood streams beyond the levels that the EPA considers safe.[2] Thus, millions of American women of childbearing age are overexposed to mercury through consumption of contaminated fish, putting over 300,000 newborns at risk of brain damage and learning disabilities each year.[3]

Recognizing the increasing health threats from mercury pollution, the United States Food and Drug Administration and 43 states warn against eating several species of fish such as pike, bass, shark, swordfish and mackerel. Figure 2 maps the locations of current fish-consumption advisories.[4] The geographic extent of areas under mercury advisories increased by almost 1300% from 1993 to 2002, with the most dramatic increases having occurred in the last several years (see Figure 3).

The increase in fish advisories is not necessarily an indication that the problem of mercury-contaminated fish is worsening, but the increase does reflect that scientists and public health officials have gained an increased understanding of the severity of the mercury-deposition problem. Increased testing of fish for mercury contamination has revealed more species and more water bodies with high mercury concentrations.

OUT OF CONTROL

Coal-fired power plants remain unregulated for mercury

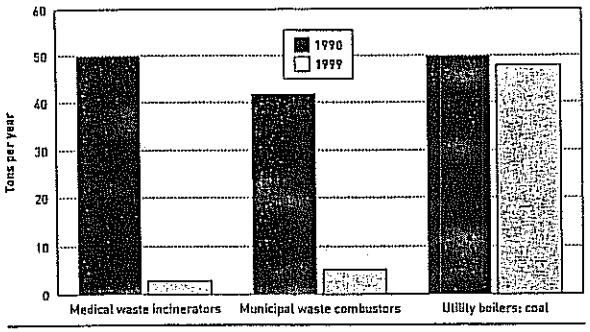
In 1999, mercury emissions from coal-fired power plants accounted for about 48 tons, or 41%, of new mercury emissions to the atmosphere from the major sources. While

(Attachment #8)

FIGURE 4

Mercury released from major sectors

Electric utility emissions have remained static while the other two largest sources of mercury have declined. Since 1990, national regulations have compelled municipal and medical waste incinerators to reduce emissions by 90%.



Source: United States Environmental Protection Agency, Technology Transfer Network (TTN), Clearinghouse for Inventories and Emissions Factors. 1999 data: National Emissions Inventories for Hazardous Air Pollutants, Version 3, July 2003. 1990 data: National Toxics Inventory, Version 0302, October, 2003. www.epa.gov/ttn/chief/.

the other two largest sources of mercury pollution have declined, mercury pollution from power plants has remained static. In 1990, municipal waste incinerators, medical waste incinerators and power plants were the three largest sources of mercury pollution. Since then, federal regulations have required the clean-up of both medical and municipal waste incinerators, resulting in a 90% reduction in pollution levels. This leaves power plants as the predominant source of mercury pollution and, of the three largest sources, the only one that is not regulated (Figure 4). The more than 90% reduction from medical and municipal waste incinerators provides a benchmark for policies to reduce pollution from power plants. Without strong standards, mercury pollution from power plants will increase as demand for electricity rises.

States are taking the lead in controlling mercury pollution

In 2003, Connecticut became the first state in the country to regulate mercury emissions from coal-burning power plants.[4] The Connecticut law requires coal-fired power plants to achieve either an emissions standard of 0.6 pounds of mercury per trillion Btu, or a 90% efficiency in technology installed to control mercury emissions. According to the company affected by the legislation, PSEG Power, applying the Connecticut standard nationally could cut mercury emissions from power plants up to 86%.[5]

Other states are also considering mercury standards. Massachusetts has proposed a standard to capture 95% of mercury contained in the combusted coal, while Wisconsin's final proposed rule would require an 80% capture efficiency, based on the mercury content of the coal.[16] New Hampshire intends to propose mercury emissions caps on the power sector in 2004. Illinois is evaluating the need for state standards, and North Carolina is reviewing options for reducing mercury pollution.

TIGHT CONTROLS ON POWER PLANT MERCURY POLLUTION ARE NECESSARY AND FEASIBLE

EPA is well aware of the public health threats of mercury pollution. In 1997, the agency presented a comprehensive report to Congress on mercury pollution.[5] In December of 2000, EPA made the determination that it would develop mercury standards for power plants, identifying mercury "as the hazardous air pollutant of greatest concern to public health from the [electric utility] industry."[6] Proposed standards are due December 2003 with final standards required one year later. Cost-effective technologies exist to reduce mercury emissions by more than 90%,[7] providing EPA the opportunity to develop strong standards.

CLOSE TO HOME

The significance of local mercury deposition

Mercury does not break down, and it can travel long distances before it is deposited. Some power companies use this as an excuse to oppose strong national mercury limits, claiming most mercury pollution comes from outside U.S. borders. However, modeling data show that significant portions of mercury deposited in waters across the nation come from within North America, and often deposition is local.

Atmospheric mercury pollution that has reacted and combined with other pollutants tends to deposit locally or regionally, while unreacted mercury (elemental) tends to enter the global atmospheric pool, enabling it to be deposited virtually anywhere in the world. Even where the global sources are major contributors, it is important to recognize that the large global pool of mercury is not naturally occurring. The global pool is fed by the emissions that result from the combustion of coal in the United States and around the world.

The EPA Mercury Study Report to Congress in 1997 estimates that 66% of all of the mercury deposited in the U.S. comes from national sources, and that 34% comes from sources outside of the U.S.[11] On the other hand, recent modeling supported by the Electric Power Resource Institute (EPRI), the research arm of some of the nation's largest power companies, estimates that on average 70% of mercury deposition comes from global sources.[12] However, the average deposition figure is highly misleading. Averaging modeling results drowns out the high local deposition rates in specific locations across the country. For example, a family eating fish from a water body that is downwind from a nearby power plant might not take any comfort in the fact that average deposition from North American sources may only be 30%. For the family, the local power plant may account for the vast majority of the deposition.

This same EPRI analysis also shows that U.S. sources are responsible for more than 60% of the mercury deposition in the Boston–Washington, DC, corridor, an indication of the importance of local and regional sources. At one of the models' selected receptor areas, Pines Lake, New Jersey, 80% of the deposition comes from sources within the United States, showing that regional deposition can be quite high.

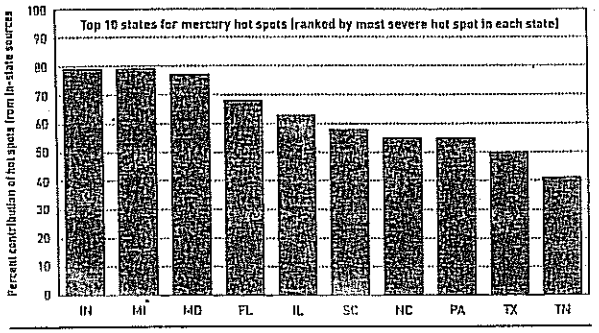
The influence of local emission sources is reinforced by state-of-the-art mercury deposition modeling assessments conducted by EPA.[13] This EPA modeling

(Attachment #8)

FIGURE 5

Local pollution sources predominate at mercury hot spots

EPA modeling shows that at mercury hot spots (locations where mercury deposition is highest), local emission sources within a state can be the dominant source of deposition. In-state sources contribute more than 50% of the pollution to sites in 9 of the 10 worst hot spot states.



Source: Draft Mercury Deposition Modeling Results, EPA Office of Water, 2000.

shows that at mercury hot spots (locations where mercury deposition is highest within a state), local emission sources within a state can be the dominant source of deposition. At hot spots, local sources within a state commonly account for 50% to 80% of the mercury deposition (Figure 5). In-state sources contribute more than 50% of the pollution to sites in 9 of the 10 worst hot spot states. Local deposition hot spots are located across the country, and local deposition estimates would likely be even higher if they accounted for pollution sources in nearby states, not just those in-state.

An ambitious analysis of mercury pollution, deposition and fish contamination in Florida provides on-the-ground evidence that corroborates the importance of local sources.[14] Because of tighter standards on medical and municipal waste incinerators that took effect in mid-1992, South Florida's[15] total estimated local emissions of mercury declined by about 93% between 1991 and 2000. During this same period, mercury deposited via rain and other precipitation declined in South Florida by about 25%. Concentrations of mercury in large mouth bass have also decreased significantly, 60–75% since the early 1990s. These data strongly suggest that reducing local mercury pollution will lower concentrations in local water bodies, and in turn reduce contamination in fish and the risk of human exposure.

Recommendations

Reducing power plant pollution is critical to reducing local mercury deposition and avoiding the dangerous contamination of fish, wildlife and people. EPA is required by the federal Clean Air Act to lower mercury pollution from power plants. To protect public health and the environment from harmful mercury emissions, federal and state policy-makers should take the following steps:

International action

The nations of the world recognize the public health threat posed by mercury pollution. The United Nations Environment Program (UNEP) Governing Council urges all countries to identify populations at risk and reduce human-generated mercury releases, and many nations have initiated measures to reduce mercury pollution.[16]

In North America, the U.S. and Canada Great Lakes Water Quality Agreement calls for the elimination of mercury from the Great Lakes.[17] The New England governors and Eastern Canadian premiers adopted a Mercury Action Plan to reduce mercury pollution in that region.[18] The United States and Canada also joined Europe in signing a 1998 Protocol to the Convention on Long-Range Transboundary Air Pollution to reduce mercury emissions below 1990 levels.[19]

- EPA should issue strong mercury standards for power plants that reduce mercury pollution from 48 tons today to about 5 tons, or a 90% reduction. These pollution reductions are consistent with national standards for other source sectors and achievable through available pollution-control technology.

- States with mercury deposition hot spots should pursue their own mercury pollution standards to protect local water bodies and public health, and all states should press for rigorous national standards.

Conclusion

Sources in the United States contribute to local mercury "hot spots" and add to global mercury pollution levels, leading to contaminated water bodies, fish that is not healthy for consumption and brain damage and learning disabilities in infants. The experience of Florida shows that substantially reducing mercury emissions can dramatically lower mercury contamination in fish and reduce human exposure. To reduce deposition and environmental contamination, the United States needs to clean up its own sources of mercury pollution.

National policies have successfully reduced mercury emissions by 90% in both medical and municipal waste incinerators, and the technology exists for power companies to make similar reductions. Despite being the largest single source, mercury pollution from power plants has never been regulated. It is past time for government to set protective but predictable standards for power plant mercury pollution to protect the nation's children from its damaging effects. Leadership by the United States will not only lower mercury deposition and improve public health within the nation's borders, it will also provide a model to other nations for reducing mercury emissions globally.

(Attachment #8)

Notes

[1] United States Environmental Protection Agency, Office of Water. Mercury Update Impact on Fish Advisories (Factsheet), June 2001. www.epa.gov/waterscience/fishadvice/mercupd.pdf.

[2] U.S. Centers for Disease Control and Prevention, "Blood and hair mercury level in young children and women of childbearing age—United States, 1999." Morbidity and Mortality Weekly, March 2, 2001.

[3] Hshaffey, Kathryn R., Robert Clickner, and Catherine B. Joseph, Blood Organic Mercury and Dietary Mercury Intake: National Health and Nutrition Examination Survey, 1999 and 2000, doi:10.1289/ehp.6587 (available at http://dx.doi.org/), Online 19 November 2003.

[4] State Mercury Advisories can be found on the Internet under "National Listing of Advisories" at http://map1.epa.gov/.

[5] Environmental Protection Agency, "Mercury Study Report to Congress", 1997, www.epa.gov/oar/mercury.html.

[6] Environmental Protection Agency mercury regulatory finding announcement, Federal Register Notice, 2000 at www.epa.gov/ttn/atw/combust/utitox/utoxpg.html#REG.

[7] For a summary of mercury-capture technologies, see Northeast States for Coordinated Air Use Management (NESCAUM), "Mercury Emissions From Coal-Fired Power Plants, The Case for Regulatory Action," October 2003. This report states "The evidence suggests with respect to all coal types that existing control devices designed to control pollutants other than mercury can deliver substantial mercury reductions, and that mercury-specific control technologies (e.g. carbon injection) are well on their way to commercial availability. Further, extremely successful field experience with the control of mercury emissions from municipal waste combustors gives additional reason for confidence as to the potential for controlling mercury emissions from the electric sector to stringent levels."

[8] State of Connecticut, House bill 6048 can be viewed at www.cga.state.ct.us/2003/act/Pa/2003PA-00072-R00HB-06048-PA.htm with supplementary information about the bill at www.cga.state.ct.us/asp/CGABillStatus/CGABillStatus.asp?selBillType=Bill&bill_num=HB6048.

[9] Public Service Enterprise Group. "Leading by Example." www.pseg.com/environment/clean/leading_by_example.html. Last visited 11-10-03.

[10] Northeast States for Coordinated Air Use Management (NESCAUM)," Mercury Emissions From Coal-Fired Power Plants, The Case for Regulatory Action," October 2003.

[11] U.S. Environmental Protection Agency. Mercury Study Report to Congress, 1997, Volume III. www.epa.gov/oar/mercury.html

[12] Seigneur, Christian, Krish Vijayaraghavan, Kristen Lohman, Prakash Karamchandani and Courtney Scott , "Global Source Attributions for Mercury Deposition in the United States" In press Environmental Science& Technology, 2003.

[13] EPA Office of Water, Draft Mercury REMSAD Deposition Modeling Results, 2003. This analysis was performed as part of the Devil's Lake, Wisconsin mercury study. The emissions inventory for this model was the same as used for the Bush administration's Clear Skies modeling analysis. Results were presented outside EPA to the Maryland Department of Natural Resources, Annapolis, MD (4/17/03), Region 5 states, Madison, WI (8/6/03), and Region 6 states, Dallas, TX (10/9/03). A Powerpoint presentation of data can be requested from Dwight Atkinson at the following email address Atkinson.Dwight@epa.gov

[14] Florida Department of Environmental Protection, "Integrating Atmospheric Mercury Deposition with Aquatic Cycling in South Florida: An approach for conducting a Total Maximum Daily Load analysis for an atmospherically derived pollutant," November 2003, pp. 56, 66. www.floridadep.org/labs/mercury/index.htm. Last updated November 2003.

[15] Broward, Dade and Palm Beach Counties.

[16] UNEP Mercury Program Mercury Assessment: www.chem.unep.ch/mercury/.

[17] United States Environmental Protection Agency, "U.S., Canada Move to Eliminate Toxics in Great Lakes," EPA Press Release. April 7, 1997. www.epa.gov/history/topics/canada/04.htm.

[18] New England Governors and Eastern Canadian Premiers Committee on the Environment, "Mercury Action Plan" August 27, 2001, Westbrook Connecticut. www.sdes.gc.ca/pdf/850084012_e.pdf.

[19] United Nations Economic Commission for Europe, "Convention on Long-Range Transboundary Air Pollution: the 1998 Aarhus protocol on heavy metals." Last updated November 20, 2003. www.unece.org/env/lrtap/hm_h1.htm.

(Attachment #8)

JEFF WRISLEY
DEMOCRAT FOR CONGRESS
WORKING TOWARDS COMMON SENSE AND JUSTICE

JEFF WRISLEY REPORT ON "ADVERSE EFFECTS OF COAL BURNING POWER PLANTS IN MICHIGAN"

ADVERSE EFFECTS OF COAL BURNING POWER PLANTS IN MICHIGAN:

Coal is used to generate the majority of the electricity in Michigan. Power plant pollution affects both health and the environment. These pollutants aggravate asthma, contaminate Michigan's 11,000 inland lakes, and contribute to unhealthy ozone smog, acid rain, premature death and global climate change.[1] For instance, asthma is made substantially worse by concentrations of ground level ozone and particulate matter from power plant emissions. Children, senior citizens, outdoor workers and persons with existing asthma, emphysema, heart disease and chronic bronchitis are at an increased risk of experiencing detrimental health effects from poor air quality.[2]

Exposure to air pollutants from power plants may occur from direct inhalation or indirect exposure. Indirect exposures can happen by ingestion of water, soil, vegetation, or meat, eggs, dairy products, and fish that become contaminated through accumulation in the food chain.[3] People near a coal-burning power plant can be exposed to pollutants by drinking groundwater into which the contaminants have leached, eating the exposed livestock or crops, inhaling contaminants contained in windblown dust or from coming into contact with, or ingesting soils onto which these wastes have been applied.[4] Children who come into contact with dirt during play are especially susceptible because they can ingest soil contaminated by C.C.W. (coal contamination wastes) and air emissions from power plants.[5]

ADDITIONAL ENVIRONMENTAL IMPACTS FROM COAL-BURNING POWER PLANTS:

Nearly 900 million tons of coal is burned in the United States each year.[6] It is used to generate over half the electricity produced in the US and is the dirtiest of all fuels used in the electric power industry.[7] Coal-burning power plants emit large quantities of carbon dioxide (CO2), the "greenhouse gas" largely responsible for climate change. Some of the trace elements in coal include metals like nickel, mercury, arsenic, chromium and cadmium. Other contaminants are sulfur, nitrogen, chlorine and fluorine. Because of the enormous amounts of coal burned each year, these pollutants are released into the atmosphere in significant quantities. Under the Clean Air Act (C.A.A.), National Ambient Air Quality Standards (NAAQS) have been set for six "criteria" pollutants: nitrogen dioxide (NO2), sulfur dioxide (SO2), particulate matter (PM), lead, carbon monoxide and ozone. In 1990, the C.A.A. was amended to require additional cuts in SO2 emissions. However, despite steps to reduce emissions, a loophole in the C.A.A. exempts many of the nation's old coal-fired power plants from implementing more modern technologies that reduce pollutants from coal.

Until recently, a provision in the C.A.A. exempted all power plants from any emission limits for hazardous air pollutants. Emissions from coal-fired power plants account for 2/3 of the nation's SO2

http://web.ask.com/link?q=Health+Risks+of+burning+coal&u=http%3a%2f%2flm.wc.ask.... 1/8/2004

(sulfur dioxide), 1/3 the national NOx (nitrogen oxide) emissions and 1/3 the national mercury emissions. This is 67 percent of the sulfur dioxide, 23 percent of the nitrogen oxides, 33 percent of the mercury, and 38 percent of the carbon dioxide. Power plants are responsible for about half of the fine particulate matter in many parts of the US. Based on an analysis of 1998 Toxics Release Inventory data, power plants ranked 5th in releases of developmental and neurological toxins with a total of 78 million pounds released to the air and surface waters.[8]

The E.P.A. decided in 2000 to develop standards for hazardous air pollutants. However, after being collected by pollution control devices to prevent emissions to the air, these pollutants are shifted to another waste stream as either liquid or solid wastes. Most coal combustion waste (CCW) landfills and impoundments are unlined and are located at the same site as the power plant. Most wastes are disposed of in older surface impoundments that almost never have liners to prevent liquids from leaching, underground leachate collection systems, or groundwater monitors. In some states, liquids from impoundments are not only allowed to percolate to the groundwater, the disposal units are actually designed to allow this. An industry survey of disposal units showed that about 40 percent of the coal waste landfills and 80 percent of the coal waste surface impoundments do not have liners. The survey also showed that less than half the landfills and only 1 percent of impoundments have leachate collection systems.[9]

Sub-populations that may be more sensitive to air pollution include infants and children, elderly people, pregnant women and nursing mothers, and people with chronic diseases, such as asthma. Children are not only more sensitive because they are at critical stages of physical and mental development, but also receive a relatively higher pollutant dose because they consume more food per body weight and breathe more air per body weight than do adults. People who tend to eat locally grown produce and locally caught fish may also receive higher than average exposure to deposited pollutants if they live close to a facility. In addition, some pollutants like sulfur dioxide and mercury are transported in the atmosphere and deposited far from the source.

COST EFFECTIVENESS OF COAL WASTE REGULATIONS:

Older coal burning plants are up to four times dirtier than new coal plants built today.[10] Pollution from electricity generation adds to the cost of living and doing business in Michigan through increased health care costs and loss of worker productivity. Air pollution is a considerable threat to Michigan's $9 billion tourism industry that is dependent upon clean water and a healthy fishery. In 1996, expenditures on fishing brought $1.5 billion into the economy of Michigan.[11] Coal-burning power plants are a significant uncontrolled source of mercury which pollutes nearly all of Michigan's 11,000 inland lakes. Therefore, the coal-burning industry is a considerable threat to Michigan's tourist industry. It is also a threat to the lake system that we share with neighboring states and Canada. Even at levels below the current health standard, studies have shown large increases in respiratory-related hospital admissions and emergency room visits due to ozone and acidic air pollution.[12] This not only increases patient and family expenses, which include lost work days and school absences, but also increases the burden of cost to Michigan's health care system. According to the American Lung Association, "The health costs of air pollution are estimated to be $50 billion per year." Michigan's "Environment and Relative Risk", a 1992 report endorsed by Governor John Engler, found that "the inefficient use of energy and the deleterious by-products of production and consumption threaten Michigan's economic security and environmental quality."

Initially consumers may pay more for electricity but they will pay less in health care costs due to poor air quality and less for insurance costs due to losses from extreme weather patterns caused by global warming. In addition, trends toward higher CO2 emissions can be reversed while eventually lowering energy costs for consumers. The Department of Energy's Inter-laboratory Working Group on Energy-

Back to Your Results www.jeffwrisleyforcongress.org... Remove Frame

Page 1 of 1 Ask Jeeves Answer Options

(Attachment #8)

Efficient and Clean Energy Technologies released a report (the "5-Lab Study") that concludes that we can achieve a 47 percent reduction in CO2 emissions from power plants by the year 2020. This can be achieved while lowering the nation's energy bill by 124 billion per year. This is compared to the costs of energy in 2020 if we do nothing. The Energy Information Administration's "Analysis of Strategies for Reducing Multiple Emissions from Electric Power Plants with Advanced Technology Scenarios," was released in Oct. 2001. The analysis found that a mandatory CO2 emission cap on electric power plants that would require a return to 1990 emission levels by 2007, matched with policies analyzed in the 5-Lab Study, would cut electricity bills in the U.S. by 36 billion annually starting in 2020.[13]

A presumed electricity shortage is the underlying premise of the Bush administration's push to relax regulations on emissions from power plants. There is no nationwide electricity reliablity crisis that justifies relaxation of current and proposed clean air safeguards in order to greater utilize old, coal-fired plants. In addition work done by a major northeast utility in the 1990's found that heat rate improvements at their plants had been mostly tapped and further improvements would not be cost-effective. In fact, the U.S is in the midst of a power plant building boom. Developers have announced an intention to build over 400,000 megawatts of new capacity between 2000 and 2005. This is ten times the generating capacity that could be recovered from old coal-fired plants. The Northbridge Group estimated that a more realistic expectation of increased capacity would be 250,000 megawatts. This amount of capacity would restore the national reserve margin. This is the margin between installed capacity and projected peak demand. This capacity would be above the 1990 level of 25 percent from the low in 1999 of 8 percent. Every region of the country should expect to see an increase in reserve margin by 2005. Nearly all this new capacity will be fueled by cleaner-burning natural gas that will be required to meet current air emission standards and will have 0 tons of emissions for sulfur dioxide. Furthermore, natural gas prices continue to fall. Despite the documented building boom of new gas plants, price quotes for natural gas through 2003 are projected to stay the same or become lower.[14]

HEALTH EFFECTS OF AIR POLLUTION ON CHILDREN:

The primary beneficiaries of switching from carbon intensive energy sources to cleaner technologies will be children. Cleaner energy technologies reduce particulate matter and ozone smog thereby improving the quality of ambient air. Although research specific to children is limited, all children, even healthy children, may be at an increased risk to the effects of air pollution.[15]

Several factors may increase the risk of children to air pollution relative to adults. One of the greatest causes is the higher activity level of children. Children's exposure to outdoor air pollution is increased because they spend more time playing outdoors. Children are particularly susceptible to pollution because their defense mechanisms have not yet fully developed which increases their susceptibility to the harmful effects of pollution. Children also breathe more rapidly and have more lung surface area for their body size compared to adults. This means that they take in more air per minute and inhale more air for their size. Pound-for-pound, children breathe 50 percent more air than do adults. As a result, children inhale a greater percentage of pollution. Children also suffer a higher prevalence of asthma compared to adults. Asthma makes children more susceptible to the impacts of air pollution.[16]

Recent studies indicate that air pollution affects those living in poverty more than those with means. A higher percentage of children than adults live in poverty which means that their access to health care is more limited. Power plant emissions and their by-products form particulate matter, ozone smog and air toxins. These pollutants are associated with respiratory hospitalizations, lost school days due to asthma attacks, low birth weight, stunted lung growth and infant death. Cases of asthma have rapidly increased, more than doubling in the past two decades. Six percent of US children have asthma and 72,000 of the nation's schools are within 30 miles of a power plant putting them at a higher risk to the effects of poor air quality. Average health risks to children due to exposure to power plant combustion wastes could be

up to 10,000 times higher than EPA's allowable risk levels for cancer and other illnesses.[17]

As fine particulate levels rise, emergency room visits by asthmatic children also increase, even when fine particulate levels are below EPA's air quality standard. Children living in high ozone communities and who played sports year-round were three times more likely to develop asthma compared to children who did not play sports.[18] This is some of the first evidence suggesting smog can cause asthma. Methyl mercury can have adverse effects on the developing and adult cardiovascular systems, blood pressure regulation and heart-rate variability. Global warming could lead to more frequent and severe air pollution problems as well as the spread of infectious and communicable diseases, and increasingly extreme weather events such as heat waves that could disproportionately affect children for the reasons mentioned above.

The research that shows the increased adverse affect of children relative to adults due to poor air quality is growing. A new CA study suggests prenatal ozone exposures may cause heart defects. Research in a coal-dominated region of the Czech Republic indicates that stunted development in unborn children may be a result of exposure to very high levels of particulate matter. Researchers in China have found that high concentrations of particulate matter may affect developing babies. It is well established that methyl mercury interferes with the development and function of the central nervous system. Studies are beginning to show that prenatal exposure from maternal consumption of mercury via contaminated fish can result in problems later in childhood such as learning disabilities, attention deficits, loss of I.Q. points or other disorders depending on the severity of exposure. In the United States, ten percent of women of childbearing age are estimated to carry a body burden of mercury contamination above E.P.A.'s safe level. This translates nationally to 6 million women of childbearing age with elevated levels of mercury from eating contaminated fish, and approximately 390,000 newborns at risk of neurological effects from being exposed in utero to elevated levels of mercury.[19]

In a study of 86 cities, U.S. researchers found that infants living in a highly polluted city during their first two months of life had a mortality rate ten percent higher than did infants living in the city with the cleanest air. A preliminary study projects that eleven percent of the infant mortality in the US is attributable to particulate matter at low to moderate levels. Studies have also found that exposure to ozone may permanently affect the lung structure of children. Monkeys exposed to ozone developed little more than half of the normal number of branches of their lungs than monkeys that were only exposed to clean air. Another recent study suggests that asthmatic children that were born pre-term and/or with low birth weights, are at an even greater risk from ozone exposures.[20]

AIR POLLUTANTS EMITTED FROM COAL-BURNING POWER PLANTS OF PRIMARY CONCERN:

CARBON DIOXIDE (CO2):

Coal-fired power plants are among our largest sources of CO2 emissions. Power plants in the US are responsible for 40 percent of all emissions of carbon dioxide and burning coal results in more CO2 emissions than any other method of generating electricity. The U.S. relies on coal for more than half of its generation of electricity.[21] [22]

Carbon dioxide is a greenhouse gas that presents a serious threat to the Earth's climate.[23] Atmospheric CO2 allows incoming sunlight to pass through but traps heat that radiates from the Earth's surface. The heat is trapped in the same way that heat is trapped in a greenhouse, hence the term "greenhouse effect". Presently there are no mandatory limits on carbon dioxide emitted by coal burning power plants and the Bush administration's Clear Air Initiative contains no mandate to reduce emissions of CO2. Power plants that have to report emissions to the national acid rain database report their CO2 emissions to the

(Attachment #8)

EPA. Based on information from the EPA's Acid Rain database, "The 500 Most Polluting Power Plants in the US," between 1995 and 2000 CO2 emissions have risen by 13.5%.[24] The Energy Information Administration reported in November 2001 that overall US CO2 emissions in 2000 were 17 percent higher in 2000 than in 1990. From 1990 to 2000, electric utility emissions alone grew 26.5 percent.[25]

MERCURY:

Mercury is a highly toxic persistent heavy metal and potent neurotoxin. Neurotoxins affect the human brain and nervous system. In addition to affecting the brain and nervous system, exposure to inorganic mercury can impair human kidney function. Mercury and other toxic emissions from electric utilities are not currently regulated. Recent estimates on mercury emissions from power plants are the only data available for mercury.

Coal-burning power plants emit mercury in CCW (coal combustion wastes) and air emissions. National estimates for 1994-1995 found that coal and oil burning power plants were the largest stationary source of human caused mercury releases. Power plants are responsible for approximately 40 percent of emissions in Michigan and 33 percent nationwide. [26]

Mercury mixes with rain and snow in the atmosphere and falls into lakes and waterways. Once in the water, it reacts with bacteria to form an organic form of mercury Ò methyl mercury. This is one of the most toxic forms of mercury. Methyl mercury accumulates and concentrates in fish and fish-eating wildlife. For instance, adult walleye have been found to have a mercury concentration 150,000 times as high as the surrounding water.[27] It also finds its way into surface and groundwater by leaching from CCWs and CCW can sometimes be recycled into fertilizer.[28] Furthermore, mercury emitted from smokestacks can be deposited over 1000 miles from its source.[29]

Mercury is of particular concern in Michigan. It takes 1/70th of a teaspoon of mercury to contaminate a 25-acre lake to the point where fish may be unsafe to eat.[30] Since 1988, mercury contaminated fish have been found in many of the lakes in Michigan sampled. This has prompted the State Department of Public Health to issue fish consumption advisories for all of Michigan's 11,000 inland lakes.[31]

HEALTH AFFECTS OF MERCURY:

Mercury is toxic to the central nervous system.[32] Known or suspected neurotoxicants are 81 percent of the total top 20 chemicals released to air and surface water. They make up 71 percent of total on-site releases to air, water and land of the top 20 chemicals. The major sources of mercury, which included coal-fired power plants, were not required to report to TRI (Toxic Release Inventory) in 1997. Based on comparisons studies of animal and human data, "safe" exposure levels in humans is far less than that which caused adverse effects for the animals tested.[33]

Mercury causes serious neurological damage when ingested. Inhalation exposure to elemental mercury results in central nervous system effects and effects on the human gastrointestinal tract and respiratory system. The major effect from chronic exposure to inorganic mercury is kidney damage. [34]

Fetuses, infants, and children are particularly susceptible to mercury poisoning. Exposure is primarily from fish contaminated by methyl mercury, the organic and most dangerous form of mercury. It's effects are similar to lead toxicity in children and include delayed development and cognitive deficits, language difficulties, and problems with motor function, attention and memory.[35] Mercury toxicity has also been found to cause, irritability, and lack of calmness. Memory loss and fatigue are often reported by those with toxic levels of mercury in their system. It is a relevant factor to ADD, ADHD, and the

general physical and mental health of children, as well as adults.[36]

Methyl mercury can cross the placenta of a pregnant woman. According to recent EPA estimates, about 1.16 million women in the US of childbearing age (about 10 percent) eat sufficient amounts of mercury contaminated fish to risk damaging brain development of their children. Infants born to women who ingested methylmercury may perform poorly on neurobehavorial tests. The National Academy of Sciences issued a report in July of 2000 that concluded that more than 60,000 US children are born each year with a risk of nervous system damage from Mercury exposure in the womb. [37]

Fetal mercury exposure may impair learning, memory, and attention in children as they grow older. Large fetal exposures to methyl mercury can cause mental retardation, gait and visual disturbances. Smaller fetal exposures, such as those resulting from regular maternal fish consumption, have been implicated in language, attention, and memory impairments that appear to be permanent. Studies suggest that environmental components, like mercury contamination, can also cause autism.[38]

ACID RAIN:

Sulfur dioxide and nitrogen oxides are the main components of sulfates and nitrates, which form acid rain. Acid rain hinders forest growth and creates conditions for excess algae blooms in water bodies, which in turn limits the amount of oxygen available to sustain fish and other aquatic life. Estuaries and other water bodies in the Great Lakes Region located downwind of areas with high nitrogen oxides emissions, like Midwest coal plants, are at risk from nitrogen overload.[39] In 1990 the Clean Air Act mandated utilities to reduce sulfur dioxide emissions but there is ample scientific research that suggests that existing reductions in acid-causing emissions have not alleviated ongoing health or environmental damage.[40] There have been overall reductions in sulfate deposition, but levels continue to be high in certain areas. Nitrate deposition has remained largely unchanged.

SULFUR DIOXIDE (SO2):

Sulfur Dioxide is a gas emitted from coal-burning power plants that converts in the atmosphere to fine particle aerosols which cause acid rain. Two thirds of the sulfur dioxide gas emitted in the US comes from power plants.[41] Air pollution control devices installed to reduce SO2 emissions create large volumes of solid waste. Sulfur dioxide, itself a potential health risk near smokestacks, converts into harmful sulfate particulate matter and sulfuric acid downwind of the plant. It is a pollution that forms "fine particle" (PM2.5 or PM10) soot and causes heart disease.

Sulfur dioxide is transformed in the atmosphere to sulfuric acid and sulfates, which can be deposited up to 1000 miles from the source.[42] Between 1995 and 2000, the Acid Rain Program has resulted in pollution cuts on a nationwide scale but individual plants can increase emissions buy buying "pollution credits" from plants that cut their emissions more than required.[43] Although the Clean Air Act was amended in 1990 to place a national cap on SO2 from power plants, 300 of the 500 dirtiest power plants increased their emissions of sulfur dioxide between 1995 and 2000. The J.H. Campbell coal-burning plant in West Olive and the B.C. Cobb coal-burning facility in Muskegon both increased SO2 emissions between 1995 and 1999. James De Young increased SO2 mass emissions from 1997 and 1998. [44]

ADVERSE HEALTH EFFECTS OF SO2:

SO2 can trigger asthma attacks, heart attacks in people with heart disease, hospitalization for respiratory and cardiovascular disease, chronic bronchitis, and premature mortality. A 2000 study by the Harvard School of Public Health, the Health Effects Institute et. al. estimated that 30,000 people in the US die prematurely each year due to particles from power plants. Of these deaths, an estimated 18,000 could be

(Attachment #8)

prevented if power companies were required to install modern pollution controls.[45]

When inhaled, SO2 irritates the lungs, triggering bronchial reactions and reducing lung function. The most measurable effects occur in children and in people with an already-compromised lung function.[46] Acute exposure to Sulfur dioxide causes lung irritation, can trigger asthma, and causes low birth weight in infants. Chronic exposure to sulfur dioxide reduces lung function and is associated with premature death.[47]

NITROGEN OXIDE (NOx):

Nitrogen oxides convert in the atmosphere to fine particle aerosols. NOx forms ozone smog and acid rain. Ozone is associated with asthma, reduced lung function, adverse birth outcomes and allergen sensitization. Between 1995 and 2000 (analyzing of EPA emissions data) 263 of the 500 dirtiest power plants increased their emissions of NOx. Between 1995 and 2000 there was an overall decrease in NOx emissions but 263 of the 500 dirtiest power plants increased their NOx emissions. Power Plants are the largest industrial source of NOx in the US Smog triggers an estimated 6 million asthma attacks per year.[48]

ADVERSE HEALTH EFFECTS OF NOx:

Nitrogen oxide can trigger asthma attacks, heart attacks in people with heart disease, hospitalization for respiratory and cardiovascular disease, chronic bronchitis, and premature mortality. A 2000 study by the Harvard School of Public Health, the Health Effects Institute and others have estimated that 30,000 people in the US die prematurely each year due to particles from power plants. Of these deaths, an estimated 18,000 could be prevented if power companies were required to install modern pollution controls.[49] Studies have shown NOx to cause asthma in athletic children.[50] Acute exposure to nitrogen oxide can change lung function and increases respiratory illness in children. Chronic exposure increases susceptibility to respiratory illnesses and causes permanent alteration of the lung.[51]

GROUND-LEVEL OZONE:

Ground-level ozone, the main component of smog, is formed when hydrocarbons and nitrogen oxides (NOx) react in the atmosphere in the presence of sunlight. Ozone is a powerful respiratory irritant at levels frequently found on hot summer days in the counties along Lake Michigan and in Kent, Ingham, Macomb, Oakland, Washtenaw and Wayne counties.[52]

ASTHMA AND OZONE:

Asthma is the most common chronic disease of childhood. In addition, asthma prevalence and incidence have been increasing in children in developed countries during the past few decades. Also, exposures to outdoor air pollutants have been linked with asthma. Acute exposure to ozone and other outdoor air pollutants exacerbates asthma. A study found that time spent outside was associated with a higher incidence of asthma in areas of high ozone but not in areas of low ozone. Therefore, incidences of new cases of asthma can be associated with heavy exercise in communities with high concentrations of ozone.[53]

The same study found that air pollution and outdoor exercise could contribute to the development of asthma in children. Cross-sectional studies have shown that competitive athletes have a high prevalence of asthma and exercise-induced bronchospasm or bronchial hyper-reactivity. People exercising outside

receive greater doses of outdoor pollutants to the lung than those who do not and are therefore more susceptible to any chronic effects of air pollution. Ozone also increases responses to other allergens present in ambient air. Exposure to small amounts of ozone during light exercise increased the bronchial hyper-reactivity of children with mild asthma to house dust mite allergen. It is possible that the increased pulmonary dose of ambient ozone resulting from heavy exercise, combined with exposure to outdoor and indoor allergens, may induce new onset asthma or exacerbate existing asthma.

ADVERSE HEALTH EFFECTS OF OZONE EXPOSURE:

Ozone exposure may lead to shortness of breath, chest pain when inhaling deeply, wheezing and coughing. Asthma is made substantially worse by current concentrations of ground-level ozone. Long-term repeated exposure to ozone (at concentrations as low as the new health standard adopted by the US EPA) may lead to reductions in lung function, inflammation of the lung lining, increased susceptibility to respiratory infections and increased hospital admissions and emergency room visits.[54]

PARTICULATE MATTER (PM2.5, PM10):

Particulate matter includes microscopic particles and tiny droplets of liquid. Among other sources, these particles come from the burning of fuels, construction and mining activities and diesel emissions. Fine particles lodge deeply in the lungs affecting respiratory health and restricting the flow of oxygen. They can cause lung damage, exacerbate existing respiratory diseases and lead to early death. A re-analysis of a 1993 Harvard study of 8,000 people in six U.S. cities with different levels of pollution suggests that the smallest particles, less than 2.5 microns in diameter (a human hair is about 75 microns in diameter), are associated with mortality rates. A 1995 study found that exposure to particulate matter was linked to hospitalizations for heart attacks, angina and heart failure in Detroit. Researchers have estimated that almost 1,200 heart disease hospital admissions in Detroit each year could be caused by particulate matter.[55]

Fine particles caused by reactions in the atmosphere with NOx and SO2 have recently been implicated in some of the more serious health impacts from power plant pollution. A recent study found that fine particle pollution from US power plants causes more than 603,300 asthma attacks a year and is cutting short the lives of over 30,000 people each year.[56] Epidemiological studies have suggested that sulfate particles are among those most strongly associated with health impacts and premature mortality in adults. Acute exposure to particulate matter can cause asthma attacks, heart rate variablity, and heart attacks Chronic exposure to particulate matter can cause cardiovascular disease, pneumonia, chronic obstructive pulmonary disease, and premature death.[57]

TRANSPORT:

Older coal burning plants are up to four times dirtier than new coal plants built today. West Michigan is affected by transport but so are Chicago, Milwaukee, Cincinnati, as well as almost every major urban area. On many days west Michigan is affected by transport but reducing the causes of ozone in Kent and Ottawa Counties will improve air quality. In addition, if the causes of ozone were reduced nationally, the ambient air quality in areas in west Michigan affected by transport will be improved as well as those areas affected by pollution transport from west Michigan.[58]

Sally Billups at the Michigan Environmental Council stated that, "Largely uncontrolled power plants are the most significant source of this smog, impacting communities hundreds of miles downwind."[59] "Several thousand respiratory room visits to Michigan hospitals every year are attributed to high ozone levels," said Elliot Levinsohn of the American Lung Association of Michigan (ALAM). "Additionally,

(Attachment #8)

emissions from these power plants contribute to the formation of fine particle matter known as soot which causes up to 2,500 premature deaths a year in Michigan."

In an Ozone Transport Assessment Group Stakeholder Presentation in 1997 Southern Company demonstrated that emissions from the Southeast do not contribute significantly to non-attainment in the Midwest and Northeast. The Midwest Ozone Group and Cinergy had results that suggested that impacts to Lake Michigan areas are predominantly from local sources. Georgia Institute of Technology summarized recent findings from the southern Oxidant Study indicating that there was clear evidence of Long-range ozone transport in the Midwest and Northeast. The State of Michigan showed that the State's relatively high NOx emissions, if zeroed out completely, would result in modeled ozone reductions in selected downwind non-attainment areas but with more realistic control strategies, downwind benefits of Michigan controls become insignificant compared to the high incremental costs. The Lake Michigan States concluded that 75% utility NOx reduction may provide sufficient upwind NOx reductions.[60]

MICHIGAN'S EXPOSURE TO COAL-FIRED POWER PLANTS:

Michigan has a total of 20 coal-fired power plants. 887,019 lake acres and 139 river miles in Michigan are under a Mercury Fish Advisory. There are a total 7,525,865 people living within 30 miles of coal-fired power plants. 1,929,662 of these people are children. 404,408 of them live in poverty. 106,194 of them have asthma. There are 5 coal-burning plants in the Muskegon, Kent, and Ottawa county area.[61] Their 30 mile radius encompasses all of Ottawa and Muskegon counties and a little over half of Allegan and Oceana counties (30 miles was chosen as the metric as it is a standard criteria used in modeling impacts from power plumes. This is a recent study (Levy et. al., 2000) suggesting that impacts from power plants are greatest within a 30 mile radius of a smokestack in MA. [62]). There are 400,721 people exposed within 30 miles of the B.C. Cobb plant in Muskegon. 104,815 of them are children under 18. 19,270 of these children live in poverty. 6,131 of the children living within 30 miles of B.C. Cobb have asthma. There are 858,010 people living within 30 miles of the J.H. Campbell power plant and landfill. 224,203 of them are children under 18. 33,635 of the children live in poverty. 13,114 of the children have pediatric asthma. 1,018,020 people live within 30 miles of the James De Young power plant located in Holland. 266,104 of them are children under 18. 40,007 of the children live in poverty. 15,535 of the children living within 30 miles of the James De Young plant have pediatric asthma. Children living in the vicinity of power plants have the highest health risks. Adults are also at risk from contaminated groundwater and from inhaling dust from facilities. The poverty rate of people living within one mile of power plant waste facilities is twice as high as the national average and the percentage of non-white populations within one mile is 30 percent higher than the national average.[63]

In 2000, the B.C. Cobb plant on the shore of Muskegon Lake in Muskegon had total reported air releases of 2,586,713 tons. J.B. Sims in Ottawa county had total reported air releases of 399,108 tons. J.H. Campbell on the shore of Lake Michigan in West Olive had total reported air releases of 8,808,913 tons. James De Young in Ottawa county had total reported air releases of 231,512 tons.[64]

COAL-FIRED POWER PLANTS IN DISTRICT 2:

Ottawa county was designated a moderate non-attainment area in 1996 under the CAA but claimed that the pollution was mostly from transport and it was reclassified as an attainment area. As a non-attainment area, Ottawa County would have been required to reduce ozone levels.

B.C. COBB GENERATING PLANT:

The B.C. Cobb Generating Plant is located on the shores of Muskegon Lake, where its waters meet the Muskegon River. The plant has 2 coal-fired units and 3 natural gas units that can generate 500 megawatts of electricity. Western coal from the Powder River Basin in Wyoming and Montana and eastern coal from Kentucky, West Virginia and Pennsylvania are used in coal-fired power production at the Cobb plant. The western coal has a lower sulfur content than the eastern coal which helps to maintain better air quality standards.[65] The three natural gas units operate during times of peak customer demand. SO2 and NOx are largely uncontrolled at the B.C. Cobb Plant . SO2, NOx, and CO2 total mass emissions at the plant rose sharply in 1998. Estimated total Mercury released in 1998 equaled 205 pounds. Estimated mercury air pollution in 1998 equaled 128 pounds.[66]

J.H. CAMPBELL GENERATING PLANT:

The J.H. Campbell generating plant is located on the shore of Lake Michigan between Holland and Grand Haven. It is Consumers Energy's largest coal-fired generating complex. It uses low-sulfur coal with a less than one percent sulfur content. J.H. Campbell claims that 99 percent of its particulate matter is removed from stack emissions via static electricity. The fly ash is then blown through pipes by air pressure to an on-site storage facility. Ash not reused in concrete manufacturing (Nationally very little is reused. Over 100 million tons of waste materials are generated during coal and oil combustion each year. About 76 million tons are disposed of while the rest is sold for manufacturing uses such as cement, wallboard and fill.[67]) becomes mounds that are seeded with hardy grass. To protect groundwater quality, the site has its own sanitary treatment system and monitoring wells.[68] This suggests that there may be no liners at the J.H. Campbell landfill. Disposal of solid combustion wastes should be regulated by the Resource Recovery and Conservation Act (RRCA). The Clean Water Act (CWA) governs liquid effluent discharges to navigable waters. Unfortunately, the EPA has exempted CCW from hazardous waste disposal requirements. Instead, the EPA has stated its intention to develop state guidelines for hazardous waste disposal requirements on CCW which cannot be directly enforced by the EPA.[69] SO2 is uncontrolled at the JH Campbell Plant. Emissions controls for NOx were improved in 1990 and 1994. Estimated total Mercury releases at the J.H. Campbell Plant in 1998 equaled 665 pounds. Estimated mercury air pollution in 1998 equaled 373 pounds.[70] The results of the EPA data release for 1998 on the toxic release inventory a list of 159 Michigan top airborne toxic emitters for 1998, shows that JH Campbell is 2nd only to Detroit Edison's Monroe Power Plant as Michigan's top airborne toxic emitters. Grand Haven Board of Light and Power is 4th on the list. BC Cobb is 28th and the James De Young Generation Station is 34th.[71]

JAMES DE YOUNG PLANT:

This plant is located in Holland. SO2 and NOx are not controlled at this plant. NOx emissions at this plant have risen steadily with a drop in emissions in 1995. There was a rise in SO2 emissions from 1997 to 1998. There was a drop in Mass Emssions of CO2 from 1997 to 1998 Estimated total mercury released in 1998 was 27 pounds. Estimated mercury air pollution in 1998 was 17 pounds. [72]

JB SIMS PLANT:

Emission controls for NOx were installed in 1995. SO2 emissions have dropped from 1997 to 1998. CO2 emissions rose from 1997 to 1998.[73] Estimated total mercury releases in 1998 equaled 39 pounds. Estimated total mercury air pollution in 1998 equaled 16 pounds.[74]

REPRESENTATIVE PETER HOEKSTRA:

In 1994 Representative Peter Hoekstra voted for reducing the amount of funding for coal research and

(Attachment #8)

development. His overall environmental scorecard rating during 1994 was 12% as rated by the League of Conservation voters.[75] Hoekstra's environmental scorecard for the 105th Congress was 28% and was 10% for the 106th Congress. He is rated as having one of the worst environmental voting records in Congress. Representative Hoekstra opposes Governor Engler's plan to drill beneath the Great Lakes and supports a bill introduced by Michigan Democratic Senator Debbie Stabenow to halt Great Lakes drilling. He is a Republican who historically supports his party's governing values of deregulating industry, lowering taxes, reforming welfare, supporting school vouchers, and opposing gun control and abortion. Representative Hoekstra supports President Bush's Clear Skies Initiative which does away with New Source Review, puts no regulations on CO2, and allows companies that cannot meet air quality standards to buy pollution credits (except mercury). President Bush and Vice President Dick Cheney have received lucrative campaign contributions from the energy industry.[76]

CONTRASTS BETWEEN THE ADMINISTRATIONS'S PROPASAL TO ADDRESS POWER PLANT POLLUTION AND THE LEADING CONGRESSIONAL PROPOSALS:

The Clean Power Act (S. 556) and the Clean Smokestacks Act (H.R. 1256) would establish caps for NOx and SO2 that work with important existing clean air programs rather than eliminating Clean Air Act programs, including New Source Review, as proposed by the Bush administration. S. 556 and H.R. 1256 establish a mandatory cap for carbon dioxide at 1990 emission levels. S. 556 and H.R. 1256 call for plant-specific controls for NOx, SO2 and mercury to ensure that nearby plants do not threaten human health and to prevent toxic hotspots from developing (no selling of pollution credits). The caps and plant-specific controls under S. 556 and H.R.1256 are far more stringent and would take effect more than a decade earlier than would the pollution reductions envisioned in the Bush plan.[77]

BIBLIOGRAPHY

Michigan Environmental Council, Sally Billups and David Wright et. al. The Trouble With Coal: Michigan Needs Cleaner Power Choices. September 1999. http://www.mecprotect.org/troubled_coal.pdf

Ontario Medical Association. Health Effects of Ground-Level Ozone, Acid Aerosols and Particulate Matter. May 1998.

Clean Air Task Force, Martha Keating. Cradle to Grave: The Environmental Impacts of Coal. June 2001. http://www.clnatf.org/publications

US EPA, 1998a. Study of hazardous air pollutant emissions from electric utility seam generating units - final report to Congress. February. 453/R-98-004a.

National Environmental Trust. Toxics Power: what the toxics release inventory tells us about power plant pollution. August 2000. http://www.clearthenir.org

The Clean Air Task Force. Children at Risk: How Air Pollution from Power Plants Effect the Health of America's Children. April 2002. http://www.clnatf.org/press_room/children_at_risk.html

EPA 530-R99-010. Volume2 - methods, findings and recommendations. March 1999.

1996 National Survey of Fish, Hunting, and Wildlife-Associates Recreation, US Department of Interior, US Department of commerce, November 1997

American Lung Association. A Summary of Recent Studies of the Health Effects of Air Pollution

Darkening Skies, pg. 4, http://www.cta.policy.net/proactive.

Department of Preventive Medicine, University of Southern California School of Medicine, Los Angeles, CA (R McConnell MD, et al); National Institute of Environmental Health Sciences, Research Triangle Park, NC; and California Air Resources Board, Sacramento, CA. Asthma in exercising children exposed to ozone: a cohort study. The Lancet, Vol 359. February 2, 2002.
http://www.thelancet.com

Office of Technology Assessment, 1979. The Direct Use of Coal: Prospects and Problems of Production and combustion. April 1979

Michigan Mercury Pollution Prevention Task Force. Mercury Pollution Prevention in Michigan, April 1996.

US EPA. Mercury Study Report to Congress. December 1997.

Mercury in the Environment Brochure, Michigan Department of Environmental Quality.

Environmental working Group. Michigan estimated mercury emissions from coal-burning power plants. Compiled from US DOE and US EPA databases. 2000.
http://www.ewg.org

National Wildlife Federation. Ohio's Mercury Menace. 1997.

US EPA. 1997 Toxics Release Inventory Public Data Release. May 13, 1999.

Rice D, Evangelista de Duffard A, Duffard R etal. Lessons for neurotoxicology from selected model compounds: SGOMSEC joint report. Environ Health Perspect. 104(suppl. 2): 205-215, 1996.

Dr. Laura Thompson. Toxic Metals. http://www.drlaurathompson.com/heavy_metal_toxicity.htm

Dr. Allen Buresz. Attention Deficit Disorder & Hyperactivity Success.
http://www.all-natural.com/add.html

US Centers for Disease Control and Prevention. Blood and hair mercury level in young children and women of childbearing age - United States 1999. Morbidity and Mortality Weekly, March 2, 2001

Greater Boston Physicians for Social Responsibility Project. In Harm's Way: Toxic Threats to Child Development. May 2000.
http://www.igc.org/ihw.htm

US EPA, Clean Air Market Programs. Emissions Data Plant Summaries. Updated April 4, 2000.
http://www.epa.gov/airmarket/picturethis/mi

(Attachment #8)

American Lung Association. 11 Health Effects of Outdoor Air Pollution.

Department of Preventive Medicine, University of Southern California School of Medicine, Los Angeles, CA (R McConnell MD, et al); National Institute of Environmental Health Sciences, Research Triangle Park, NC; and California Air Resources Board, Sacramento, CA. Asthma in exercising children exposed to ozone: a cohort study. The Lancet, Vol 359, February 2, 2002.
http://www.thelancet.com

Federal Register, July 18, 1997. Environmental Protection Agency. National Ambient Air Quality Standards for Ozone; Final Rule, page 5.

Schwartz, et. Al. Is Daily Mortality Associated Specifically With Fine Particles?. J Air Waste Mgmt 1996; 46:927-39.

Clean Air Task Force, 2000a. Death, Disease and Dirty Power-Mortality and health damage due to air pollution from power plants. October.
http://www.cleartheair.org

Enviro-Mich. West MI Air Hearing Press Release, Citizens for a Better Environment.
http://www.great-lakes.net/lists/enviro-mich/1997-00/msg0018.html

Sally Billups, MEC, Media Release,
http://www.great-lakes.net/lists/glin-announce/1997-10/msg00021.html

OTAG Stakeholders Presentations, Atlanta, April 15 - 17, 1997, Summary of Summaries Prepared for the Air Quality Analysis Workgroup, Rudolf Husar and Richard Poirot, May 3 1997 (draft).
http://www.capita.wustl.edu/otag/reports/STAKESUM/STKEATL4.html

Sources via report: US Census Population Estimates for 1997; "Estimated Prevalence and Incidence of Lung Disease by Lung Association Territory," American Lung Association, 2001 (1998 data)

Consumer's Power. B.C. Cobb Generating Plant.
http://www.consumersenergy.com/

American Coal Ash Association, 1998. 1990 Coal combustion product production and use. Alexandria, VA.

Federal Register, Volume 65, number 99, page 32213. Regulatory determination on wastes from the combustion of fossil fuels. Final rule. May 22,2000

Enviro-Mich, Alex J. Sagady & Associates. Top Michigan Toxic Air Emitters. May 11, 2000.
http://www.great-lakes.net/lists/enviro-mich/2000-05/msg00061.html

League of Conservation Voters, 2001. 2001 National Environmental Scorecard
http://www.igc.org/lcv/lcv94/House/hoekstra.html

Michigan Land Use Institute, Keith Schneider. A Plan to Drill Under the Great Lakes is fracturing the Michigan Republican Party. June 29, 2001,
http://www.gristmagazine.com/cgi-bin/printify-2.pl

Legislation & Other Information

1. Michigan Mercury Legislation-Bi-partisan, Michigan House of Representatives
2. Debate Rages Over Proposed Coal-burning Plant in Manistee-Holland Sentinal
3. Letter Concerning Air Quality in Manistee County to U.S.E.P.A.

(Attachment #8)

(February 4,2004)

Enviro-Mich message from "Daniel Farough" <Dfarough@house.mi.gov>

Michigan House of Representatives

FOR IMMEDIATE RELEASE
Wednesday, February 4, 2004 Contact:
Dan Farough
Phone: (517) 373-2093

DEM LEGISLATORS UNVEIL MICHIGAN MERCURY INITIATIVE
Regional press conferences address multi-state mercury pollution

LANSING * As part of a bipartisan, multi-state press conference, House Democrats today unveiled the Michigan Mercury Legislation Initiative to protect Michigan families from the dangers associated with mercury. The initiative, a multi-bill legislative package, is part of a concerted effort to find regional solutions to a regional toxic mercury problem. State Representatives Alexander Lipsey (D-Kalamazoo), Jack Minore (D-Flint), Julie Dennis (D-Muskegon), Paul Gieleghem (D-Clinton Twp.), Kathleen Law (D-Gibraltar), Chris Kolb (D-Ann Arbor), and State Senator Liz Brater (D-Ann Arbor) were joined by colleagues in neighboring states who held press conferences today addressing the Great Lakes' most pervasive pollutant, mercury.

"Michigan families need protection from this toxin that contaminates our freshwater fish and can harm the health of consumers," Minore said. "By acting together, we can send a collective message to Washington that state policymakers are seeking to eliminate the threat of mercury pollution."

Mercury is a potent neurotoxin that attacks the body's central nervous system, damaging or destroying tissues including those in the brain. These neurotoxic effects are particularly harmful to children, delaying early development, and can include behavior changes, seizures, as well as wide range of effects, including death. The Centers for Disease Control indicate that 1 in 12 women of childbearing age have unsafe mercury levels, resulting in more than 400,000 babies born at risk in the U.S. each year.

- More -

- 2 -

"Developing similar legislative ideas and working together to address the devastating effects of mercury pollution allows us to tackle the problem as a whole and not just hope that the federal government or each state eventually does the right thing," Lipsey said. "It is crucial that we work together on this initiative to eliminate this threat in Michigan,"

Currently Michigan law bans the sale of mercury thermometers and has instituted a plan to phase out the use of mercury in schools. Additionally, the state requires specific waste management practices for businesses using and disposing of products containing mercury. The Mercury Legislation Initiative further protects Michigan consumers by working with businesses and industries to phase out and seek

(February 4,2004)

alternatives to the nonessential use of mercury in manufacturing various products including toys, games, cosmetics, and apparel. Under the legislation, Michigan would also work with businesses and households to ensure the proper disposal of mercury.

Some components of the initiative would include labeling all products that contain mercury, informing consumers on the proper disposal of such products, and requiring the removal of mercury parts and switches before the disposal or destruction of products and buildings. Recently, Michigan automakers have voluntarily begun to phase out the non-essential use of mercury in many of their components, and Representatives Lipsey, Minore, Dennis, Law, Kolb and Gieleghem said they plan to continue working with automakers to find additional ways to end the nonessential use of mercury in manufacturing.

"Many Michigan residents are unaware of the health risks associated with mercury," Dennis said. "This initiative will not only lessen those risks, but also inform consumers of the critical role they play in protecting their own families from the harmful effects of mercury."

###

Dan Farough
Press Secretary
House Democratic Communications
517-373-2093
dfarough@house.mi.gov

(Attachment #8)

Coupons... ...Bargains Online Ads!
RYANWALTERSGROUP.COM
Jim Ryan Ford Walters
REAL ESTATE

The Holland Online Sentinel Local

sections
- Local News
- News
- Iraq Coverage
- Latest AP News
- Features
- Life & Style
- Maps
- Weather
- Obituaries
- Movie Listings
- Business
- Opinion
- House & Home
- Religion
- Entertainment
- Outdoor/Tracks&Trails
- Anniversaries
- Weddings
- Engagements
- Stocks
- Archives
- Special Sections
- Contact us
- WoodTV School Closings
- Bid4Bargains Auctions
- Today's Headlines

sports
- Local Sports
- Sports
- Golf West Michigan
- Golf News
- Holland Little League
- Zeeland Little League
- Holland Rec
- Zeeland Rec

classified connection
- Submit an ad
- Find a Job
- Garage Sales

Friday January 9, 2004

Schedule your wedding photography online!
Dan Adams Studios
Bradford

Web posted Tuesday, January 6, 2004

BPW weighs stake in controversial plant

Debate rages over proposed coal-burning plant in Manistee

FROM STAFF AND WIRE REPORTS

MANISTEE -- A proposed coal-fired power plant has ignited a debate between city officials who say the plant would be an economic boon and residents who fear it will significantly raise pollution levels around Lake Manistee.

The 425-megawatt plant is proposed by the Manistee Saltworks/Tondu Corp. and would be built on a site formerly owned by a chemical company.

The project would be a joint venture between about a dozen Michigan cities and municipal utilities, including the Holland Board of Public Works.

Holland BPW officials have spent $247,000 on studies to determine if buying into the proposed 425-megawatt coal-burning power plant would be a good move to gain between 60 and 100 megawatts of power.

BPW officials are currently researching whether to pay $450,000 to be part of the second phase of the project. The second phase would include completing a detailed design for the facility, obtaining environmental permits and preparing final agreements.

Developers are now waiting for the Manistee Planning Commission to decide the fate of a special

Email the editor
Send to a friend
Print friendly
Got a scoop/ev

Speci Offer
Newbride.n Local Wedd Resource:
[view complete
[view all offer
Top Hon
Today's Classifie
View all TopAds
View Classified
Job Connection
Top Jo
Today's Classifie
Maintenance Field S
Technician A.D. Bos
MAN ALIVE Co-Mgr
Manager Man Alive,

Find a Car
Find a Home
Find Merchandise
Professional Services
specialty publications
:: ZeelandSentinel.com
:: West Michigan Today
:: NewBride.net Mag
:: Living Great
:: Shoreleave
:: Alive!
:: All About Holland
interactive
:: view our online ads
:: church directory
:: e-postcards
:: receive e-headlines
:: comments
:: buy photos & articles
:: GR Ford airport flight info
:: today's front page pdf
:: washington school
:: e-letter to the editor
:: faq
:: n.i.e.
:: set your homepage
:: 360° virtual tours
:: Parade of Homes 2003
:: westmichigantoday.com
:: allaboutholland.org

land use permit for the plant. The commission could decide on Thursday, but Manistee City Manager Mitchell Deisch said action on the issue may be delayed until February.

Those against the plant say it would emit sulfur dioxide, nitrogen oxide and hundreds of pounds of mercury each year.

"Years of industrial pollutants have stressed the lake's ecosystem," Fred LaPoint, a Manistee resident who is also a member of Citizens for Responsible Development, told the Traverse City Record-Eagle for a recent story. "And they're talking about adding a huge amount of additional pollution."

Holland BPW spokesperson Andree Keneau said if the decision is delayed, it will have little impact on the local utility.

"We are still trying to reach an agreement on whether or not we want to pursue the next phase of the project," Keneau said.

Holland's decision on whether to continue on the project is expected to be made by the BPW board in February, Keneau said.

"That isn't to say that we aren't concerned about environmental issues, we just aren't at the stage where this will have an impact," Keneau said.

Michigan Department of Environmental Quality officials say mercury is a problem throughout western Michigan, including Manistee, and that coal-fired boilers are one of the main sources.

Tondu spokeswoman Meagan Kempf would not comment specifically on the emission levels from the proposed plant, but said it would meet required emissions standards.

Manistee city officials say the plant would add about 60 new permanent jobs and generate up to $112 million in construction wages. It would also bring in between $10 million to $12 million annually for the local economy.

Holland BPW staff started looking into the proposed power plant last year to increase electric output. Another option would be to expand the James DeYoung plant, which would provide around 65 additional megawatts.

nat...
Busy occupational n office in need of full
Visual Supervisor W searching for an individua...
RNs and LPNs SIGN BONUS NOCC, a 64 long-ter...
REGISTERED RESPIRATORY THEF (RRT) Caring peo...
Customer Service / Assistant Holland St
RN ICU-PCU This pa position will be on c
Receptionist Local marketing and desi agency see...
Child Care Center D Grace Christian Chil
View all TopAds
View Classified
Job Connection

(Attachment #8)

Mr. Thomas V. Skinner, Regional Administrator
United States environmental Protection Agency, Region 5
77 West Jackson Boulevard (R-19J)
Chicago, Illinois 60604-3507

Dear Mr. Skinner;

I have been informed that the United States Environmental Protection Agency is considering designating Manistee County, Michigan as "Attainment/Unclassifiable" for the 8 Hour Ozone National Ambient Air Quality Standard, which EPA intends to establish in April 2004. It is our understanding that the lack of county specific air quality monitoring data is the sole reason for this recommendation.

Not withstanding the absence of monitoring stations (and data) in Manistee County, I am requesting that EPA include Manistee County within the same "Non-attainment" area designation being proposed for Benzie & Mason Counties. As you may already be aware, Manistee County is sandwiched directly between Benzie and Mason Counties. Historical monitoring records for both Benzie and Mason Counties, indicate that air quality for these two counties regularly exceed the air design values of 0.085 parts per million (ppm) for ozone. There is simply no basis for presuming that the ozone levels in Manistee County would meet attainment levels, given the fact that the same contaminated air mass in place over Mason & Benzie Counties would also be in place over Manistee County at that same time.

EPA has provided guidance which allows parties to submit recommendations that vary from the presumed if those recommendations are supported by an analysis of some or all of the following eleven factors: 1.) Emissions and air quality in adjacent areas; 2.) Population density and degree of urbanization; 3.) Monitoring data representing ozone concentrations in local areas and larger areas; 4.) Location of emission sources (Note: Emission sources and nearby receptors should generally be included in the same non-attainment area); 5.) Traffic and commuting patterns; 6.) Expected growth (including extent, pattern and rate of growth); 7.) Meteorology (weather transport); 8.) Geography; 9.) Topography; 10.) Level of control of emission sources; 11.) Regional emissions reductions. As will be discussed below, a substantial number of these factors support the inclusion of Manistee County within the same "non-attainment" designation that would also include Benzie & Mason Counties.

1.) Emissions and air quality data in adjacent areas; As noted previously, air quality data from Benzie and Mason Counties are both recommended as non-attainment. This designation is supported by the State Of Michigan. Similar non-attainment designation is recommended for the nearest Metropolitan Statistical Area (MSA) of Muskegon-Norton Shores, which like Manistee County, is on the shores of Lake Michigan. All of the Lake Michigan shoreline counties are known to be receptors of high levels of transport pollutants from Chicago-Gary Indiana and Milwaukee as they are in the direct path of this pollutant plume.

2.) Population Density/Degree of Urbanization; 2000 Census records confirm that Manistee County has a much greater degree of urbanization than Benzie County and a level comparable to Mason County. In addition, Manistee County has a substantially greater concentration of industrial development than either Mason or Benzie Counties. In fact, data from the Michigan Department Of Environmental Quality's Air Emissions Reporting System (MAERS) and EPA's State/Plant Index, indicate that emissions of primary ozone-causing pollutants – NOx and VOC's from stationary sources and are comparable to emissions levels from such sources in highly urbanized counties such as Muskegon County.

3.) Location Of Emission Sources; As noted previously, emission sources located in Manistee County contribute significant quantities of ozone-causing pollutants to the local air-shed. Emissions data from MAERS and EPA State/Plant Index indicate that emissions sources in Manistee County contribute nearly 2,000 tons of VOC's and over 4000 tons of NOx to the local environment. Nearly all of these emission sources are located in/near the City Of Manistee, near the Lake Michigan shoreline. Emissions from Manistee County undoubtedly contribute to ozone levels in parts of Benzie County and Mason County. EPA's guidelines recommend that areas that contribute to ambient air quality in a nearby area that does not meet the national standard should be included within the same non-attainment area status. See e.g. USC 74079(d)(1)(A)(I). Wind data on EPA Ozone Implementation Sites, confirms that, during summer months when ozone violations have been recorded in Benzie County, the winds have been from the south and southwest. Those winds would carry pollutants from Manistee County sources to Benzie County.

4.) Traffic & Commuting Patterns; According to data prepared by a consultant for applicant for an air quality permit (Tondu Energy/Manistee Saltworks Development Corporation), there were more than 17,000 vehicles traveling on U.S. 31 in the City Of Manistee per day. In addition, the 2000 Census indicates that the average drive to work for Manistee residents is comparable to that for residents in more urban counties.

5.) Meteorology/Weather Patterns; As noted previously, wind data on EPA Ozone Implementation Sites confirms that, during the summer months, when ozone violations have been recorded in Benzie County, the winds are from the south and southwest. Those winds would carry pollutants from Manistee County sources to Benzie County. In addition, Manistee County is most definitely affected by the meteorological conditions that transport ozone-causing from Chicago-Gary Indiana & Milwaukee Wisconsin to other west Michigan Counties.

6.) Expected Growth; The 2000 Census records confirm that Manistee County experienced a growth rate in excess of 15% between 1990 and 2000 – nearly three 93) times the average rate in Michigan. This growth has dramatically increased the level of vehicle traffic in Manistee County. In addition, Tondu Energy Corporation and the Michigan Municipal Power Association are proposing to locate a large 425 megawatt coal-fired power plant in Manistee County. Information provided by Tondu Energy's consultant, indicate that this proposed plant would increase the levels of NOx emissions in Manistee County by nearly 67% - nearly doubling the emissions levels.

Any strategies to control emissions levels to bring Benzie and Mason Counties into compliance with EPA's 8-Hour Ozone Standard must include consideration of the existing and new sources of ozone-causing pollutants from existing sources in Manistee County and new sources resulting from the growth Manistee is experiencing.

Based upon these factors, the weight of the evidence clearly supports inclusion of Manistee County within a single non-attainment area that would also include Benzie and Mason Counties.

We look forward to working with EPA as it develops the final air quality designations for Manistee and surrounding counties.

Respectfully,

cc: Honorable Governor Jennifer M. Granholm
Steven E. Chester, Director, MDEQ

(Attachment #8)

(Attachment #8)

Harvard experts analyze new Oak Creek coal plants

Marc Loure

Pollution from the new coal plants We Energies wants to build under its proposed Oak Creek power plant expansion would contribute to approximately 28 premature deaths annually and cause $170 million to $190 million in health-related damages every year, according to two Harvard University researchers and an environmental scientist, all three who are recognized as some of the country's foremost experts on the health impacts of air pollution.

In testimony filed with the Public Service Commission on behalf of SC Johnson and Clean Wisconsin, Dr. John D. Spengler and Dr. Jonathan Levy from the Harvard School of Public Health and Dr. David L. MacIntosh, from Environmental Health & Engineering in Newton, Massachusetts, also said pollutants from the three We Energies coal plants would trigger thousands of asthma attacks and send hundreds to the hospital each year.

In addition, they said, mercury pollution from the new plants could double mercury deposits within six square miles around the plant, including into Lake Michigan. The scientists reviewed information and statistics from We Energies, the U.S. Environmental Protection Agency, numerous medical analyses and other sources to reach their conclusions. In addition to the mortality and cost impacts, the researchers found that pollution from the new coal plants would annually contribute to:

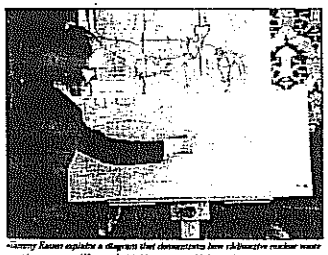
- 1,500 asthma attacks
- 340 emergency room visits
- 25 hospital admissions for cardiovascular and respiratory concerns
- 24,000 minor restricted activity days.

These estimates are actually conservative, the researchers said, because they did not evaluate mortality impacts on children and adults younger than 30, including such sensitive groups as asthmatic children.

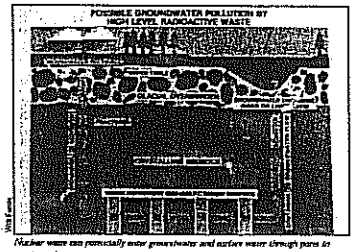
According to figures on file with the U.S. Department of Energy's Energy Information Administration, We Energies' proposed expansion would turn its Oak Creek plant into the largest coal plant located within 15 miles of a major U.S. metropolitan area. The state's Final Environmental Impact on We Energies' proposal concluded it would hurt air quality and cost consumers more.

For more information on We Energies coal plant expansion and what you can do to help, please contact Marc Loure at mloure@cleanwisconsin.org or visit the RESET website www.resetwisconsin.org.

COVER STORY CONTINUED



Tammy Raven explains a diagram that demonstrates how radioactive nuclear waste could contaminate Wisconsin's drinking water and lakes and rivers.



Nuclear waste can potentially enter groundwater and surface water through pores in granite rock.

Wausau in the early 1980s. Thousands of citizens attended a public meeting to speak out against siting a nuclear waste dump in Wisconsin. The auditorium was filled to capacity, and many more people waited outside the hall in blizzard conditions.

Nuclear Waste and Wisconsin details the threats Wisconsin could face from a nuclear repository. In particular, the report examines the importance of the Wolf River Batholith, which includes land in Langlade, Shawano, Waupaca, Menominee, Portage, Marathon, and Oconto Counties as a ground water source under certain circumstances and, the report shows, has potential for radioactive leaks into underground water supplies also known as ground water. The ground water in the batholith discharges into the Wolf River, a pristine, popular river already threatened by sulfide mining. From the Wolf River, contaminated water could continue into the Fox River, and ultimately contaminate Green Bay and Lake Michigan.

"During the 5 months I investigated the possibility of a high-level nuclear waste repository in Wisconsin, I became increasingly concerned about our state's ground water," says Tammy Raven, author of the report and geology student at the University of Wisconsin-Madison. "Ground water would be the number one path that would bring hazardous radioactive chemicals into our environment. Since ground water flows near the surface here in Wisconsin, the waste repository would fit within the saturated zone of our ground water, putting our water and health at risk."

Experts are concerned that there may already be too much waste to fill Yucca Mountain and that another site will have to be selected. Federal law limits the capacity of the proposed Yucca Mountain repository to 70,000 metric tons of nuclear waste. According to Physician's for Social Responsibility, 46,000 tons are currently being stored in short-term storage at commercial nuclear facilities. However, by 2030, when Yucca is projected to be operational, an additional 68,000 tons of waste is projected to be produced, leaving an overflow of 46,000 tons of radioactive waste.

Also, these numbers do not account for any waste generated from new or re-commissioned power plants. The Bush Administration's 2003 Energy Policy Act currently being debated in Congress supports the building of new nuclear power plants. "Nuclear energy creates nuclear waste, and that's not good for Wisconsin," said Lisa Gue, senior energy analyst with Washington-based Public Citizen. "With no known way to safely dispose of deadly radioactive waste, the government's plan to build new reactors is sheer folly."

Clean Wisconsin opposes nuclear power because of the unavoidable risks to public health, the environment, and Wisconsin's tourism industry. Wisconsin may be asked to host the second permanent nuclear waste facility in the country, the only such repository east of the Mississippi, even though studies have shown that storing nuclear waste in the Batholith could expose our ground water and Great Lakes to contamination.

Clearly, Wisconsin needs the strong voices of its residents to oppose becoming a nuclear waste dump. Nuclear power is not clean or safe and nuclear waste continues to threaten Wisconsin's way of life. We are asking members to contact presidential candidates and ask them to pledge to not advocate for nuclear power but instead promote clean and safe energy like solar, wind, biomass and geothermal.

My name is Shirley Skiera; I live at 1307 24th Street. I am a life-long resident of Manistee having lived in the Oak Hill area of Filer Township for the past 35 years. I am the Director of Ministries at Saint Joseph Parish in Manistee. I am opposed to the proposed coal fueled plant advanced by the Tondu Corporation of Huston, Texas.

According to the Special Use Permit Standards the proposed use must be "reasonable and designed to protect the health, safety, and welfare of the community."

My major concern is in regards to this facility are the health issues. These concerns have been & will continue to be addressed to you from many different sources.

Using the criteria of health, safety, and welfare, I would like to share with you what it is like to live within a half mile, up hill, of the present TES Plant in Filer City.

When me moved to our present home in Oak Hill there were factories both downhill (south & north) of the area and a certain amount of air particulates were the norm. In the late 1980's the present TES plant, built by Joe Tondu of Huston Texas became operational, from that time through the present the amount of particulates have increased by a tremendous amount. Obviously it is not all from the TES plant, I am only stating that since the TES Filer Plant opened there has been a huge increase of particulates & soot in the air. Instead of washing the house once or twice a year, monthly would now be the norm. Porches & railings, along with outdoor furniture and picnic tables must be wiped down daily or even multiple times throughout the day if they are being used. Vehicles have the same fate. We installed vinyl replacement windows about six years ago and they are permanently imbedded with black soot. In nice weather, when the winds are blowing and the windows are open, there are times where wiping the tables inside the house, results in a blacked dust cloth, again, coal soot. We installed central air conditioning two years ago primarily to keep the soot out but we do miss the summer breezes and open the windows from time to time with the same sooty results. The air-conditioning also helps control the noise level from the facilities which is considerable.

There is also the issue of the trucks that carry the ash, they are covered, however a significant amount of that ash falls from the vehicles creating a film on the roads that is not only dirty but in wet weather creates a slimy mess. It is estimated that a minimum of 2 trucks; 20 times a day will be going to the local land fill, that equals at least 40 roundtrips per day, 7 days per week driving through the same neighborhoods.

I, like many people in the neighborhood like to walk outdoors during the nice weather a favorite time being in the morning. On the many humid days we experience, there is a smelly, heavy feeling to the air. Some days the sidewalks and roads are covered with soot. If one drives through Filer City, when the cooling towers are emitting steam, it's similar to driving through a heavy fog. There is at least one documented case of a residence in Filer City freezing over. As the proposed coal fueled plant is estimated to be six times larger then the Filer City Plant, we can only assume that all of these problems will be six times greater. With more & larger cooling towers and a 400 ft. smoke stack, this will not be just an Oak Hill, Filer City, Eastlake, Maxwell Town or Stronach issue; this facility will affect the entire Manistee Community with these problems.

Life in Oak Hill has changed since the TES plant came to town and my hope is that they coal fueled plant proposed by the Tondu Corporation of Huston, Texas will **not** become a reality in Manistee. I would also assume that, as a good neighbor, the expanded pollution and coal pile controls that Mr. Tondu states would be present in the proposed facility, would instead be made available at the existing TES Plant.

What I have shared speaks directly to the health, safety, welfare, and quality of life issues that you are asked to consider. Whether or not you are personally for or against this proposed facility, please remember in you deliberations that if you, the Manistee Planning Commission approve the Special Use Permit for this coal fueled plant, all of the citizens of Manistee will share equally in the negative aspects it brings to our community. Please also consider our regional neighbors who will also be affected. Also consider that the biggest economic slice will go to Huston Texas and numerous communities that like Manistee share the shore line of beautiful Lake Michigan.

I will end with a quote from Erin Kilpatrick, Planner from Williams & Works Inc, taken from the Planning & Zoning News, in November 2002 and I quote: " Air pollution remains a significant concern with coal-fired generating facilities, even though contemporary plants that burn low sulfur coal are far less a threat than older plants. Nevertheless, such facilities should not be sited near planned or existing residential areas, and special concern should be taken to avoiding areas that already have a significant air pollution problem" This proposed facility would be in a residential area and we already, although unmonitored, have poor air quality.

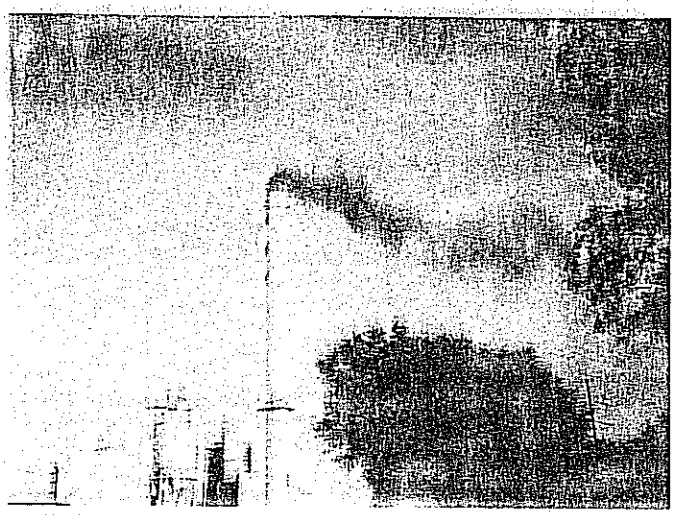
I have included pictures with this statement for your review that gives visual proof that our air is already being compromised.

Thank you for you time and consideration.

Shirley Skiera

(Attachment #9)

Filer City TES Plant



2001

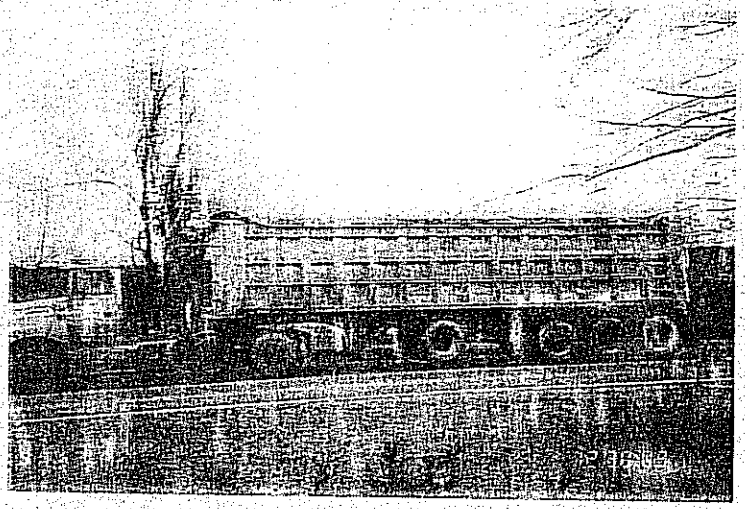
PERMITTED EMISSIONS

"The permittee shall provide notice of an abnormal condition, start-up, shutdown, or malfunction that results in emissions of a hazardous or toxic air pollutant which continues for more than one hour in excess of any applicable standard or limitation or emissions of any air contaminant continuing for more than two hours in excess of an applicable standard or limitation, as required in R336.1912....not later than two business days after...." #26 of Renewable Operating Permit T.E.S. Filer City Station Permit Number 199600181 - 2002

(Attachment #9)

Genoa Area

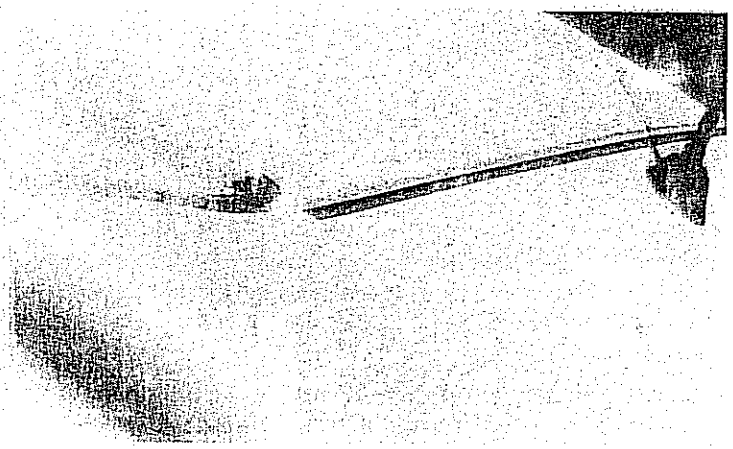
smoggy like conditions

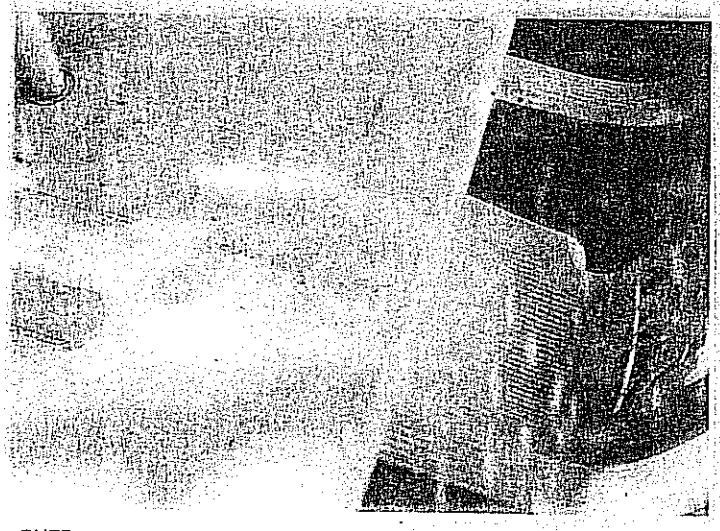


Trucks carrying ash
30 - 40 per day ?

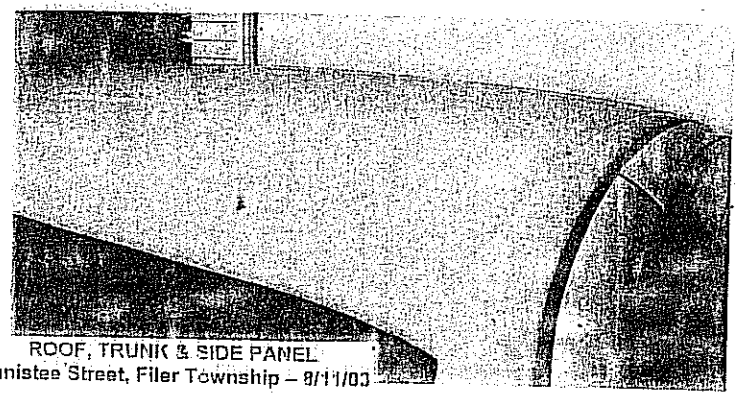
(Attachment #9)

OVERNIGHT COAL DUST
OAK HILL, FILER TOWNSHIP
Up to one mile from T.E.S. Filer City Mill

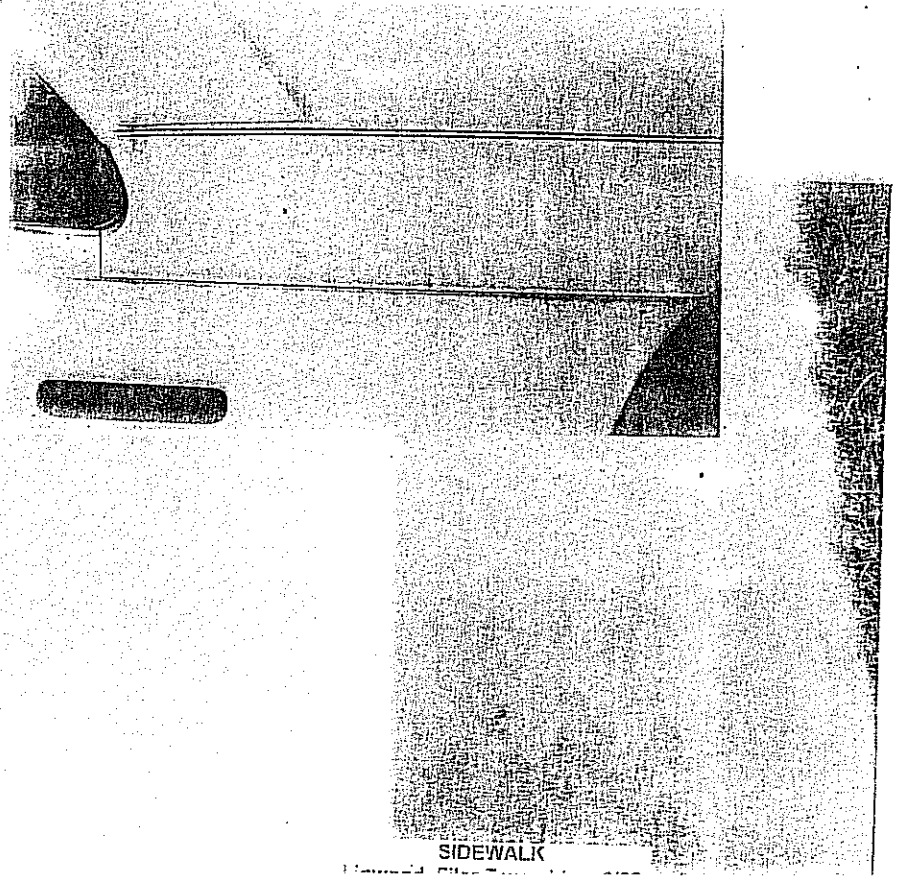




OUTDOOR TABLE AND CHAIR
25th Street, Filer Township – 9/16/03



ROOF, TRUNK & SIDE PANEL
Manistee Street, Filer Township – 9/11/03



SIDEWALK

(Attachment #9)

Hello,

My name is Ruth Pratt. My husband Dave and I and our five children were transferred here 12 years ago when the prison opened up. We bought a large Victorian home on 463 fourth street and have made Manistee our home. Maybe some of you have been to our home we were on the home of tours in the summer 0f 2002. We have taken great pride on fixing up our home and have worked many long and hard hours on community and school causes.

I am opposed to the proposed coal plant coming in to our town. My sister and her family live in Litchfield Michigan. There is a Northern lights plant in her area. I have seen the tower that predominates there once farming town. I have experienced the ash fall out and seen the dust that goes through their town. Believe me it is not a pretty sight. I can not even believe that Manistee would even remotely consider having such a plant in our town.

We have a beautiful town and a wonderful area to raise a family. And I am not opposed to jobs for people. However I am apposed to 40- to 60 jobs for people when so very many people, wildlife and the water around us will pay such a high price. The prison did not come to this area with open arms from everyone. Neither did the casino. However when you consider the amount of people that the prison and the casino employs the 40 to 60 jobs that Tondue of Texas is offering is not even a drop in the bucket. Even though the prison and the casino were controversial to some people they came and offered great employment to our citizens without all the harmful effects that this coal plant will give to us all.

I would like you to think about this, if the coal plant comes I will ask my husband to put in for a transfer to another area. I do not want my children being exposed to this kind of a health risk. Do you think people are going to bring there families here to live, are people going to want to

retire in an area with a coal plant in town? Maybe you should start to consider what you will loose if you let this happen. It might very well be far more that 40 to 60 jobs. You may very well turn Manistee into an area where no one wants to live and raise a health family, or an area where no tourist would even want to visit.

It is for this reason that I am requesting that you deny this application. You were put here for the people and by the people and I think you would have to be ~~deft~~ deaf, dumb and blind to think that this is what the people of Manistee or our surrounding areas want.

(Attachment #11)

COMMENTS TO THE MANISTEE PLANNING COMMISSION ON THE PROPOSED ZONING OF A NEW 425 MW COAL-FIRED POWER PLANT

BY

David L. Gard, M.B.A., M.S.
Michigan Environmental Council

February 19, 2004

Members of the Commission:

Thank you for the opportunity to submit comments regarding the proposed Northern Lights Project (NPL). The Michigan Environmental Council, on behalf of over 200,000 members statewide, is keenly interested in this issue. Construction and operation of a 425 MW power plant would pose a serious risk to public health, water quality and the unique character of an area in Michigan known for its natural beauty and outdoor heritage. We would ask the Planning Commission to carefully weigh each of the following concerns.

Mercury Emissions

The NLP power plant would add a major new source of heavy metal pollution including mercury, a powerful neurotoxin. When the elemental form of mercury is deposited in a lake or stream and consumed by fish and other wildlife, it becomes an organic compound. The most common and dangerous form of organic mercury is methylmercury, which reaches the brain through the bloodstream and can affect the fetuses of pregnant women. At high doses, infants may suffer cerebral palsy, mental retardation, vision loss and arrested development. Adults with mercury in their bodies can experience neurological disturbances and liver degeneration. We understand that up to 420 lbs. of mercury could be released annually from the new facility. To put this in context, only 1/70th of a teaspoon of mercury will contaminate a 25-acre lake to the point where fish are unsafe to eat!

A recent study by the Florida Department of Environmental Protection and the U.S. EPA demonstrated a positive relationship between reduced atmospheric mercury deposition and concentrations of mercury in game fish such as largemouth bass. **So, despite a reasonable amount of scientific uncertainty, it was shown that sustained reductions of mercury loading can lead to significant improvements in the quality of local water bodies. The implication is clear for lakes around Manistee, all of which carry fish advisories for mercury poisoning: operating a 425 MW coal-fired power plant near downtown Manistee could threaten the health of people and wildlife living nearby.** Some of the notable water bodies in and around Manistee County are:

Manistee County: *Manistee Lake, Bear Lake, Tippy Dam Pond, Manistee River*

Benzie County: *Crystal Lake, Lake Ann, Platte Lake*

Grand Traverse County: *Duck Lake, Fife Lake, Green Lake, Long Lake, Silver Lake, Spider Lake*

Wexford County: *Lake Mitchell*

Lake County: *Big Star Lake, Wolf Lake*

Mason County: *Bass Lake, Hamlin Lake, Long Lake, Round Lake, Big Sable River, Pere Marquette River*

Given the economic, cultural and historical significance of these unique natural features, the Planning Commission should carefully consider whether to add further mercury loading to these watersheds.

Ozone and Particulate Pollution

The NLP project would add a significant source of nitrogen oxides (precursors to ground-level ozone and smog) and sulfur dioxide (a leading contributor to particulate pollution and acid rain) to the Manistee area.

Nitrogen Oxides (NOx)

On hot summer days, nitrogen oxides react with other chemicals in sunlight to form ground-level ozone. Health impacts near emissions sources include wheezing, coughing and increased asthma attacks. Children are particularly affected because they breathe more air relative to their body volume, their lung tissues are not yet fully developed and they spend more time outdoors than most adults.

In the past three years, counties along Lake Michigan with air quality monitors (i.e., Benzie, Mason, Muskegon, Ottawa, Allegan and Berrien) registered a total of 35 days during which eight-hour ozone levels were expected to exceed 0.08 parts per million. Because of poor air quality, the EPA will soon designate each of these counties as nonattainment for the new 8-Hour Ozone Standard. It is generally accepted that Manistee County would be in nonattainment, too, were an official air quality monitor located within its borders. Table 1 provides data on respiratory disease rates among at-risk groups in the two nonattainment lakeshore counties that border Manistee County. Particularly noteworthy is the childhood asthma rate over 6% for both counties.

Table 1. Respiratory Disease in At-risk Populations

County	Total Population	14 & Under	65 & Over	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema
BENZIE	15,998	3,108	2,803	207	1,082	601	239
MASON	28,274	5,559	4,748	379	1,896	1,047	411

Source: American Lung Association, *State of the Air 2003*, http://lungaction.org/reports/stateofthealr2003.html

While some ozone pollution in the region does come from sources on the other side of Lake Michigan, adding a 425 MW coal-fired power plant in Manistee would only exacerbate the local summertime air quality problem.

Sulfur Dioxide (SO2)

Another harmful pollutant from coal-fired power plants is sulfur dioxide. The hospitalizations and deaths caused by the great 1952 London Fog and events in Donora, Pennsylvania were the first indicators of a relationship between sulfur dioxide, sulfate particulate matter and human health. Numerous studies link sulfate particulates with bronchial reactions, reduced lung

function and premature death. Children and adults with asthma are at increased risk from exposure. In its gaseous form, sulfur dioxide can directly threaten communities in close proximity to power plant smokestacks.

In addition to the costs of healthcare and human suffering, ozone and particulate pollution jeopardize an economic sector of great importance to West Michigan – outdoor recreation and tourism. Unhealthy air forces people to limit outdoor activities during prime travel months in the summer. If regional air quality does not improve, it could be a significant drag on this vital industry. Furthermore, the negative health and economic impacts could affect neighboring and downstream communities and counties. In light of this, has the Manistee Planning Commission been completely forthcoming about the NLP proposal to its regional partners?

Potential Environmental Impacts

While Michigan law does not require an Environmental Assessment (EA), the Planning Commission should insist on a serious and comprehensive study into the human health and ecological impacts of such a major industrial project as a coal-fired power plant. Unfortunately, neither the Developer's simplistic 13-page EA document (submitted December 17, 2003) nor subsequent clarifying comments (submitted January 22, 2003) adequately address the Planning Commission's original questions.

Responses to these questions tend to be overly brief, vague or misleading. Weak assurances such as "in accordance with applicable Federal, State and Local regulations" are repeated throughout and demonstrate a lack of diligence in providing important detailed information. One cannot help but imagine a subsequent lack of concern for the ecological integrity of the Manistee region. In particular, the following points under the original questions need to be fully addressed:

Question 1: *Overall Description of the Site*

- The actual destination of all potentially hazardous construction debris was not given.
- Developer: "Animal life is transitory, if any exists at all." This statement indicates that little effort was made to understand the status and fate of wildlife at the site.
- The map supposedly showing topography and drainage patterns lacks sufficient detail. How will drainage and runoff be treated? What chemicals will be used to do this?
- Although specifically requested, little information was provided about the depth of onsite wells. Also, what is the nature of the so-called Superfund well?

Question 2: *Asbestos Abatement*

- Who is the designated asbestos contractor? Is this person properly licensed and qualified?

Question 3: *Existence Contamination at the Site*

- Developer: "Numerous and specific environmental conditions do exist." What does this statement mean exactly, and what is the nature of these existing conditions?

Question 4: *Management of Existing Contamination*

- No explanation was provided as to how existing contamination will be handled during construction. Nearby residents should be fully aware of potential hazards.

Question 5: *Coastal and Riparian Impacts*

- Developer: "the water's edge will be improved..." What is the basis for this claim, and how does the developer intend to accomplish the improvement?"

Question 6: *Farmland Impacts*

- Developer: "No farmland will be affected due to construction of Northern Lights Project." Could any farmland be potentially affected during long-term facility operations?

Question 7: *Flood Plain Activities*

- Will any onsite water treatment infrastructure be located in the identified flood plains?

Question 9: *Historical Significance*

- The inquiry into historical significance should be expanded to include cultural and recreational significance of the site and surrounding areas. How will the asset of Manistee's visual appearance be affected by a new smokestack, industrial buildings and large coal pile?

Question 10: *Emissions and Air Quality*

- Developer: "We believe that these emissions will result in no significant deterioration of the air quality in Manistee County as defined by state and federal regulations." How would the addition of a 425 MW power plant in Manistee affect implementation of the upcoming 8-Hour Ozone Rule in neighboring Benzie and Mason Counties? Have appropriate officials in those counties been duly notified by the Planning Commission?
- **While the developer claims that the plant would comply with federal mercury regulations, many experts believe the current EPA proposal to regulate mercury from power plants is inadequate to protect human health. Furthermore, the proposed plant does not reflect state-of-the-art mercury control technology.**

Question 11: *Hazardous Waste Storage*

- Despite probable on-site generation, storage and use of large quantities of ammonia, nothing was mentioned about managing risks of leaks and explosions. What is the emergency plan for the surrounding community in such events? Are local firefighters and other emergency responders properly trained and equipped? If not, what additional expenses are required?

Question 12: *Water Discharges and Cooling Water*

- If the combined stream of cooling water blowdown, process wastewater and coal pile runoff is sent offsite as suggested, can the city's wastewater treatment infrastructure handle the additional volume? Can it detect, isolate and capture carcinogens and toxics generated from plant operations? If not, what is the cost of upgrading these municipal facilities?
- The discussion of impacts to Manistee Lake from massive cooling water uptake and discharge was not sufficiently detailed.

Finally, the landmark Michigan Environmental Protection Act (MEPA), PA 451, applies to any activity which "...has, or is likely to pollute, impair or destroy the air, water or other natural resources or the public trust therein..." A 425 MW coal-fired power plant fits this description in spades. **MEPA requires that all feasible and prudent alternatives to such a project must be fully considered before it may proceed. This has not yet been done in the case of NPL. A number of options should be evaluated, not only to investigate other sources of new electricity generation (i.e., energy efficiency and renewable power), but also to identify alternative visions for developing the NPL site (e.g., light manufacturing or commercial projects).**

(Attachment #11)

Economic Considerations

The Michigan Environmental Council seriously questions the need for new generating capacity in Michigan. Furthermore, it appears that none of the NLP customers would be local to Manistee. They are electricity consumers located elsewhere who do not want a power plant nearby. Surely Manistee – and the state of Michigan – would be much better served by exploring alternatives to an unnecessary coal-fired power plant.

One alternative is renewable power such as wind power and biomass. Both of these sources can deliver significant economic benefits to farmers and rural communities. Michigan should also fully exploit energy efficiency, which represents a potential business boon to entrepreneurs who produce and install energy-efficient products and services. At 1.5–3.0 cents/kWh, energy efficiency is the cheapest source of new power. It is also enjoys the most rapid deployment. By investing in homegrown energy alternatives such as renewable power and efficiency, Michigan could begin to offset its heavy reliance on coal, a resource that must be purchased entirely from out-of-state sources.

The issue of local employment should be carefully considered. A new coal-fired power plant would be highly automated, which means relatively few jobs for this large financial investment. Most of the jobs associated with NLP would be front-loaded during construction and would disappear when workers move on to projects in other communities. There are many other development options for such prime lakefront property with rail and water access that would bring many more jobs – and a better quality of life – than a power plant.

This proposal's negative impact on the tourism industry around Manistee should be fully understood. Providing services related to outdoor recreation is an important part of the area's economic, cultural and historical heritage. A 425 MW coal-fired power plant would decrease local air quality, emit more mercury into surrounding lakes and streams, and damage the visual beauty that characterizes Manistee's lakeshore.

Opportunity for Public Input

Public access to the policy-making process is critical when deciding whether to site and build a coal-fired power plant. Therefore, we are concerned that some citizens in your community feel their views have been discounted in this important decision. Specifically, I draw your attention to the following complaints:

- Limited time appears to have been given to substantive public debate. Only one public hearing was initially scheduled to decide the special use permit. Meanwhile, the Developer's perception that the people of Manistee are "supportive" of the project illustrates that those who are legitimately opposed have not been fully heard. More time should be devoted to making sure this happens, and time pressure should not be a factor in making this decision.
- Newspaper quotes from the city manager and some Planning Commissioners indicating strong support of the project appeared prior to the November public hearing. It is puzzling that such conclusions could have been reached by public officials before all of their constituents had been fully heard.

- Closed meetings between the city manager and the Developer to negotiate a "community fee" in lieu of taxes has made some citizens wonder if their financial interests are being fully represented. It is entirely appropriate to give tax-paying citizens access to these proceedings before any decisions are made regarding public finances.

In conclusion, we thank you again for the opportunity to share these concerns before the Commission. Your decision regarding the NLP proposal is momentous not just for the citizens of Manistee, but also for the State of Michigan. Therefore, the Michigan Environmental Council will continue to follow this issue with great interest. Please do not hesitate to contact our organization if you require additional information.

(Attachment #11)

David Gard is a Policy Specialist at the Michigan Environmental Council. He advocates for state and federal strategies that promote energy efficiency, renewable power, and responsible pollution controls. David holds a joint MBA and MS in Environmental Policy from the University of Michigan's Corporate Environmental Management Program. Previously, he worked as an engineer designing material handling systems, and served in the U.S. Navy.

(Attachment #11)

MICHIGAN ENVIRONMENTAL COUNCIL

The Michigan Environmental Council (MEC) provides a collective voice for the environment at the local, state and federal levels. Working with our member groups and their collective membership of nearly 200,000 residents, MEC is addressing the primary assaults on Michigan's environment; promoting alternatives to urban blight and suburban sprawl; advocating for a sustainable environment and economy; protecting Michigan's water legacy; promoting cleaner energy; and working to diminish environmental impacts on children's health.

Since our inception in 1980, MEC has been responsible for countless victories for our environment. Join us in the fight. You can make a difference with MEC!

LAND STEWARDSHIP

We support policies that foster a new approach to Michigan's land resources. This approach promotes sustained, healthy ecosystems and biological diversity. It will also reverse trends that now favor urban decay and sprawl and the loss of open spaces, while providing momentum for revitalization of cities, the protection of natural features and land dependent economies (farming, forestry and recreation), and the establishment of new patterns of development as alternatives to low density, land consumptive sprawl. In 2002 we seek a Michigan Smart Growth program which includes:

* Statewide land use goals and coordinated planning among all levels of government;

* A full complement of growth management and urban revitalization tools for local governments including transfer of development rights (TDR), purchase of development rights (PDR), urban growth boundaries, Urban Service Districts, geographic information systems regional revenue sharing and a streamlined tax reversion process to promote urban redevelopment;

* A framework of state programs (tax incentives, grants, infrastructure investment, etc.) to encourage the use of the tools or plan in accordance with the goals;

* Shifts in transportation funding priorities to maintain Michigan's existing road system instead of building new highways and paving more rural roads, and to provide greater emphasis on public transportation;

* Economic impact statements that will provide information needed to stop public subsidies for sprawl; and

* New models of cooperation and planning based on local demonstration projects undertaken by our members.

CHILDREN'S HEALTH

We favor state laws and policies at all levels of government that protect children from toxic pollutants and other environmental risks. Children's unique metabolism, sensitivity and behavior place them at special risk of illness and physical and mental impairments from pollution. Low-income and minority children are particularly at risk because they tend to live in more polluted conditions. In 2002 we seek:

* State laws that base pollution standards on protection of children, not adults;

(Attachment #11)

* An aggressive state program to prevent environmental lead poisoning of children;

* Public health information that enables parents and guardians to protect their children from risks through consumption of contaminated sportfish, inhalation of air fouled by smog and soot, sewage at public beaches, and exposure to toxic substances in consumer products,

* Changes in DEQ practice to consider the cumulative effects of all air pollution sources, not just a single proposed new source, on the health of children and other sensitive populations;

* Promulgation of rules required by Michigan's Safe Drinking Water Act to provide timely public health advice on the effect of drinking water contaminants on the health of children and other sensitive populations; and

* An overall state emphasis on prevention rather than control of pollution, in order to avoid unnecessary risk to children.

SUSTAINABLE ENVIRONMENT, SUSTAINABLE ECONOMY

We support policies and practices that contribute to a sustainable economy and a sustainable environment. Policies that promote clean air, clean water, and recreational resources improve quality of life and make Michigan and its communities both more attractive and more profitable. In 2002 we seek:

* To assure that electric industry restructuring provides incentives for cleaner air and new green industries by funding energy efficiency and wind, solar and other clean power options, while decreasing the amount of electricity generated by burning dirty coal;

* To encourage the auto industry, labor, and vehicle buyers to support innovative automobile technology that will protect Michigan's leading industry while helping curb emissions that jeopardize human health and foster global warming;

* Prudent investments in pollution prevention programs that enable businesses to become more competitive and cleaner at the same time;

* Passage of legislation creating a heritage program license plate to provide funding for natural heritage programs that educate citizens about, and assure protection of, Michigan's legacy of diverse wildlife and landscapes; and

* To provide state tax incentives for environmentally progressive actions by corporations and individuals, including the reduction of toxic chemical use, full cleanup of contaminated sites, manufacture of high-efficiency alternative technology automobiles, and the manufacture of products from recycled materials.

OPEN GOVERNMENT

Once the country's leader in both environmental protection and citizen participation in decision making, Michigan now lags behind the nation in both. Too many decisions affecting public health and the environment are now made behind closed doors to benefit special interests rather than the public as a whole. In 2002 we seek:

* Reform of the DEQ's decision making process to promote environmental justice for all citizens through a fair, open public participation process; Creation of an Environmental Quality Commission of citizens to oversee the DEQ, which was itself created without citizen comment or participation;

* Legislation to protect the public's right to know and understand the condition of the environment through collection and reporting of data on our air, water and land quality;

* Reinstatement of the state's toxic chemicals public reporting program, which was unilaterally suspended by the DEQ in 1995; and

* Careful watch dogging of spending priorities for the $675 million voter-approved 1998 environmental bond issue to assure that promises about the use of the money that were made to taxpayers are kept.

PROTECTING OUR WATER

No resource defines Michigan like water. Our state is surrounded by four of the world's largest lakes and the Great Lakes hold 80% of North America's surface freshwater; we have 11,000 inland lakes, 5.5 million acres of wetlands and 3,288 miles of Great Lakes shoreline as well as abundant, high quality groundwater. Michigan's water legacy is at risk from current policies which promote degradation and wetland destruction. In 2002 we seek:

* Spending of $90 million in water quality funding from the 1998 bond to protect inland lakes, clean up Lake St.Clair, and keep the state's promises to make Lake Superior a water model for the world;

* Reform of the DEQ's wetland program, which is troubled by allegations of bias toward wetland destruction, to assure protection of this critical resource;

* Enactment of legislation to limit water withdrawals from rivers and from groundwater in order to protect high quality rivers and groundwater supplies;

* Reform of the state's policies toward intensive agricultural facilities to protect rivers, lakes and public health from severe runoff; and

* Strong policies to prevent new or increased diversions or commercial sales of Great Lakes water.

Michigan Environmental Council
119 Pere Marquette Drive, Suite 2A
Lansing, Michigan 48912
(517) 487-9539
(517) 487-9541 FAX
mec@voyager.net

(Attachment #12)

Statement of National Wildlife Federation to Manistee City Planning Commission Concerning Consideration of a Special Use Permit for Tondu Corporation for a Coal-Fired Power Plant
February 19, 2004

On behalf of the National Wildlife Federation (NWF) and its members and supporters, I am pleased to have the opportunity to address the issue of a proposed coal-fired power plant for Manistee that is before the City Planning Commission. NWF is a national conservation education and advocacy organization with over four million members and supporters around the country.

Through our Great Lakes field office in Ann Arbor, and working with a number of other groups, including our state affiliate, the Michigan United Conservation Clubs, we have been actively involved in efforts to reduce and virtually eliminate the releases of persistent, bioaccumulative, toxic (PBT) chemicals – including mercury – in the Great Lakes region.

Mercury contamination of the environment is a persistent problem that is drawing increasing attention from scientists, policy makers, and the general public. Based on the most recent data on blood mercury levels obtained by the Centers for Disease Control and Prevention, the U.S. Environmental Protection Agency (EPA) recently estimated that up to 630,000 newborns a year in the U.S. are at risk for neurodevelopmental problems (including in the areas of memory, attention, and language development) due to mercury exposure they receive in the womb. This figure *doubles* earlier estimates. The study found that 1 in 6 women of childbearing age has blood mercury levels exceeding what EPA considers safe for fetuses - that means approximately 20,000 babies are born every year in Michigan at risk.

Mercury poisoning can permanently harm an unborn baby or young child. Mercury in pregnant women can disrupt brain development in their babies. Among the harmful, and possibly permanent, health affects associated with mercury exposure are delays in walking, talking, and developing fine motor skills, attention deficit, poor memory, an inability to process and recall information. Very high exposures to mercury can cause mental retardation. Research shows the level of mercury in the umbilical cord is 1.7 times higher on average than that in the mother's overall blood.

Mercury poisoning affects adults, too. A study of middle aged men published in 2002 in the *New England Journal of Medicine* found that mercury exposure may diminish the cardiovascular benefits of eating fish. Another recent study showed links between high blood mercury levels and infertility in both men and women.

These widespread public health risks are reflected in the fact that 43 states have issued fish consumption advisories due to mercury contamination. Like most other states in the region, Michigan has a statewide mercury advisory in place. This advisory recommends that both the general population and women of childbearing age and young children limit their consumption of 7 species from all inland lakes, including any size of largemouth and smallmouth bass, walleye, and northern pike because of mercury contamination. In addition, fish in specific water bodies in the region have more specific advisories due to mercury contamination, including

walleye in Lake Michigan, black crappie, bass and walleye in Manistee Lake, bass and northern pike in Portage Lake, northern pike in Pere Marquette Lake, and brown trout in the Pere Marquette River.

Mercury contamination of fish has potential economic repercussions as well – according to the U.S. Fish and Wildlife Service, over 1.3 million anglers fished in the state in 2001, and fishing expenditures amount to over $800 million dollars annually.

In addition to threats to people, methylmercury poses threats to wildlife. Some wildlife susceptible to the reproductive and developmental effects of mercury include loons, river otters, and mink.

Although mercury is a naturally occurring element, research has shown that levels in the environment have climbed as much as five-fold in the industrial era. A number of human activities, including mining, burning fossil fuels, burning mercury-bearing waste, and some chemical production processes result in releases of large amounts of mercury to the environment. Although we are generally concerned with mercury that winds up in fish, the principle source of that mercury is mercury released to the air. Airborne mercury is deposited to watersheds (e.g. through rain or snow or dry deposition), in the sediments of lakes or rivers, it is then converted to methylmercury, a form that much more readily bioaccumulates in the food chain. In this way, predator fish such as walleye can have mercury concentrations over one million times higher than the surrounding water. So, for most water bodies, addressing the mercury contamination problem means dealing with sources that release mercury to the air.

Based on the most recent EPA data, in 1999 coal-fired power plants accounted for 42 percent of mercury air emissions in the U.S. The proportions in the Great Lakes region are even higher: these plants accounted for over one-half the mercury emissions in the eight Great Lakes states in 1999, and 60 percent of the emissions in Michigan.

Once mercury is released to the air, it can be transported and deposited to watersheds both near and far, both through rain and snow, with dust particles, and as direct deposition of gases. Computer modeling has indicated that over 40 percent of the mercury falling on Lake Michigan comes from sources within 60 miles of the lake. Recent unpublished EPA data indicates that nearly 80 percent of the mercury falling in southeastern Michigan comes from Michigan sources.

Precipitation data collected through research at the University of Michigan indicated generally higher concentrations of mercury in the southern peninsula than in Eagle Harbor in the U.P., likely reflecting industrial sources. Limited sampling of precipitation coordinated by NWF in 2002-03 showed generally higher concentrations in the more industrial southeastern part of the state, but average levels in Muskegon and Traverse City were still between 2.4 and 4.5 times the standard EPA established for surface waters in the Great Lakes. This indicates that the rain on average in the region is this much more contaminated than what the surface waters should be in order to protect people from mercury that builds up in fish tissue.

So how does the proposed coal-fired power plant for Manistee fit in this picture? The proposed plant would add to the ongoing mercury contamination problem in Michigan and the region. Similar sized plants operating in Michigan currently emit in the range of 100 – 200 lbs. of mercury annually. Even if mercury emissions from this plant were approximately 80 lbs. annually, this would still represent one of the top 15-20 sources in the state. While this may not seem like much, the total amount of mercury in a 25-acre Michigan lake under a mercury advisory would fit in one fever thermometer, so releases of this magnitude are very important.

Nearly every other major mercury emitting sector either has rules in place or pending to address mercury emissions. The application for the proposed coal plant comes at a time of increased activities at state, regional and national levels to address mercury emissions from coal-fired power plants. The Department of Environmental Quality (DEQ) has an ongoing mercury utility workgroup, made up of utility representatives (including Tondu Corporation), environmental groups and others, developing recommendations to Governor Granholm on how to significantly reduce and ultimately phase out mercury emissions from Michigan's coal-fired utilities. In addition, last December, the EPA released regulatory options for controlling mercury at coal-fired power plants. At a federal level, NWF and many others are calling for a strong regulatory standard as required under section 112 of the Clean Air Act.

Although technologies are available to dramatically reduce mercury emissions from coal-fired power plants, NWF is concerned that with the current uncertainties in the development of federal regulatory requirements, a plant-specific standard for the Manistee plant may not be sufficiently strong to reduce mercury releases in the state and help restore our mercury polluted waters. More broadly, because of the ongoing need to reduce mercury emissions from this sector as a whole, a decision to build a new coal plant will not be consistent with a longer term goal of reducing and eliminating mercury emissions in the state.

In addition to the problems with mercury, the proposed plant would also add another source of sulfur dioxide, nitrogen oxides and other pollutants to our air, contributing to ongoing smog and particulate problems in the southern part of the state, and acid deposition in regions downwind. In addition, the plant would add millions of tons of carbon dioxide emissions annually to the air, at a time when even the U.S. Defense Department is sounding an alarm about the risks from global warming.

For all these reasons, NWF believes Michigan utilities should be looking to cleaner energy sources, including wind, biomass, and solar, as well as much more aggressive efforts to increase conservation and improve efficiency in our energy use. These measures have great potential in Michigan. For example, the American Wind Energy Association ranked the state 14th highest in the lower 48 states for wind energy potential, yet in 2001, installed utility-scale turbines were tapping less than one one-hundredth of a percent of the state's wind energy potential.

Concerning the proposed Manistee plant (as with any new coal plants in the region), we would urge the Planning Commission to assess whether there is real demand for more electricity generation in the state, and whether this demand could be met by a comparable investment in promotion of energy efficiency and conservation measures or by renewable energy generation projects. This could include consideration of wind or other alternatives in the region. We would

(Attachment #12)

also urge the commission to consider alternative development scenarios (e.g. in manufacturing or tourism-related industries) could promote the local economy, and generate greater numbers of jobs, without degrading the environment.

Finally, based on our understanding, the plant would apparently not be generating electricity for local use, nor would it be taxable if operated by the municipality. An additional concern specific to this plant is that the municipality, rather than the developer, is likely to have to deal with any long-term environmental, operational or other issues involving the plant. Thus, in addition to our environmental and public health concerns, we question local benefits of this project.

In conclusion, based on the considerations above, the National Wildlife Federation is very concerned about the proposed Manistee coal-fired power plant. We believe Michigan utilities should be taking steps now to move us to a cleaner energy future, and we encourage the Planning Commission to consider these important issues in making your decision.

Thank you.

Nisha Kapadia
Organizing Intern

for

Michael W. Murray
Staff Scientist

and

Zoe Lipman
Program Manager, Clean the Rain

National Wildlife Federation Great Lakes Office
213 W. Liberty, Suite 200
Ann Arbor, MI 48104
734-769-3351

February 18, 2004

Attention:ALL BOARD MEMBERS

Dear Manistee City Planning Commission

Subject:Tondu Coal Plant and Special Use Permit

Board members, this is a letter urging you to act in good conscience and reject the proposed Tondu coal plant. We believe that it is your moral and ethical duty to reject this proposal on the grounds that it will pollute and contaminate the ground, air, and water of Manistee, and surrounding areas. Your decision will affect the future of your city, and the entire region.

THE PROPOSED TONDU COAL PLANT IS NOT REASONABLE

IT *WILL* ENDANGER THE HEALTH, SAFETY AND WELFARE OF THE COMMUNITY

VOTE NO!!

Mr. Erik Kinzinger and Mrs. Julie Laporte

4281 Joyfield Road

Arcadia, MI 49613

Anna Grabowski
10040 Alkire Rd.
Bear Lake MI
49614

~~Anna Grabowski~~ Thank you for giving me this opportunity to speak. I would like to give you a few reasons to deny the Special use Permit.

1. The sediments that have Settled on the bottom of manistee Lake are contaminated with Toxic Pollutants. If Tonducorp. were to drege the bottom of the Lake in order that their coal boats ~~could~~ could come through, it would cause these Sediments to rise and pollate manistee Lake. This would be Hazordatous to our Citizens health Safety and welfare.

2. Tondu corp. has told us that there will be a unenclosed Coal pile. Such coal Piles have fugative dust which can aggrevate respitory Problems in Surrounding neighborhoods.

For These reasons, the Special use Permit Standard is not fulfilled and I am requesting you deny this application.

Thank you for listning to My Comments and concerns.
Anna Grabowski

(Attachment #14)

MORTON SALT

A Rohm and Haas Company

February 19, 2004

CITY
Manistee ~~County~~ Planning Commission
~~Manistee County Courthouse~~
2/19/04 ~~415 Third Street~~
Manistee, MI 49660

Dear Planning Commission:

Morton Salt, a Rohm and Haas Company, appreciates this opportunity to make public comment regarding the proposed power plant by the Manistee Salt Works Development Corporation. Morton Salt employs 180 people in Manistee. The Manistee facility has been in operation since 1922.

Morton Salt strongly urges the Planning Commission to grant the Special Use permit for the construction of the proposed power plant at the current General Chemical site. This support is based on the following facts:

1. The proposed plant will strongly contribute to the local economy. While there has been some debate over the tax status of the plant, it is certain that an equitable arrangement on either taxes or a use fee can be worked out between the City and the proposed plant. Beyond taxes however, the plant will provide between 50 – 60 new jobs according to the local press. Industrial workers around Manistee Lake currently earn roughly $20/hour with a full list of benefits as compared to tourism jobs which pay roughly $8/hour with little to no benefits.

2. The plant will be operated in an environmentally responsible manner by using Best Available Control Technology (BACT) for pollution control in general, and employing even more strict Maximum Available Control Technology (MACT) standards for mercury emissions in specific. These standards have been appropriately set by qualified personnel of the United States Environmental Protection Agency (USEPA) as well as the Michigan Department of Environmental Quality (MDEQ) for the protection of the environment and the health of the surrounding communities. The proposed plant must abide by these standards and will be held accountable under law by their Clean Air Act Amendment, Title V Renewable Operating Permit.

180 Sixth Street • Manistee, MI 49660-3000 • 231/723-2561 • Fax 231/723-7301

(Attachment #15)

3. The new plant will spend several million dollars in general site clean up and improvements. This will not occur if the site remains vacant.

4. The site is currently zoned for industrial use; the use of the property for a power plant is consistent with this zoning designation.

The City of Manistee has been very successful in recent years in pursuing a diverse economy – an economy that can grow in both industry and tourism. In fact, Manistee already has a growing tourism economy in the presence of a strong industrial base. Approving the Special Use Permit will add to the local economy and will greatly improve an existing and essentially abandoned industrial site.

Sincerely,

Phillip W. Carleton

Phillip W. Carleton
Facility Manager
Morton Salt
a Rohm and Haas Company

My name is Gary VanHouten and I live in Cadillac. I am opposed to the Tondu Northern Lights Power Plant project. If I lived right here in Manistee, from everything I've read, there would be a whole host of reasons to reject this boondoggle, but, seeing I don't live here I won't comment on those.
I would like to say, however, that our desire to make frequent visits over here to Manistee the Beautiful to see the lake, or to go fishing, or visit the festivals taking place, would be diminished if this blemish to the beautiful surroundings is allowed to become a reality.

As someone who is living 40-some miles downwind, however, I am very concerned that this will impact my community's health and welfare on a daily basis.

I find it very interesting that the plans for this project include a 400 foot high smokestack so that the pollutants will be, to quote the president of Tondu Corporation, "broadly dispersed." How does one say thank you to that.

While the discussion rages about how much tax revenue will be realized by whom, and what jobs might be created, etcetera, what I know is that those of us living 50 miles downwind will get nothing except our share of the "broadly dispersed pollutants."

And these will be what are left over from what doesn't fall on the lakes and streams and plants and animals in the Manistee National Forest. I ask that you please take all of us into consideration when making your decision. Thank you.

Gary VanHouten
1822 Shadyside Dr.
Cadillac, MI 49601

CRYSTAL LAKE ASSOCIATION
P.O. Box 89, Beulah, MI 49617-0089 ✦(231) 882-5342

February 17, 2004

City of Manistee Planning Commission
C/o City Hall
70 Maple Street
Manistee, MI 49660

Dear Members of the City of Manistee Planning Commission:

The Crystal Lake Association is a not-for-profit member organization in Benzie County whose mission is to protect and preserve Crystal Lake and its watershed now and for future generations. Our organization represents about nine hundred and eighty individuals, family members, and businesses.

The Northern Lights Power Plant, if constructed, poses a danger to Crystal Lake because the emissions from the plant could pollute the lake's pristine waters and surrounding watershed. It is well know that coal burning power plants are the largest U.S. source of mercury air pollutants. It is also widely understood that regional emissions of mercury contribute significantly to local lakes and streams. When best available control technology (BACT) is used, emissions output can be reduced. However, the Tondu Corporation has not committed to use BACT in all aspects of plant operations. In fact, it has stated that it is merely "attempting to meet minimum standards," a requirement it must fulfill to operate at all.

Our water quality team has tracked heavy metals in Crystal Lake for years. Test results from the period 1997-1998 show mercury levels to be below safe standards. We cannot risk elevating those levels. Fishing is one of the primary uses residents of and visitors to Benzie County make of Crystal Lake. Increasing mercury levels in the lake would directly contradict our stated mission of protecting the lake.

Benzie County has one of the poorest air quality records in the state of Michigan. This is caused by ozone emissions from both Illinois and Wisconsin crossing Lake Michigan and getting trapped in a geographical formation that exists here along the eastern coast of Lake Michigan. Adding more noxious particulates to an already documented problem without studying other feasible alternatives is unconscionable.

CRYSTAL LAKE ASSOCIATION
P.O. Box 89, Beulah, MI 49617-0089 ✦(231) 882-5342

Finally, as far as economics are concerned, the Tondu Corporation could ultimately take from our region much more than it can ever repay. The damage to the area's people and environment in terms of health can never be justified by promises of meager local revenues and a handful of jobs that may materialize.

Please examine the questionable economics and the irrevocable damage to the environment and health of our region posed by the Northern Lights Power Plant. Join with the Crystal Lake Association and your concerned neighbors to the north, the citizens of Benzie County, to oppose the Tondu Corporation's proposed plans.

Thank you for your consideration.

Sincerely,

Ron Renner / ask

The Executive Committee
Crystal Lake Association

Febuary 12, 2004

Manistee City Planning Commission
Att: Denise Blakeslee, Secy.
P.O. Box 358
Manistee, Michigan 49660

Dear Members of the Planning Commission:

We would like to take this opportunity to thank all of you for your dedication to serving the citizens of Manistee. A very difficult task is set before you, and to date all of you have done a fine job at trying to understand the complexities of the proposed Tondu project.

The complexities of this proposed project are so vast that no one can really understand what will happen if this special use permit is approved and Tondu is given the go ahead. Below, we have listed some of the issues and questions that will be difficult to get answers to before your vote on the special use permit:

FINANCIAL ISSUES :

1. Who will eventually end up being the owner of this facility and how financially solvent are they?
2. Has the City got an agreement from the proposed operating company as to the revenues this project will produce?
3. Has the operating company guaranteed the number of jobs that will be created as well as the wage scales for these jobs?
4. What increased services will be required of the city to support the ongoing operation of this facility and what are the cost of these services.? ie. water and sewer, environmental monitoring, street and road repair, fire prevention and protection etc.
5. Has the operating company offered a bond to protect the city in case of business discontinuance or hazardous waste spills?
6. How much will this proposed plant effect the tourism industry in Manistee and how much will it cost existing businesses?
7. How much will the proposed plant detrimentally affect property values in Manistee?
8. Can we honestly expect that the proposed plant will have no detrimental effect on the growth of other business in Manistee County?

(Attachment #18)

ENVIRONMENTAL ISSUES :

1. What are the hazardous materials which will be kept on site for the operation of this facility and how will they be monitored?
2. Will the City be protected by a bond for any hazardous material spill?
3. Has the operating company guaranteed the City as to the fuel being used or will they be able to burn anything at their disposal? ie. tires, wood pulp, recycled oil
4. Can the operating company identify without a doubt the type of pollutants and quantity expelled into our air and water?
5. How will the expelled pollutants be monitored?
6. What will be the effect of these expelled pollutants along with the pollutants already identified in Manistee Lake on the wildlife and people in Manistee? ie. mercury, brine and affluent from PCA
7. How will the construction of this project disturb the hazardous materials already identified in Manistee Lake?
8 What are the noise levels to the surrounding neighborhood and will they be monitored and or controlled?
9. How will the landscape lighting effect the surrounding neighborhood?
10. Who will monitor coal pile run off into Lake Manistee?
11. What are the type and quantity of pollutants in the ash which will be dumped in our landfills?

OTHER ISSUES:

1. Will a detailed site plan be provided before voting on this proposed project as required in the special use permit application?
2. Will the proposed plant be designed to protect the health, safety and welfare of the community? This is a requirement needed "by your definition" in order to approve an application.
3. Is this special use request designed to insure that public services and facilities are capable of accommodating the increased loads caused by the approval of this application? This is an issue to be answered according to your requirements for a special use permit.
4. Will the proposed use be detrimental to the public welfare or injurious to property in the neighborhood? This is a requirement as stated in your application.

Please be assured we are not putting any blame on the Planning Commission for the above listed concerns nor the ability to have the answers to these concerns. We do believe, however, that before you approve this special use permit application all the above listed concerns need to be addressed to your satisfaction. If for any reason you cannot find the answers, the application should be turned down.

In our opinion this project presents to the entire community huge financial and environmental risks with very little reward.

Sincerely Yours,

Richard and Linda Albee
365 Lighthouse Way So.
Manistee, Michigan 49660

Cc: Mr. Fred LaPoint, President CERP
1606 Main Street
Manistee, Michigan 49660

Mitch Deisch, City Manager
City of Manistsee
P.O. Box 358
Manistee, Michigan 49660

Dave Barber, Managing Editor
Manistee News Advocate
75 Maple Street
Manistee, Michigan 49660

(Attachment #18)

February 18, 2004

John Rose
Planning Commission
City Hall
70 Maple St.
Manistee, MI 49660

Sir:

As physicians in Manistee, we share a stake in the good health and physical welfare of our patients, the citizens of this community. Hence, we view with particular concern the recent plans of the Tondu Corporation to construct a coal-fired power plant on the shores of Manistee Lake.

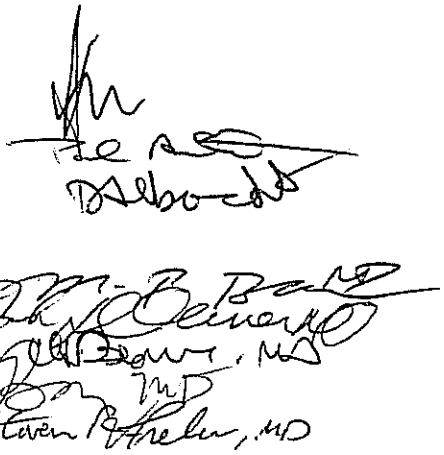
The science which documents untoward human health effects of increased production of mercury, nitrogen oxides, sulfur dioxides and ozone-depleting emissions associated with more modern power plants is admittedly sketchy. However, past environmental contaminations such as the Minamata disaster, wherein mercury discharges into the environment caused large-scale neurologic injury to residents, have shown that there is potential for peril to human health whenever industrial interests proceed unchecked.

How coal barge traffic will affect access to emergency medical care is an additional near-term issue which requires forethought, considering that ambulances and other emergency vehicles will likely be detained at raised drawbridges. Tondu's own estimate is that 130 additional freighters per year will result in such disruptions of traffic.

Such potential risks to health invite one to ask what the benefit to our community might be. That answer, ostensibly, is economic. However, given that the facility will be municipally-owned by such distant consumers as Hillsdale and Holland, taxes will not be assessed for the benefit of Manistee. The future *perception* of pollution by tourists and outdoorsmen who have been attracted to our area by clean water and air could be economically devastating to our local economy if tourists then elect to recreate elsewhere, out of eyesight of the 400 foot smokestacks which would define our skyline. Tondu's estimate of the creation of 60 jobs seems an insufficient reciprocation for the risks we are being asked to bear.

Sincerely,

Alan Fark, M.D.
Paul Antal, M.D.
Donald Albrecht, M.D.
Klaus Kutschke, M.D.
Michael Reines, M.D.
Michael Barna, M.D.
John Oliver, D.O.
Cheryl Dionne, M.D.
Robert Barry, M.D.
Steven Frelier, M.D.



(Attachment #19)

(Attachment #20)

610 Spruce St.
Manistee, Michigan 49660
February 17, 2004

Planning Commission
City of Manistee

Dear Planning Commission Members:

My name is Carol Pasco. I live at 610 Spruce Street in Manistee. Four years ago I returned to Manistee for a family reunion. Though I was born in Manistee, I had spent all of my life after the 8th grade in the downstate area of Northville/Farmington Hills where I taught for many years. When I came back I was delightfully surprised at the changes which had taken place in our city. I had remembered the heavy industrial emphasis of my childhood. Instead I found a clean, vibrant Victorian city. Manistee had taken on a whole new identity and direction. As soon as I returned downstate I began surfing the net to find out more about the "new Manistee." The Chamber of Commerce praised its beautiful white sandy beaches and the clear water of Lake Michigan rivaling the best resorts in the world (I wonder how many of those resorts have a 425 megawatt coal burning plant.) Further references were made to Manistee's uniqueness, its old fashioned hometown feeling, its life away from the brisk life of larger cities. I dreamed of walking the River Walk every day! I decided that this was indeed the place for me. Within eight months I sold my house downstate, bought a house here, and moved in. I have not had one moment of regret since I made that decision – until I learned of the efforts of Mr. Tondu of Houston Texas to bring a twenty five story coal burning energy plant with a forty story smokestack spewing out pollutants into the air and into the water and surrounded by mammoth mounds of coal. I would not have moved here had the plant already been built or had it been in the final stages of development.

I could name many more people who had similar experiences. I quote from a couple in Virginia who bought a condo in Harbor Village. "In all the promotional literature about the Victorian Port City as I contemplated purchasing a pre-retirement home some five years ago nowhere was Manistee touted as a prime industrial area. Instead Manistee was enticingly promoted as a pristine resort/tourist/retirement community. How does the proposed plant advance the dream of a reborn Manistee?" It seems that Manistee's present and future lie in a far different direction than the Northern Lights Project would take us.

I strongly oppose the Northern Lights Project and believe you should deny the permit because the project is not compatible with Manistee's Master Plan. I quote from the Master Plan:

"Achieving a balance of land use will require a recognition of changing economic and social conditions of the city, region, and the nation, with its shift toward retail and service employment and the growing need for human services. MOREOVER, MANISTEE IS EXPERIENCING A CHANGE FROM AN INDUSTRIAL COMMUNITY TO ONE STEEPED IN TOURISM AND SEASONAL RESIDENTS." (This is a direct quote from the Master Plan.)

Another section of the Master Plan states: "Among the many reasons that make Manistee a desirable place to live is because it is a clean attractive community. Small cities in particular can QUICKLY LOSE THEIR CHARACTER AND ATTRACTIVENESS IF ATTENTION IS NOT PAID TO THE PHYSICAL ENVIRONMENT." Does a 25 story building with a 40 story stack (one hundred feet higher than the Statue of Liberty) surrounded by four mammoth piles of coal fit the small town character? I don't think so.

We have a very special city with wonderful potential. Please do not take us backwards. A few years ago the city officials realized that Manistee had tremendous potential in its beaches, its trout streams, its forests, its fishing. They had the foresight and courage to change directions. A lot of city money was put into redefining Manistee. Building a huge coal-burning plant in this beautiful city will only take us in the wrong direction Your decision will go a long way toward determining what Manistee's future will be. Please do not let it be a coal-filled, pollutant spewing, mercury emitting future.

Therefore, I am opposed to the proposed coal fueled plant advanced by the Tondu Corporation of Houston, Texas. According to the Special Use Permit Standards, the proposed use must be compatible with adjacent land use and with the Master Plan. As stated previously, the Northern Lights Project is not compatible with the Master Plan. For this reason, the Special Use

Permit Standard is not fulfilled and I am requesting that you deny the application.

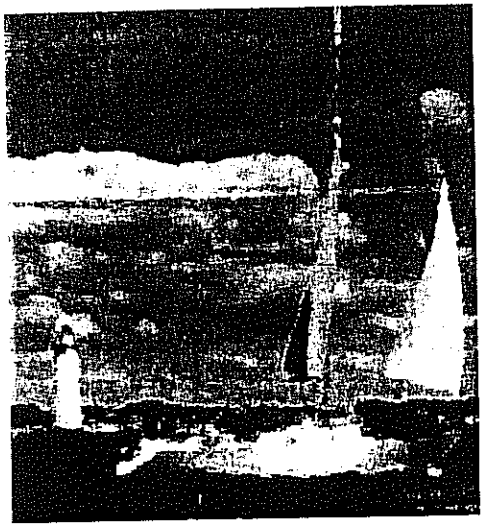
Thank you.

Sincerely,

Carol A. Pasco

(Attachment #20)

Discover Manistee County



"Community of Economic Excellence" located on the West coast of Michigan.

Historic Manistee, once the home of more millionaires per capita than any other city, was a lumbering town a hundred years ago and thrived as one of the busiest ports on the Great Lakes. The beauty of the area attracts many tourists with it's uniqueness, and old-fashioned hometown feeling. Residents choose to live here, away from the brisk life of larger cities. Manistee has much to offer out-door enthusiasts, sportsmen, fishermen, theatre buffs, antique collectors, etc. Our beautiful white sandy beaches, and the clear water of Lake Michigan can rival the best resorts in the world.

Coastline villages include Onekama, Arcadia and Bear Lake. Inland communities near smaller inland Lakes, include Copemish, Kaleva, Brethren and Wellston. Each has its own unique characteristics, but all share in offering a warm

Directory

Demographics
Quality of Life

Housing
Education
Medical
Facilities
Culture
DDA Manistee Downtown
Recreation
Churches
Transportation
Rail Service
Air Service
Camping
Accomodations
Utilities
Villages
Restaurants

Population Information

Weather

E-mail:

Back to top

Order the new "MANISTEE! COME GROW WITH US" CD-ROM for MS Windows 95/98/NT4.x complete with maps, aerial views, history, photos, land use maps.

welcome to visitor and new resident. See the Manistee Information Page for more on the Villages of Manistee County.

Manistee County is experiencing outstanding economic growth and development with millions of dollars invested in private and public projects. The new Manistee County "Tax Free" Renaissance Zone Designation by the State of Michigan, effective 1/1/97, and additional 3 years added in December 1999 by the State Legislature, lengthen the time period from 2000 to 2015. A new City Industrial Park, and land in Manistee Township is included in the Renaissance Zone. Also included are the Kaleva Industrial Park, buildings in the City of Manistee and Filer Charter Township. More information may be received by contacting the EDO Office. Back to top

Throughout Manistee County, new development can be seen. The new Little River Casino, and the new Oaks State Correctional Facility are Manistee County's largest employers. New additions are buildings and industry in the Industrial Parks, downtown Manistee building improvements and Streetscape project, new 1.5 mile long Riverwalk and Bandshell, Kaleva Water Improvement Project, an extensive Road Improvement Program on County area roads and US 31 and M 55 State Highways. Other expansion includes infrastructure for new companies in the Renaissance Zones, Industrial Parks. A Co-generation plant, four new golf courses (total of 8 courses in the County), condo/marina projects are under construction on Lake Michigan and Manistee River. A new water treatment plant, new County jail, are also major projects which have been completed. Back to top

The fine Labor/Management cooperation Manistee County has contributed to industry retention and growth. Tax Abatements have been given to local industries wishing to improve or expand their companies as incentives to new industry. Information on available buildings and industrial parks can be obtained at the EDO Office.

Main Page

All rights reserved 2003 Manistee County EDO

- **QUALITY OF LIFE** Manistee County is rich in history and natural beauty. Manistee, the Victorian Port City, with it's many Victorian buildings and homes called "Painted Ladies" is located on Lake Michigan, Manistee Lake, and the winding Manistee River. A bandshell and performing stage on the River add to the charm of the downtown area. Unique shops, rustic to luxury lodging, National Forest, excellent recreational facilities, sport fishing, lakes, rivers, museums and the Historic Ramsdell Theatre all combine to make Manistee County an exciting place to be. Tourism is a major factor in the economic profile of Manistee County. Many interesting villages and townships are located in the County including Kaleva with it's historic Bottle House Museum, Onekama located on Portage Lake, Arcadia with it's scenic views of Lake Michigan, Bear Lake, Wellston, Copemish, Brethren and many more areas in the County all have their special points of interest which will appeal to all ages. See Spirit of the Woods for Manistee County History. Back to top

EDUCATION Michigan Dept. of Education

K-12 Public and parochial schools:

(Attachment #20)

- Bear Lake Area Schools - Bear Lake Elementary, Bear Lake Middle School, Bear Lake Senior High School
- Manistee Area Public Schools Manistee High School, Manistee Middle School, John F. Kennedy Elementary School, James Madison Elementary School, Washington Elementary School, Thomas Jefferson Elementary School
- Onekama Consolidated Schools Arcadia Elementary School, Onekama Middle School, Onekama High School
- Kaleva Norman Dickson School District- Kaleva Elementary, Wellston Elementary, Brethren Middle/Senior High
- Manistee Catholic Central High School
- Manistee Trinity Lutheran K-8

Other Schools Available:

- Bear Lake N. Michigan Christian Academy
- Manistee Trinity Lutheran Nursery School
- Casman Alternative School

- Manistee Intermediate School District/Special Education, 4 Star Program, Chittenden Education Center

- West Shore Community College - Local 2 year college & Technical Schools 1-800-484-9722
  Ferris State University, closest 4 year college, Big Rapids (distance, 80 Miles)
  Back to top

HOUSING- 78% Owner occupied - 35% of housing units constructed after 1960 - Average value/owner-occupied in 1990 - $40,400 - Several new apartment complexes available - New condo units on Manistee River and Lake Mich. - "Painted Lady" Victorian style homes are abundant - A home in Manistee could be purchased generally for much less than a comparable home in Grand Rapids or Traverse City. A Manistee County Housing Study is available.

Back to top

MEDICAL FACILITIES

West Shore Medical Center, Phone: 231-398-1000. Provides acute care and many new services including a recent upgrade to Advanced Paramedic Ambulance Service and an advanced mammography unit. A new Professional office building is next to the hospital. Forty-eight physicians, surgeons, specialists, and osteopathic physicians are affiliated with the hospital.

- Three chiropractors, five optometrists, three vets, and twelve dentists service the county.
- The Manistee County Medical Care Facility, and private adult care facilities are available in the County. Health seminars, screenings and support groups are also available.

- The West Shore Health Connection, located in the Professional office building, 1293 E. Parkdale, is available for club membership and rehabilitation. Back to top

CULTURAL AND ENTERTAINMENT OPPORTUNITIES

- See "Events" for 2003/2004
- Historic Ramsdell Theatre offers tours and plays throughout the year and has a talented civic theatre group.
- Audubon Bird Watching Tower & Grey Estate
- Little River Casino
- Art Galleries
- Manistee County Historical Museum Relics of the logging era survive - Various museums and restorations as well as in ornate Victorian mansions. Tours of historic churches and the oldest operating firehouse in Michigan are also available. History of Manistee Virtual Tour

  Member Groups: Manistee Art &Crafts Council
  Manistee Historical Society - Contact the Manistee County Historical Museum
  Manistee Civic Players - Ramsdell Theatre
  Community bands & Orchestras
  Social clubs/Elks, Eagles, Moose Club Rotary, JayCees, Lions Club & others Manistee Choral Society Many others - list may be obtained
  West Shore College also offers an entertainment program of well-known performers and plays.

- Ethnic and Community festivals throughout the year. Very popular are the 4th of July Manistee National Forest Festival, Victorian Port City Festival, and Old Christmas Sleighbell Parade as well as Village celebrations.
- A 50's style renovated movie theatre with 2 screens is also available in Manistee's historic downtown district.
- Manistee County Public Libraries
- DNR Fish Wier & Tippy Dam
- Senior and Teen Centers Back to top
- RECREATION Some of the finest year-round fishing in the country off Lake Michigan coastline, piers, or in abundant inland lakes, rivers and streams. *Record sized* Steelhead trout, Coho Salmon, Brown Trout, perch, walleye, pike, smelt and others offer anglers a wide variety of fishing. The Michigan State Record Brown Trout (over 34 lbs.) was recently caught near Manistee Harbor. Charter boats are also available. Overnight docking at several new marinas offer excellent facilities.

  Outdoor recreation is available all year. Manistee National Forest

  - White sandy beaches, Manistee National Forest, Mountain Biking, hunting, campgrounds, horse-back-riding, skiing, snowmobile trails, 8 golf courses,

(Attachment #20)

tennis courts, parks, public access lakes, numerous baseball fields, canoeing, two swimming pools, basketball courts, Riverwalk, Bandshell with summer concerts, and two bowling alleys. The newly completed Riverwalk runs through the downtown to Lake Michigan beach and affords a beautiful view of river activity including large "lower laker" ships and resident ducks and seagulls. The U.S. Coast Guard, Manistee Station is ever visable. Back to top

- CHURCHES Twenty denominations may be found in the churches of Manistee County. A listing can be furnished upon request. Manistee County has historic churches built during the Lumber Baron era and tours are available.
- TRANSPORTATION ·
  - US 31 - Major north-south highway. Joins major freeway - 30 mi. ·
  - M-55 - Major east-west access ·
  - M-115 - Cuts across NE corner/ County ·
  - M-22 - Scenic West Coast of County ·
  - BUS: Manistee County Transportation provides commuter services, fixed bus routes, Dial-a-ride and charter service. Special rates for Seniors and Students. ·
  - TROLLEYS: during summer months tour the City every hour through historic districts of Manistee.
    Lake Michigan Car Ferry: S.S. Badger - Sailing schedule May 15 - October 11, Seven days a week sail across Lake Michigan to Manitowoc, Wisconsin. Leaves from Ludington, only 30 miles south of Manistee. Call 1-800-841-4243 for reservations. Back to top
- RAIL Daily Rail Freight Service - CSX
- AIR
  - Great Lakes Airlines,, 231-723-8661, scheduled commercial flights to and from Chicago O'Hare Airport
  - Commuter passenger and air freight services are available at Manistee-Blacker Airport.
  - You may take a fly-over Manistee at a reasonable rate and see our beautiful area from the sky. Call 231-723-4351
- PORT · A full domestic port facility is available at Manistee Lake. In support of the harbor, Manistee River Channel is maintained to a dredged 23 feet.Commercial ships navigate the river to Manistee Lake factories. · New Harbor Village Marina at mouth of River · New Riverwalk from downtown to Lake Michigan · Municipal and private marinas · Historic Catwalk and lighthouse, U.S. Coast Guard Station Manistee · Municipal boat launching ramps at First Street Beach in City and various other County areas · Public Recreational beaches. Great Lakes Shipping page describes industrial lake shipping.
- CAMPING on Lake Michigan at Orchard Beach State Park and other private campgrounds on numerous small lakes in Manistee County offer another facet of Manistee County's lake side opportunities. A list may be obtained upon request. Back to top
- UTILITIES
  - Gas, Electricity and Steam Suppliers: Consumers Energy Co. * Cherryland Electric * TES Co-generation Plant * Western Michigan * MichCon
  - Water: City of Manistee: Municipal Wells
  - City of Manistee: Primary Township and Village information is available on request.
- Township and Village information- See our webpage for Villages Information.
- Population- Manistee County: 1970 = 20,094 1980 = 21,019 1990 = 21,265 1994 = 22,633 1996 = 22,902 1998 = 23,330 2000 = 24,527
  See Population growth Links to U.S. Census Bureau

- **Restaurants** *Yahoo Yellow Pages* for Manistee County Restaurants *Maps and directions*

Main Page Back to top

18264

(Attachment #20)

- SCORE
- Convention&Visitors Center
- Chamber of Commerce
- Interactive Map

Relocation

- Chamber of Commerce
- MichiganWorks!

Recreation

- Golf
- X Country Skiing
- Profile
- Villages
- Historic Manistee
- National Forest
- Riverwalk
- Lighthouse / Pier
- Casino
- Library
- Ramsdell Theatre
- Fishing
- SS City of Milwaukee
- Bandshell Concerts
- Top

(Attachment #20)

County Info

- *Community*
- *Business*
- *Relocation*
- *Recreation*

- **Community**
  - ManisteeDowntown
  - City Offices
  - County Clerk
  - Election Results
  - Villages
  - College
  - Schools
  - Census 2000
  - Top
- **Business**
  - RenaissanceZones
  - Great Lakes Ships
  - Principal Employers
  - Profile
  - Top
  - Population growth
  - Available Space
  - Business News

character, traffic, etc.

Maintaining Balanced Development

There is no model for a perfect land use "balance" in a community. Rather, it is the function of the community to determine the ultimate direction for its use of land. This means identifying and achieving a reasonable balance between various types of uses, including housing, commercial, industrial, and public uses. Determining the "right" balance involves an examination of a combination of factors, including existing land uses, available land and infrastructure, and the overall community vision.

Achieving a balance of land use will require a recognition of changing economic and social conditions of the City, region, and the nation, with its shift toward retail and service employment, and the growing need for human services. As the demographics of the City change and the population ages, land use needs will vary as new services, housing, and other uses will be required. Moreover, Manistee is experiencing a change from an industrial community to one steeped in tourism and seasonal residents. This change can be beneficial if properly planned and managed.

What did people say about balanced development?

- Economic and social stability in Manistee is dependent upon balanced development in the community. A range of land use opportunities and developments are important to the City's success.
- Achieve balance by guiding development without being too restrictive.
- The balance of development will likely change as Manistee attempts to sustain its economic health and potentially compete with neighboring communities.

Providing Choices and Opportunities

While the construction of housing is a function of the marketplace and the demand created by new residents, the City does have the ability to influence the quality and quantity of the housing produced. Similarly, the City's policies with respect to existing housing can influence its preservation and maintenance. Affordability remains an issue if Manistee is to attract or retain younger families.

Land for new residential construction within the City of Manistee is limited. Yet, the need for new homes in the Manistee area is growing as businesses expand and continue to add employees, and as the demand for seasonal (second) homes increases.

What did people say about housing?

- Manistee needs to foster a variety of housing opportunities, including assisted living and elder care facilities, and price ranges to accommodate the needs of its citizens.
- The range of housing (e.g. neighborhoods) in the City, in its different geographic

Statement in Opposition to Proposed Tondu power Plant

The Chinese have a saying, a curse, really, that goes something like this: "May you live in interesting times." This doesn't sound too threatening unless you know that by "interesting times", they mean times of great havoc, upheaval, stress and peril.

We, you and I, live in an "interesting time." Our habitat is threatened by constant environmental insults, resulting for one thing, in an already existing shortage of water, fresh water. There are places on our earth where women must walk miles and miles every day to collect enough usable water for their families. But we, you and I, live next to one of the largest fresh water sources on this planet. And so it falls to us to protect it. The proposed coal burning power plant would add admitted, specific and deadly pollution to our Great Lake. And the pollutants also would endanger our surrounding land area, being totally incompatible with current use. The pollution from burning coal has been documented since late in the 19th Century. No need for me to belabor this. But it should be stated that this pollution is not a danger for a vague and distant future; we will see it soon enough and we ourselves will have to solve the problems it inevitably brings.

One of our citizens, Shirley Skiera, gave us moving testimony to this when she spoke of the coal dust that constantly showers her home. And this is just the pollution that she can *see*. It comes from existing industry, and has been more evident since the building of TES. Industry, including Tondu, cannot or will not eliminate it.

Ruth Pratt adds that her sister in Litchfield, where Tondu has another coal-burning power plant, says that the "ash flies all over town." Tondu claims that the additional pollution would be small, but we must remember, when they show us charts indicating how "small" the pollution would be, that it IS ADDED pollution, not reduced pollution. All across our country people are working, at enormous cost in dollars, to reduce pollution, and now we are expected to voluntarily INCREASE it?

What kind of neighbor is Tondu? The same neighbor that took Filer Township to court over taxes, and LOST, earning a reprimand from the judge in the process. Can we believe this neighbor when he promises site reclamation and minimal additional pollution? What if that proves not to be the case? Who will pay to 'fix' it?

I ask you to reject this coal-fueled power plant. We need to hear about the viable alternatives to burning coal. And we need to work toward solving our existing environmental problems, not create new ones.

Who needs new problems? Aren't our times "interesting" enough?

Thank you.

Carol Atkins

Ms. Carol Atkins
1870 Pine Ridge Dr
Manistee, MI 49660

Comments to the Manistee Planning Commission
John Veach
February 26, 2004

A new business is being proposed for the Manistee community.

Many well-documented facts concerning the new business are available.

With these facts we can decide if this business is good for Manistee.

1. Manistee is not a partner in this business.
2. Other communities are partners in this business.
3. Manistee taxpayers will never share in the profits of this business like other communities.
4. Manistee taxpayers will pay expenses related to this business.
5. Local property taxes will not be paid by this business.
6. The Manistee County Commissioners believed that this business would be paying local property taxes when they approved this business in November 2003.
7. When Manistee discovered that this business would not be paying local property taxes, payment in lieu of taxes was offered.
8. Tondu claimed that Manistee was legally obligated to reduce Tondu's property taxes.
9. Manistee taxpayers spent $900,000.00 in legal fees defending themselves against Tondu's claims.
10. The ruling on page 83 of the Michigan State Tax Tribunal said this about Tondu's claims. "(Tondu's) appraisal method is factually flawed, unreasonable, and unlawful."

Thank you,

John Veach

(Attachment #22)

To: Manistee Planning Commission
From: John Veach
Date: February 19, 2004

RE: State of Michigan Department of Labor and Economic Growth Michigan Tax Tribunal: TES Filer City Station v Township of Filer

Most interesting:
1. Individual Findings of Fact- beginning on page 26
2. Veracity of petitioner- (many, but most notable are these)- pages 30, 87 & p. 83
3. Element of financial risk to petitioner- page 30 #11.B.
4. Profitability- pages 27, 29

(Attachment #22)

STATE OF MICHIGAN
DEPARTMENT OF LABOR AND ECONOMIC GROWTH
MICHIGAN TAX TRIBUNAL

TES Filer City Station,
Petitioner,

v

MTT Docket No. 192808

Township of Filer,
Respondent,

Tribunal Judge Presiding
Richard A. Southern

OPINION AND JUDGMENT

I. INTRODUCTION

A. CASE SUMMARY

The TES Filer Plant Facility[1] real and personal property tax assessment and true cash value case was first filed by Petitioner in June 1993. It became ripe for judgment February 18, 2003 resulting in this opinion and judgment. Petitioner contended that subject property's assessment exceeded 50% of true cash value as demonstrated through its appraisal (OH[2] Exhibit P-1) by Donald Paton for tax years 1993, 1994 and 1995 and appraisal (OH Exhibit P-2) by Donald Paton and John Achenbach for tax year 1996.

Should the Tribunal be unable to reach an independent true cash value conclusion on its first claim, Petitioner alternatively claims that subject property should be "reclassified" as personal property and appraised through the application of personal property multipliers as

[1] The TES Filer Plant Facility, during the 1993-1996 tax years at issue, was owned by the T.E.S. Filer City Station Limited Partnership. This partnership is owned by CMS Generation Filer City, Inc. (CMSGFC) as a 50% general partner; by Western Michigan Cogeneration Limited Partnership as a 44% general partner; by Robert C. Pelfrey as a 5% limited partner; and by Beverly Z. Baker as a 1% limited partner. (Stipulation of Facts, Item 4 *infra*). The PURPA legislation prohibits more than a 50% controlling ownership of a QF by a regulated utility.
[2] OH and RH stand for Original Hearing and Reopened Hearing respectively.

calculated in its valuation reports (OH Exhibits P-3 and P-4) by assessor Francis Moss for tax years 1993, 1994, 1995 and 1996.

The property in contention is a group of three parcels, of approximately 5.58 acres, lying south of Lake Manistee and west of the thermal host plant site of Packaging Company of America (PCA), whereon is situated a coal and waste wood fired steam and electricity cogeneration plant in Filer Township.

Petitioner contended in the opening statement of its case-in-chief that subject property "can best be described as an . . . anachronism from the 1980s with a legacy. And Petitioner will establish, in keeping with this simile, that the anachronism and the legacy have different true cash values and that the anachronism is assessable in Michigan while the legacy is not." (OH Tr Vol 1-A, p 36, ll 3-12).

Mr. Paton, Petitioner's principal appraisal witness, explained that because he understood Michigan Law to disallow subject's actual current contract income under its Power Purchase Agreement (PPA) for use in concluding to true cash value (TCV), he developed and employed the concept of a "merchant plant" replacement model that would sell electricity, without long term contract, into the power grid. He would then use that concept as a basis to conclude to subject's TCV for the tax years 1993, 1994, and 1995. Mr. Paton again used this same "merchant plant" income approach method, with a discounted cash flow technique in Petitioner's OH Exhibit P-2 for tax year 1996; however, this time he used an abbreviated Cost Approach method as a "Check" and he added Mr. Achenbach, a registered professional engineer, as a co-appraiser and signer of the appraisal report.

To demonstrate the second of its contentions of true cash value, as an argument in the alternative, Petitioner advanced assessor/appraiser Mr. Moss, a Michigan Level IV Assessor, to calculate and introduce Petitioner's Exhibits P-3 and P-4, which he called "valuation reports" rather than appraisals, that he derived exclusively through the application of a Personal Property Multiplier technique, described in chapter 15 of the State Tax Commission (STC) Manual to conclude TCV for the tax years 1993, 1994, 1995 and 1996. In this alternative argument, Petitioner claims it is "constitutionally entitled to have [its] facilities assessed by the same method and mode of assessment as other commercial and industrial property in the township or other nonutility [sic] generating facilities throughout the state. . . ." (OH Tr Vol 1-A, p 35, ll 10-15).

Respondent answers that subject property was, on the tax years at issue, a newly built quality plant in both design and materials that was placed in service in June of 1990, less than three years from tax day December 31, 1992 of the first tax year at issue 1993, where it performs to this day generating contract income in amounts specified in its PPA just as it was intended to do. Respondent demonstrates that subject property's TCV is properly determined, by its appraisal evidence from appraiser Leslie Anderson for tax years 1993 and 1994 (OH Exhibits R-52 and R-53); Mr. Newberg for tax years 1994 and 1995 (OH Exhibit R-54); and Mr. Oetzel for tax year 1996 (OH Exhibit R-56).

In response to Petitioner's alternative argument, Respondent asserts that Petitioner's personal property "multiplier" approach is really a "reclassification" appeal, and further asserts

that because "reclassification of property" is under the exclusive jurisdiction of the State Tax Commission, this matter is not properly before the Tribunal.

Further, Respondent takes exception to Petitioner's use of an alternative argument by saying:

> . . .[i]n the years in which I have been privileged to be involved in property taxes [sic] cases, and they are several hundred in number, I have never encountered a situation which is presented here. And that is that Petitioner does not have a value identified, which it is seeking to be adopted. The Petitioner has and is offering to the Tribunal for 1992 [tax year 1993] either $29,414,000 of $38,533,224. For 1993 [tax year 1994] the Petitioner is suggesting that the true cash value is either $26,262,000 or $35,763,508. For 1994 [tax year 1995] Petitioner claims that the value is either $13,747,000 or $33,293,756. For 1995 [tax year 1996], Petitioner is suggesting the value is either $14,700,000 or $31,294,158. In one of these years the divergence is $20 million. Both of these contentions may be wrong, but one certainly must be wrong. They cannot both be correct. . . . the second witness will be impeaching the first witness and the second witness's testimony will also already be impeached by the first witness. I submit that it is both illogical and impermissible for one to carry a burden of proof submitting evidence which is contradictory . . . (OH Tr Vol 1-A, pp 74, ll 15-25, p 75, ll 1-25).

After thorough consideration of the relevant facts and law on a full and complete record of the matter, the Tribunal finds substantial, reliable, credible and compelling evidence and law to support the position that Petitioner has not met its burden of proof in these proceedings. Petitioner's principal valuation witnesses lack all appraisal credibility. Respondent's claims are found to be more reasonable and better established, its witnesses more credible and reliable than those of Petitioner. The Tribunal finds, on the alternative claim, it lacks jurisdiction to rule on the "reclassification" issue. Finding is for Respondent.

(Attachment #22)

B. APPEARANCES AND PROCEDURAL HISTORY

Petitioner is represented by Sam J. McKim III (P17480), Joanne B. Faycurry (P40993) and Cynthia M. Warr (P40544), attorneys at law with the firm of Miller, Canfield, Paddock & Stone, P.L.C., and Frank R. Knox (P16093), attorney at law with Consumers Energy.

Respondent, Township of Filer, was initially represented by Richard Wilson (P29717), of Gockerman, Wilson, Saylor & Hesslin, P.C., and was later replaced by Richard D. Reed (P19296) and Carolyn W. Schott (P49897), attorneys at law with the firm of Reed, Stover & O'Connor, P.C. and still later by Richard D. Reed (P19296), David Lewis (P45069) and Sydney P. Waldorf (P64741), attorneys at law with the firm of Lewis, Reed & Allen, P.C.

A separate appeal (MTT Docket No. 247650), with respect to the subject property for subsequent tax years 1997, 1998, 1999 and 2000, is being held in abeyance pending a decision by the Tribunal in the instant matter.

The case was originally assigned to Chairman and Chief Judge Norman D. Shinkle (June 1993 to July 1996), who guided initial development of the pleadings and reassigned it to Judge Marie E. Martell (July 1996 to September 1997) for hearing. It first became ripe for Opinion and Judgment in February 1998. Judge Martell left the Tribunal for an appointment to the Workers Compensation Appellate Commission, with no decision having been issued, and the matter was again reassigned to Judge Richard A. Southern in February 2000 for Opinion and Judgment[3]. On

[3] The original hearing [OH] lasted 22 hearing days and was conducted by Tribunal Judge Marie E. Martell. Petitioner's requested reopened hearing [RH] lasted 12 hearing days and was conducted by Tribunal Judge Richard A. Southern. The instant Opinion and Judgment was rendered by Judge Southern pursuant to MTT Rule 205.1140, which states, in pertinent part: "In the event of the death, sickness, or disability of a member of the tribunal or a hearing officer after the member or officer has heard any part of a case, his or her successor or alternate may continue the proceeding and decide the matter."

October 27, 2000 the Tribunal received Petitioner's Motion to Reopen Proofs wherein it was argued, *inter alia*, that Petitioner had, through an offer which "took place quite recently," discovered "new evidence of third party transactions" consisting of separate sales transactions of Power Purchase Agreements (PPAs) which could not have been previously uncovered using "any reasonable degree of diligence." Notwithstanding the delay that had already been experienced, the Tribunal Granted Petitioner's somewhat unusual Motion to Reopen on a basis limited to the "new evidence" rather than a re-demonstration of prior proofs. The new evidence was limited to "Petitioner's newly discovered, Ten PPA sales transactions" and "Respondent's newly discovered, proposed 'Northern Lights Plant,' a 300 MW coal fired power facility being planned for 2001-2002 by Petitioner on subject site." The reopened hearing (RH) was held from October 28, 2002 until November 22, 2002 with mandatory post hearing briefs and replies simultaneously filed on January 27, 2003 and February 18, 2003, respectively, whereupon the matter was ripe for decision a second time, resulting in the instant opinion and judgment.[4]

C. ACRONYMS & TERMS

The energy and appraisal disciplines have an acronym lexicon that enables them to speak efficiently, but it is unfortunately sometimes cryptic. Following are some of those acronyms, along with some identifications of terms that the reader may find helpful to the understanding of

[4] The Tribunal notes that its opinion in this matter incorporates some relevant portions of the evidentiary and legal analysis contained in the various briefs filed by the parties that the Tribunal finds well supported by the record and Michigan law and adopts as its own.

(Attachment #22)

this Opinion and Judgment. Most are not sufficiently developed to be called definitions, which would require considerably more space than the present purpose warrants:

NUG	Non Utility Generator
PURPA	Public Utilities Regulation Policies Act of 1978
EPACT	Energy Policy Act of 1992
SPP	Small Power Producer
QF	Qualifying Facility
FERC	Federal Energy Regulatory Commission
MPSC	Michigan Public Services Commission
PPA	Power Purchase Agreement
PCA	Packaging Company of America (paper mill host facility)
NARC	North American Reliability Council (See P-116 for map of ECAR)
ECAR	East Central Area Reliability Coordination Agreement of power systems
CECO	Consumers Energy Company (formerly Consumers Power)
TES Filer	Tondu Energy Systems/TES Filer is subject plant, often called "Filer"
R. Joe Tondu	Developer of TES Filer Cogeneration Plant
CMS Energy	Parent company of CECO
COGEN	A cogeneration plant under PURPA serving two or more purposes, for example, Filer generates steam for the host facility PCA and electricity for CMS Energy.

Real Estate	The [tangible] physical land and improvements to the land [buildings and fixtures].
Real Property	The [tangible] real estate, together with the [intangible] rights, benefits and privileges inherent in the ownership of the real estate.
Facility	The real and tangible personal property that makes up the plant.
MCV	Midland Cogeneration Venture, a base load cogeneration QF operating under PURPA and located in Midland, Michigan
SPA	Steam Purchase Agreement
IPP	Independent Power Producer
PU	Purchasing Utility (in this case Consumers Power Company)
CCGT	Combined Cycle Gas Turbine
Merchant Plant	An independent power producing (IPP) plant envisioned by the 1992 Energy Policy Act that would sell power on the open market to the "regulated" power industry. Witness Paton's replacement model hypothesized the Filer plant to be a merchant plant when he estimated costs, income and expenses in his appraisals.
Non-Regulated Affiliate	Several of the "regulated" utilities, including Filer, have established "non-regulated" affiliates which can have partial ownership in COGEN facilities. In fact, Filer is owned in part (50%) by a Consumers Power [non-regulated]Affiliate.
Stranded Costs	Those costs that cannot ordinarily be passed along to the consumer in the rate base of a regulated utility.
Wheeling	The use of transmission lines, owned by another, to transport power from an independent producer through a grid to a consumer.
Fitch Reports	Statistical/Engineering/Appraisal reporting service started in 1991 to break out costs and revenues concerning Regulated Utilities. Aids in unbundling costs into component parts of production, transmission and distribution. Used by Mr. Paton in his appraisal projections of expense and revenue for his income approach, and

(Attachment #22)

	by Messrs. Russell, Anderson & Achenbach in their Cost Approaches.
CAPM	Capital Asset Pricing Model the expected rate of return on any asset written as the risk-free rate of interest plus the asset's normalized covariance with the market, times the difference between the market's expected rate of return and the risk-free rate.
EEI	Edison Electric Institute, a private publisher of power industry informational statistics.
Act II	The 1989 Public Act No. 2, Michigan statute permitting 120 MW of capacity, statewide, to be designated by MPSC for renewable energy sources (wood, methane gas, used tires) for SPPs under PURPA.
NOI	Net Operating Income, calculated by extracting reconstructed appraisal expenses from effective gross income.
OAR	Overall Rate - a rate, typically extracted from market transactions which, when divided into NOI, generates an income estimate of value. It usually works best under conditions of a stable income stream.
DCF	Discounted Cash Flow - a method of income capitalization which discounts future cash flows into a present value, generating an income estimate of value. It usually works best under conditions of a variable income stream.
Reproduction Cost New	Reproduction Cost New - the amount it would cost to reproduce an exact "replica" of the subject, with identical materials and workmanship of the original.
Replacement Cost New	Replacement Cost New - the amount it would cost to replace the subject with a property of equivalent utility, using the current materials and workmanship available in today's market.
Historical Cost	The original cost of the asset in the year of acquisition.
Power Marketer	A person licensed by the FERC to broker sales of power between parties.

(Attachment #22)

Avoided Cost	In FERC rules the "avoided cost" concept is built upon the cost that the regulated utility would have had to pay to generate electricity and capacity itself; this is the rate QFs are allowed to obtain through their PPA over the life of the contract.
Principle of Anticipation	The present worth of anticipated future benefits of ownership of property. Often expressed in terms of the anticipated income stream.
Highest and Best Use	The reasonably probable and legal use of vacant land or an improved property that is physically possible, appropriately supported, and financially feasible and that results in the highest value.
Principle of Substitution	A party is not likely to pay more for a property than the cost of a suitable substitute, with equivalent utility, without undue delay.
AFUDC	Allowance for Funds Used During Construction - a regulated utilities deduction for interest during construction and unrealized earnings.
USPAP (1996)	The Uniform Standards of Professional Appraisal Practice, published each year since 1987, by the Appraisal Standards Board of The Appraisal Foundation - *Authorized by Congress as the source of Appraisal Standards and Appraiser Qualifications.* The 1996 version matches the year of completion of the appraisals.

II. FINDINGS OF FACT

A. STIPULATED FINDINGS OF FACT

The parties, as directed by the Tribunal, stipulated to the following facts:

1. The real and personal property assessment tax years at issue in this proceeding are 1993 through 1996, with tax days December 31, 1992, 1993, 1994 and 1995, respectively.

2. The subject site is 5.58 acres located on Manistee Lake at 700 Mee Street, Filer Township, Manistee County.

3. The subject real property and tangible personal property includes a coal and wood waste fired cogeneration facility, built in late 1988-90. It began commercial operation in June 1990 and it was designed to produce an average net of 54 MW of electricity and an average of 100,000 pounds of extraction steam per hour ("the facility").

4. During the years at issue (1993-1996), the facility was owned by the T.E.S. Filer City Station Limited Partnership. This partnership is owned by CMS Generation Filer City, Inc. (CMSGFC) as a 50% general partner; by Western Michigan Cogeneration Limited Partnership as a 44% general partner; by Robert C. Pelfrey as a 5% limited partner; and by Beverly Z. Baker as a 1% limited partner.

5. The facility sells electric capacity and energy to Consumers Power Company (CPCO) under a 35 year Power Purchase Agreement dated July 31, 1986, as amended, and is operated by CMS Generation Filer City Operating Company (CMSGFCOC) under the terms of the Operation and Maintenance Agreement dated August 19, 1988. Both CMSGFC and CMSGFCOC are wholly owned subsidiaries of CMS Generation Company. (CMSGC). Both CMSGC and CPCO are wholly owned subsidiaries of CMS Energy Corporation.

6. The subject's owners sell steam to Packaging Corporation of America ("PCA"), which owns and operates a paper mill property that abuts the subject property, under the terms of a Steam Purchase Agreement dated July 15, 1986, as amended August 1, 1988, with an initial term of 15 years.

(Attachment #22)

7. The Filer City Station was designed and constructed in a conventional manner using proven equipment supplied by reputable suppliers.

8. The subject consists of tax ID numbers and assessed value for each tax year at issue as follows:

December 31, 1992 Tax ID # 51-06-019-100-10 Assessed Value	$24,500,000
(Personal Property) # 51-06-900-072-00 Assessed Value	400,400
December 31, 1993 Tax ID # 51-06-019-100-10 Assessed Value	$25,000,000
(Personal Property) # 51-06-900-072-00 Assessed Value	479,200
December 31, 1994 Tax ID # 51-06-019-100-10 Assessed Value	$24,750,000
# 51-06-301-701-01 Assessed Value	29,400
(Personal Property) # 51-06-900-072-00 Assessed Value	398,450
December 31, 1995 Tax ID # 51-06-019-100-10 Assessed Value	$23,750,000
# 51-06-301-701-01 Assessed Value	29,400
(Personal Property) # 51-06-900-072-00 Assessed Value	332,100

9. The Filer City Station was certified as a qualifying cogeneration facility under the Public Utilities Regulatory Policies Act of 1978 (PURPA), 16 USC 824 *et seq.*

10. The following contracts were in effect with respect to the facility operations during the years at issue.

Contract	**Date**	**Exhibit No.**
Steam Purchase Agreement	7/15/86	R-7
Power Purchase Agreement	7/31/86	P-56.C
Coal Supply Agreement	1/11/88	R-10

Mary Cunningham

Judge denies new trial in Ice Mountain bottling case

By MIKE RAMSEY
Associated Press Writer

DETROIT (AP) — A Mecosta County judge who ordered Ice Mountain Spring Water Co. to stop withdrawing water from underground wells denied the company's request for a new trial, setting the stage for the case to go to the Michigan Court of Appeals.

Circuit Court Judge Lawrence C. Root — who originally ruled against the water company on Nov. 25 — released his opinion Friday.

Greenwich, Conn.-based Nestle Waters North America Inc., Ice Mountain's parent company, had asked for a new trial after the group Michigan Citizens for Water Conservation won its lawsuit to block Ice Mountain's Mecosta County pumping operation.

The group claimed the company's groundwater withdrawals from its wells 13 miles northeast of the plant harm the environment, violate state environmental protections and infringe upon the group members' rights to enjoy the recreational and aesthetic qualities of certain waterways.

"In general, obviously we are disappointed that the court declined the opportunity to hear some important environmental and scientific data that we think will show that the operation brings no harm to the environment," Ice Mountain spokeswoman Deb Muchmore said Friday.

Muchmore said the company plans to appeal to Michigan Court of Appeals and "very vigorously defend our position."

Terry Swier, president of Michigan Citizens for Water Conservation, said Friday's ruling wasn't a surprise.

"(The group) is very excited about Judge Root's ruling, and it says again that the facts prove themselves," Swier said. "It says again that the water that is used in Michigan belongs in Michigan."

In his ruling, Root said the motion for a rehearing brought out new information and pointed out minor flaws in his initial opinion, but nothing that would change his mind.

"It turns out that The Opinion had a few blemishes and internal problems as well," he wrote. "However, they are fortunately minor and inconsequential."

Root heard weeks of testimony in the case last spring and summer, then ruled that the withdrawals have caused a "material diminishment" of water flows and levels in neighboring lakes, streams and wetlands.

Root ordered the plant's operations halted, but the Michigan Court of Appeals in December granted Ice Mountain's request for emergency relief, putting Root's order on hold until the appeals process is over.

Since the first ruling, the company has begun prospecting for new sources of spring water about 13 miles south of its current location.

(Attachment #31)

(Attachment #32)

Text of Presentation by Bill Dean to the City of Manistee Planning Commission Regarding the Special Use Permit Application by the Manistee Saltworks Development Corporation/Tondu Corporation

February 25, 2004

I am Bill Dean.

My wife Val and I live in Manistee at 282 Lighthouse Circle.

I am a retired Toxicologist,
an emeritus member of The American College of Toxicology,
a former Michigan county coordinator of Emergency Preparedness,
with over 40 years of human safety evaluation, all in industry,
of which the last 40 years were with consulting/contract .
companies.

I am opposed to the coal fueled power plant and the Special Use permit which would allow for the construction of same.

My reason for opposition is the significant adverse additive effects this coal fueled plant will have on human health, wildlife and the environment.

Del Rector, a Tondu consultant spoke at the last meeting.

He stated and was quoted in the News Advocate as follows:
"the majority (95-98%) of mercury emissions, with Northern Lights controls would be elemental mercury and would become part of the global cycle of mercury".

Mr. Rector did not explain "the global cycle of mercury".

In this global cycle when elemental mercury circumnavigates the globe for 1-2 years, it encounters certain oxidants in the atmosphere which changes it into reactive gaseous mercury, which falls to earth, and following biogeochemical transformation becomes harmful methyl mercury. The harmful methyl mercury is then taken into the food chain eventually reaching man.

It was further stated by Tondue that "an individual would have to receive a sufficient concentration, for a specific exposure time, for the emissions to have a detrimental effect".

This statement recognizes that emissions do indeed have a detrimental effect.

The question then becomes, when does this detrimental effect occur?

The answer is, it has occurred in the past and is occurring now.

Detrimental effects of mercury are present in humans and in the environment and are with us daily at this time.

The Centers for Disease Control estimate that 4.9 million women of child bearing age in the US have unsafe levels of mercury in their blood.

As a result 630,000 babies are born each year with levels of mercury so high that brain damage can occur.

The National Academy of Sciences indicates that the effects in children include delayed onset of walking and talking,
reduced neurological scores,
and delays and deficits in learning ability.

How potentially detrimental have these adverse effects been in Manistee?

Using CDC numbers, 1 in 12 mothers have unsafe levels of mercury. Count the number of mothers here tonight, divide by 12 and you have the answer as to the estimated effect upon the mothers in this audience.
How many children have been affected as a result of high mercury levels in their mothers, we will never know..

The specific exposure time for emissions to have a detrimental effect is already in the past. Detrimental effects have already occurred and are occurring daily.

Joe Tondu stated that Tondu "will set the bar" and that DEQ will "only issue the permit if it meets the strictest standards".

We need to evaluate the standards.

Standards to date have allowed 1 in 12 women to have unsafe mercury blood levels which can effect the health of their developing fetus.

Standards to date have allowed for very serious and well documented reproductive and other adverse effects in wildlife.

Current proposed standards required by the Clean Air Act are in danger of being rolled back, resulting in greater pollution over the next 20 years.

The January 30th, 2004 issue of the Federal Register included proposed standards that will roll back requirements for dangerous mercury emissions.

According to Physicians for Social Responsibility, January 29, 2004, "EPA's proposed mercury standards are not protective of public health and will allow power plants to emit far more mercury into the air, for a decade longer, than EPA's original proposal".

The current proposed guidelines will roll back current MACT (maxium achieveable control technology) requirements. Current requirements reduce mercury pollution by nearly 90% by 2008. The new proposal would allow over 300% more mercury after 2018 than the current requirement.

Rather than reducing emissions from plants now causing high pollution, these plants would be allowed to trade emissions with less polluting plants under a national cap and trade program. This means that plants with lower emissions would subsidize the big polluters, allowing them to remain in operation.

Of course Tondu will be happy to comply with the regulations, regulations which cut operating costs and enhance profitability, at the expense of human and environmental health and welfare.

We in Manistee cannot in good conscience approve a coal fueled generating plant in our community.

For this reason I am requesting that the Manistee City Planning Commission deny this request for a Special Use Permit.

Thank you.

(Attachment #32)

Accent on *Action*

Feb 2004

contact WNCA

Clean Air Act Protection Threatened!

Bush Administration proposes to Roll Back Power Plant Mercury Emission Standards

Take Action: Attend a hearing or send your comments on the US EPA's proposed rules for mercury emissions and particulate matter from power plants!

On January 30th, **the Bush Administration published in the federal register a proposal to roll back standards for dangerous mercury emissions from coal-fired power plants.** The proposed rules fall far short of both current Clean Air Act requirements and what health experts say is necessary to protect children from the neurotoxin mercury. The rules would place vulnerable populations, including babies and women of childbearing age, and threaten fish and wildlife populations at risk from the dangers of mercury.

EPA's own data shows that most modern coal-fired power plants can achieve greater than 90% control of mercury and other toxic chemicals. The proposed rules will not require reductions greater than 30%.

EPA is holding public hearings on the Mercury proposal as well as the PM2.5 Transport rule (which affects regional haze pollution) at **only three locations around the country – one of them here in North Carolina.** *On February 25 & 26, EPA will take public comment at a hearing in Research Triangle Park.* We are calling upon citizens to join with a nation-wide coalition of clean air, public health, and hunter/angler organizations in telling EPA to strengthen both of these rules and require coal-fired power plants to meet the same requirements as other industries. On the 25th, activists will hold a press conference mid-day at the hotel – be sure to come support us!

Now is the time for moms, fishermen, grandparents, and anyone else concerned about the health of our children and the future of out environment to make their voices heard!

(Attachment #32)

Sign up by Feb. 20. You can call JoAnn Allman at EPA: 919-541-1815 or email her at allman.joann@epa.gov . Give your name, organization, address, phone, what location, what day, what rule, whether you need equipment, and preference for morning or afternoon. Testimony will be heard from 8:00 am - 10:00 pm each day, with breaks for meals.

Location: Holiday Inn Raleigh-Durham Airport, 4810 Old Page Road, Research Triangle Park, NC, phone 919-941-6000.

Also:
Send your comments to the EPA ***by March 30, 2004.***

Comments may be sent by electronic mail (e-mail) to A-and-R-Docket@epa.gov, Attention Docket ID No. OAR-2002-0056.

Fax your comments to the EPA Docket Center at (202) 566-1741, Attention Docket ID. No. OAR-2002-0056.

Or mail two copies of your comments to:

Environmental Protection Agency
EPA Docket Center (EPA/DC)
Air and Radiation Docket and Information Center, 6102T
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Attention Docket ID No. OAR-2002-0056

Talking points and further information can be found below and at:
EPA Mercury home page (also info on other ways of commenting)
National Resources Defense Council

EPA's Mercury Proposal: More Toxic Pollution for a Longer Time

FOR IMMEDIATE RELEASE
December 5, 2003

Press contact: John Walke, David Hawkins and Linda Greer, 202-289-6868 If you are not a member of the press, please write to us at nrdcinfo@nrdc.org or see our contact page.

EPA's Mercury Proposal: More Toxic Pollution for a Longer Time

Earlier this week NRDC and other environmental groups leaked a draft Environmental Protection Agency proposal that would weaken and delay efforts to clean up mercury emissions

from America's coal-fired power plants. Those 1,100 facilities are the largest unregulated industrial sources of mercury contamination in the country. The 50 tons they spew into the air every year amount to roughly 40 percent of total U.S. industrial mercury emissions.

In news stories on the draft proposal, EPA Administrator Mike Leavitt defended it as an emissions trading program similar to the one that has reduced acid rain. A close examination of the draft proposal, however, reveals that by emphasizing a cap-and-trade program, Leavitt was trying to deflect attention from the heart of the proposal: It would downgrade mercury from being regulated as a "hazardous" pollutant to one that requires less stringent pollution controls. By doing so, EPA's "cap" would allow nearly seven times more annual mercury emissions for five times longer than current law. Moreover, an emissions trading program would allow "hot spots" of mercury contamination in the lakes and rivers neighboring the plants that buy pollution credits instead of reducing their mercury emissions.

The proposal, an early Christmas gift to the Bush administration's friends in the energy industry, speaks volumes about the administration's unspoken policy toward America's children. Toxic mercury emissions from power plants put 300,000 newborns each year at risk for neurological impairment. But not only children suffer from mercury exposure. Adults also are threatened. Mercury exposure can damage adult cardiovascular and immune systems, and 8 percent of American women of childbearing age have mercury in their blood above EPA's "safe" level. That's nearly 5 million women.

Subverting the Clean Air Act

In 1990, President George H.W. Bush signed a Clean Air Act amendment requiring EPA to study whether regulating hazardous air pollution from power plants was necessary to protect public health. If the agency found that such regulation was necessary, it was supposed to require all power plants to install the most effective equipment available to reduce hazardous emissions. Ten years later, in December 2000, EPA finally concluded that it is necessary to regulate hazardous power plant air pollutants, including mercury. Under the law, the agency is required to set emissions limits for these hazardous power plant air pollutants, and those limits must take into account the maximum amount of reduction that is technologically achievable.

EPA staff reached a preliminary determination that requiring maximum achievable mercury emissions reduction would result in a 90 percent cut within three years -- from 50 tons to 5 tons annually. Agency experts also determined that an 80 percent drop -- from 50 tons to 11 tons -- would cost the industry less than 1 percent of its annual revenues. However, Bush administration political appointees at EPA, at White House instruction, subsequently refused to allow the agency's experts to analyze and develop scenarios for these cleanup options, apparently to placate the utility and coal industries, which want much smaller cuts stretched over a much longer period.

The electric industry would agree to a mercury emissions cut of 30 percent to 40 percent, which it could achieve as an incidental byproduct of installing equipment to control emissions of soot and smog-forming gases. If EPA required reductions of no more than 30 percent, then most coal-fired power
plants would not have to do anything else to meet the new mercury limit.

EPA's draft proposal does just that. It would rescind the December 2000 EPA finding that mercury emissions from power plants constitute hazardous air pollution requiring the maximum

(Attachment #32)

amount of technologically achievable reduction. Instead, EPA has proposed to downgrade mercury emissions -- only from the utility industry -- from a hazardous pollutant to a run-of-the-mill pollutant. EPA has proposed a 30 percent reduction goal under weaker, ineffective provisions of the Clean Air Act, which would be accompanied by a mercury-emissions trading program stretched out over 15 years, rather than the three years required by law.

The 1990 Clean Air Act amendments state that once an industrial category such as the utility industry is listed for regulation under the more rigorous hazardous pollution section of the law, the only way that EPA can "delist" that category is to find that no emissions from any one source in the entire category will "exceed a level which is adequate to protect public health with an ample margin of safety and no adverse environmental effect will result from emissions from any source." EPA is contorting the law to skirt that requirement, because the agency knows it cannot possibly meet that factual, health-based finding for a potent neurotoxin such as mercury. NRDC believes the agency's new mercury proposal would violate the law.

Mercury Poisons Our Children's Brains

Not only does the new EPA proposal violate the law, it more importantly threatens the health of all Americans, especially our children. Mercury is a potent neurotoxin that, like lead, especially threatens the brains and nervous systems of fetuses and young children. A number of neurological diseases and problems are linked to mercury exposure, including learning and attention disabilities -- which are a growing problem -- and mental retardation. Mercury also might be linked to the recent increase in autism, Parkinson's disease and Alzheimer's disease.

Mercury "bioaccumulates" in the food chain, and human beings are mainly exposed to mercury by eating fish and other kinds of seafood. Although all fish contain some amount of mercury, predator fish at the top of the food chain, such as shark, swordfish and tuna, have the highest levels.

Mercury pollution has contaminated 12 million acres of lakes, estuaries and wetland -- 30 percent of the national total -- and 473,000 miles of streams, rivers and coastlines. Last year, 44 states and territories issued warnings about eating mercury-contaminated fish, a 63 percent jump from 1993, when 27 states issued such warnings. Seventeen states have mercury warnings for every inland water body, while 11 states issue warnings for mercury in their coastal waters.

In 2001, the Food and Drug Administration issued new guidelines recommending that pregnant women and women of childbearing age who may become pregnant avoid eating shark, swordfish, king mackerel, and tilefish; the agency is currently reevaluating tuna. The need for these official warnings against eating certain fish have been underscored by the Centers for Disease Control and Prevention, which, when it measured mercury levels in the blood and hair of women and children, discovered that one in every 12 women of childbearing age has mercury in her blood above the EPA "safe" level.

Jeopardizing Public Health for the Benefit of Campaign Contributors

The proposal is yet another example of backroom quid pro quos with corporate polluters that are the hallmark of the Bush administration. The energy industry gave more than $48 million to the Republican Party in the 2000 election cycle; $3 million of that went to the Bush-Cheney campaign.

GREEN BAY, WISCONSIN
GREEN BAY PRESS-GAZETTE
www.greenbaypressgazette.com

GANNETT

Posted Dec. 27, 2003

State ponders EPA mercury rule

Policy allows for trading of emissions

The Associated Press

WASHINGTON — When Wisconsin Republican legislators told state officials this s hold off on a proposed mercury regulation until the federal government came up rule, state Rep. Spencer Black had a quick rejoinder.

"Waiting for the Bush administration to protect the environment is like waiting fc to win the pennant," Black, a Madison Democrat, said at the time.

Now that the Bush administration has come up with an arguably weaker plan, Bl baseball metaphor still applies.

"The Brewers finished in last place," he said in a recent interview. "The Bush adr approach to mercury is definitely a last-place finish."

Under the U.S. Environmental Protection Agency proposal, power plant owners c postpone, in some cases for as long a decade, requirements that they install spe technology designed to reduce mercury pollution.

Instead, they would be allowed to trade emissions under a national "cap and tra

Ed Newman, director of environmental services for Wisconsin Public Service in G anticipated significant cost savings from the plan, but said it was too early to say

Newman said Wisconsin Public Service would more likely be a seller than a buye credits.

"The Bush administration rules are a big step backward," Black said. "It won't cu significantly on mercury from power plants. Mercury is a fairly local problem, yo dealing with long-range transport as much. So trading between one region and a do much for the Midwest."

The state rule, proposed by the Department of Natural Resources earlier this ye forced Wisconsin utilities to drastically cut their mercury emissions.

But the chairman of the Assembly Natural Resource Committee, Rep. Dwayne Jo state rule may not be necessary at all now.

"We finally got the word on what EPA will do on a national basis, which is obviou sensible for us," Johnsrud, an Eastman Republican, said. "Most of our mercury c outside the state."

Coal-fired power plants are the nation's largest source of unregulated airborne n pollution, sending an estimated 48 tons into the atmosphere annually. The merc the food chain and threaten public health, especially for children and pregnant w tainted fish.

State utilities are enthusiastic about the flexibility they would get in a cap-and-t

Kris McKinney, manager of environmental policy at We Energies in Milwaukee, s company could save tens of millions of dollars in capital costs by trading emissio because buying emissions could allow the company to avoid expensive capital in to meet new mercury standards.

Alliant Energy in Madison has not quantified the dollar savings from cap and trac spokesman Chris Schoenherr said the company has been supportive of this appr

"It will allow us to reduce mercury in a cost-efficient way," he said.

But the DNR views the federal rule as inadequate.

"We see value in moving forward with a state requirement," said Jon Heinrich, a analyst in the department's bureau of air management. "We don't think the EPA good deal for us. We think much greater needs can be met."

Eric Yura, the Madison-based Midwest regional representative of the Sierra Club, state's mercury role has been held "political hostage" by the federal rule.

And he said the cap-and-trade approach would be harmful to the environment.

"Allowing some facility to achieve reduction through a paperwork approach woul spots of emission and localized contamination," Yura said.

Newman argued that mercury is more of a global problem than a local one.

"This should be a national and global issue, not a state issue," he said.

Discuss this topic in our forums

Back to Top

Send this page to a friend

GANNETT

Front Page | News | Packers | Sports | Entertainment | Homes
Autos | Jobs | Classifieds | Contact Us

(Attachment #32)

American Electric Power, Southern Co. ($1.6 million to GOP in 2000 cycle), Reliant Energy (nearly $445,000 to GOP) Dominion Resources ($560,000 to GOP), along with the government-owned Tennessee Valley Authority,were responsible for one-third of all U.S. electric utility mercury emissions that year, and American Electric Power alone released 10 percent of all power plant mercury emissions. Those four companies also were among the beneficiaries of the recent EPA ruling that essentially repealed the Clean Air Act provision requiring power plants to install modern-day pollution controls if they increased emissions when upgrading their plants.

The Natural Resources Defense Council is a national, non-profit organization of scientists, lawyers and environmental specialists dedicated to protecting public health and the environment. Founded in 1970. NRDC has more than 550,000 members nationwide, served from offices in New York, Washington, Los Angeles and San Francisco.

Talking points, from Mercury-Free Minnesota:

* Right now, we have the technology to reduce mercury pollution by 90% or more according to EPA's own estimates.1 All we need is for the Bush Administration to enforce the laws on the books.

* Unfortunately, the Bush Administration has proposed a plan that would permit three times more mercury pollution than strict enforcement of Clean Air Act allows—for decades longer. From 2008 through 2020, the Bush plan would allow 284 more tons of toxic mercury pollution than the current clean air laws allow.

* The recent proposal also includes a "cap-and-trade" program that allows industry to buy and sell the right to pollute and may leave some communities at risk for more pollution than others.

* This is an important issue with long-term consequences. However, the Bush administration will only hold public hearings in three U.S. cities: Philadelphia, PA, Raleigh, NC and Chicago, IL.

* Coal-burning power plants are the single largest source of mercury pollution in the US2 and are responsible for 33% of the total mercury emissions from all manmade sources nationwide.

* Forty-five states had fish advisories in 2002.3 Fish advisories for mercury have

increased 138% from 1993 to 2002.4

* The Centers for Disease Control reported that one in 12 women of childbearing age has levels of mercury in her blood above EPA's "safe" level.5 Children born to women with blood concentrations of mercury at that level are at risk.

* At a meeting on December 10-11, 2003 the FDA and EPA, for the first time, combined their advice into a draft joint advisory that warns pregnant women, women who may become pregnant, and nursing mothers against eating certain types of mercury-laden fish and to limit their consumption of others.6

* Why is the Bush administration undermining our air pollution protections while at the same time warning women of childbearing age and children to limit their consumption of mercury-laden fish?

(Attachment #32)

Previous *Accent on Actions*:
Clean Water Act Protection Threatened
Support Safe Routes to School
Comments on Hydrogen Sulfide & Air Quality needed by **December 15th**
Take Action to Promote Green Power
Bad Deal On HR1904
OPPOSE ROADLESS AREA EXEMPTIONS FOR TONGASS-CHUGASH NATIONAL FORESTS
Oppose Changes to Roadless Area Conservation Rule
Support The Study of Wind Energy
The National Forest Protection and Restoration Act
Oppose McInnis Bill (HR 1904)
Land Protection Funding
Park Service needs your comments regarding The North Shore Road
End the Sweatheart Deals with Big Timber
Save the Clean Air Act -Support Sen Edwards ammendments (1/03)
Free the Highway Trust Fund (6/02)

"Only when the last tree has died, and the last river has been poisoned, and the last fish has been caught will we realize that we cannot eat money." ~19th Century Cree Proverb

SCIENCE NEWS Online
THE WEEKLY NEWSMAGAZINE OF SCIENCE

Subscriber Login
Access to full contents
Sign In Help

What Else Is New?
Home page.

Search

Archives

Online Features

- **Math Trek** Sliding-Coin Puzzles
- **Food for Thought** Dietary Inflation
- **Science Safari** Super Truck
- **TimeLine** 70 Years Ago in *Science News*

Print Article
E-mail Article
Week of Feb. 1, 2003; Vol. 163, No. 5

Why the Mercury Falls

Heavy-metal rains may trace to oxidants, including smog

Janet Raloff

In the mid-1980s, some researchers in the northern Midwest, Canada, and Scandinavia began reporting alarming concentrations of mercury in freshwater fish. Curious about Florida's largemouth bass and other finned delicacies, state scientists there began assaying lake fish. Thomas Atkeson, then a Florida state wildlife biologist, recalls that most of the fish he examined fell just under the limit then recommended by the Food and Drug Administration. "We were scratching our heads as to whether this was a big deal," he recalls, until his team reached the Everglades. In these wetlands, mercury contamination of fish routinely averaged more than twice the concentrations seen elsewhere in the state. Indeed, their mercury values were among the highest ever reported for U.S. freshwater fish.

"There was no quibbling that these levels were high and a potential health concern to humans and wildlife," Atkeson says. Eating mercury-tainted fish can trigger a variety of problems, ranging from hair loss and chronic fatigue in adults to nervous system impairment of fetuses and children (*See* http://www.sciencenews.org/20021221/food.asp).

When a study of water entering the Everglades showed that feeder streams weren't responsible for the mercury excess, "we realized, astonishingly, this was an air-pollution problem," says Atkeson, now the coordinator of mercury research for the Florida Department of Environmental Protection in Tallahassee. Subsequent data confirmed that 95 to 99 percent of the mercury entering the Everglades each year comes from the air, so Florida called in atmospheric scientists to determine why the Everglades had become a mercury hot spot.

IN COLD LIGHT. The melting of Barrow's annual polar ice and snow can release huge quantities of pent-up halogens. In sunshine, these chemicals transform mercury—found throughout the atmosphere—into a form that readily falls onto land and water.
K. J. Scott / U. Manitoba

Efforts by those researchers are finally paying off in explaining Florida's problem and, ironically, mercury pollution as far away as the ice and water at Earth's poles.

Mercury taints the atmosphere worldwide, but there are large variations in how much of it drops onto land or water at any location. Recent experiments have begun identifying oxidizing gases, such as ozone and molecules containing the halogens bromine and chlorine, as triggers for that mercury fallout. Which oxidants dominate that process appears to depend on the environment, the season, the altitude of the airborne mercury, and even the amount of daylight.

Only in the past 5 years have scientists seriously considered that such gaseous oxidants might affect mercury fallout. Previously, they knew that this metal was spewed largely from smokestacks but were puzzled by why it fell out of the atmosphere where it did. Although the magnitude of atmospheric mercury oxidation and fallout is still hard to quantify, the recent findings suggest its control could prove difficult and politically thorny—because limiting mercury's fallout may hinge on better controlling regional or even international emissions of not just that metal but also sulfates, nitrates, and other air pollutants.

For instance, mercury fallout in some areas may turn out to depend on smog as much as on how much of the metal is being released, says Douglas J. Steding, a geochemist who's now studying law at the University of Washington in Seattle. Indeed, the skies already hold so much mercury that even if industrial emissions of the metal ended tomorrow, significant fallout of the pollutant might persist for decades, he notes.

Quicksilver skies

Mercury enters the air easily. It's released when coal is burned, gold is mined, some chlorine is manufactured, and even when a fluorescent lightbulb breaks. Some 99 percent of the airborne metal is elemental. Fairly insoluble and unreactive in this form, it can circumnavigate the globe for up to 2 years. What's contaminating the Everglades, therefore,

(Attachment #32)

cetos
center for ethics & toxics

Agricultural Biotech
Cancer / Genetics
Safe Pregnancy
Critical Habitat
Assessing Risk

About CETOS
Mission
Join Us
Donate
Search
Home

(Attachment #32)

Reproductive & Developmental Hazards: *Spotlight on Mercury*

By Noah Chalfin

Maternal exposure to mercury via diet and airborne sources, especially in i organic forms, is associated with reproductive toxicity, and in the case of methyl mercury, profound neurobehavioral damage in the developing fetu

Organic mercury (methyl mercury) is the most dangerous form of mercury because it is the most easily absorbed in the maternal gastrointestinal tract following ingestion, and it is readily transferred into the brain of developir fetuses. Levels in fetal circulation may be significantly higher than levels i maternal blood, and methylmercury appears in significant levels in breast r

Bacteria in the environment transform other forms of mercury into organic mercury, which is then taken up in algae eaten by fish, making its way inte human diet. Contaminated fish, particularly carnivorous fish such as swort tuna, shark, and pike, are a major source of organic mercury exposure for r people.

Elemental mercury is a significant hazard only when inhaled. People may exposed to mercury in the air from waste incinerators that are burning batt fluorescent bulbs, or medical waste. Oil and coal burning facilities also em mercury into the atmosphere, since mercury is a contaminant of these fuel: Once elemental mercury is in the body, it passes easily into the brain and a the placenta to the fetus.

Organic mercury exposure has resulted in two large epidemics of poisonin recent history. One episode, in the area around Minamata Bay in Japan, occurred in the 1950s, and the second series of outbreaks occurred in Iraq late 1950s, early 1960s, and early 1970s, when imported seed grain was tr with organic mercury to retard fungal growth. Instead of being planted, the grain was used for bread making, and thousands of people were poisoned. Although some adults developed symptoms, including constricted visual fi numbness of the fingers and toes, and even poor coordination, the main vi of the exposure in both epidemics were children exposed before and after l

Organic mercury selectively damages the developing brain. In the outbreal poisoning in Japan and Iraq, infants had cerebral palsy, mental retardation, incoordination, weakness, seizures, visual loss, and delayed development. a child exposed to organic mercury in utero appeared fairly normal at birth only slight abnormalities of reflexes and muscle tone, but later had seizure long delays in learning to walk and talk, and severe clumsiness. At lower-l levels, the only observed effects were abnormal muscle tone and reflexes a mild developmental retardation when retested at an older age.

Health effects of organic mercury are similar in animal studies and the hur

population. It is one of the best-understood developmental toxicants. Orga mercury interferes with cell division and migration of cells in the developi brain. Studies in mice have shown that cells in the developing brain stop ir middle of cell division when exposed to organic mercury.

In addition, methylmercury binds to DNA and interferes with the copying chromosomes and production of proteins, processes that are essential to lif

Two major ongoing studies of people who eat a lot of fish - one in the Seychelles Islands and one in the Faroe Islands - are attempting to evaluat low-dose effects of methylmercury on brain development. Preliminary resu are conflicting, with the Seychelles study showing little or no effect, and tl Faroe study showing subtle but significant impairment of brain function.

Based on the aforementioned Iraqi study, the U.S. EPA projected that the highest chronic exposure to methylmercury tolerable without likely health effects is 1.0 µg/kg body weight/day, and on that basis set a reference dose (RfD) of 1.0 µg/kg/day.

The evidence of adverse health effects from elemental and inorganic merc exposure is not clear. These forms of mercury do not appear to affect the developing brain like organic mercury does. Although animal studies indic that elemental mercury can damage male fertility, men occupationally exp to elemental mercury vapor did not have any apparent decrease in fertility compared to a group of unexposed men, nor did their children have a great risk of malformations. Animal studies, however, have shown that element mercury can be toxic to the fetus.

A different study of exposed male workers found a twofold-increased risk spontaneous abortion among their wives. Studies in women, mostly dental assistants, have found conflicting results as to whether elemental mercury increases the risk of spontaneous abortion. One large cohort study demons spontaneous abortion and other pregnancy complications in exposed wom Several additional studies suggest that women occupationally exposed to elemental mercury may have an increased risk of menstrual disorders, particularly heavy bleeding and severe menstrual cramps.

Citation of references has been excluded for the sake of brevity. Please co the author noah@cetos.org for fully cited article reprints, or with questio pertaining to a specific point.

may have originated in Miami, India, or Siberia.

However, atmospheric chemists have discovered that when elemental mercury encounters certain oxidants, it changes into so-called reactive gaseous mercury. Unlike the element, this form is both highly reactive and water soluble, so it remains airborne only hours to days and falls—in rain or snow or attached to dust—near where it's formed. In a lake or ocean, bacteria transform it into methylmercury, the harmful form of the metal that fish and, in turn, people and other predators accumulate in their tissues.

When it comes to triggering the transformation of elemental mercury, all oxidants are not equal. Anthony Hynes of the University of Miami (Fla.) recently found that the hydroxyl radical—abundant in the atmosphere and normally considered a strong oxidant—is a poor oxidizer of mercury except perhaps in extremely cold conditions, such as high in Earth's lower atmosphere.

On the other hand, observes Steve Lindberg of Oak Ridge (Tenn.) National Laboratory, certain halogen radicals—reactive compounds containing bromine or chlorine—rapidly and efficiently transform elemental mercury to the reactive gaseous form. It so happens that sea spray and melting polar ice release especially large quantities of these halogen radicals.

Working in Barrow, on the north-central coast of Alaska, Lindberg and his colleagues correlated the buildup of these halogens during the Arctic spring with a dramatic, localized depletion of elemental mercury in the air. In the March 15, 2002 *Environmental Science & Technology*, they showed that the missing elemental mercury had been oxidized; roughly 35 percent remained airborne, and the rest fell onto the ground. In fact, the surface snow proved so rich in oxidized mercury "that we initially had a hard time believing the data," he recalls.

Peak readings of reactive gaseous mercury in the air at this remote site ran to 1,000 picograms per cubic meter, says Lindberg, "or up to 100 times what we typically find in industrial areas of the eastern United States."

Polar extremes

Such findings demonstrate the natural vulnerability of polar sites to mercury fallout. During the many weeks of total darkness at Barrow, chemical precursors to the oxidants appear to build up in the air, Lindberg says. Reactive gaseous

(Attachment #32)

mercury remains undetectable until Arctic sunrise occurs in late January. Then, he says, "Boom!"—the light triggers mercury oxidation at a skyrocketing pace. Production of reactive gaseous mercury "is just screaming as you go from January through May," when Barrow begins experiencing 24-hour sunlight, says Lindberg.

Measurements by other researchers at Arctic sites further inland show less mercury pollution, indicating that the heavy fallout may be restricted to the near-coastal environment and parcels of open ocean where floes of annual ice melt. Halogen impurities concentrate on the surface of ice crystals and vaporize before the snow or ice begins to melt, Lindberg explains.

Ralf Ebinghaus of the GKSS Research Center in Geesthacht, Germany, and his colleagues have observed similar fallout of reactive gaseous mercury at the Neumayer Research Station in Antarctica. Again, it begins with the polar sunrise and continues through the austral spring when generation of airborne halogens is high.

In the Jan. 1 *Environmental Science & Technology*, Ebinghaus' international team offers the first report of a second, Antarctic-summertime peak in mercury fallout. Beginning after much coastal sea ice has melted, this peak probably results from mercury-oxidizing pollution drifting in from industrial areas to the north, he says.

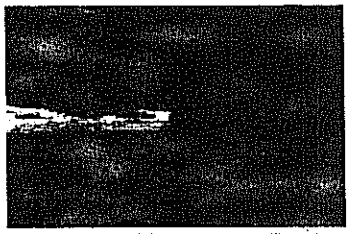
Even as a coastal phenomenon, Lindberg estimates that fallout of oxidized mercury could still amount to "hundreds of tons per year" in the Arctic and Antarctica. In large areas of the polar seas, bacteria probably start the metal on its way up the food chain, he says. Indeed, Lindberg notes, such events could account for the high concentrations of methylmercury that naturalists have measured in polar bears.

Temperate fallout

Recently, scientists collected oxidized mercury over the temperate Atlantic Ocean. There, they encountered substantial concentrations of reactive gaseous mercury—not predominantly at low altitudes typical of polar regions, but mostly in the lower atmosphere's upper reaches, at heights up to 3,000 meters, report Robert K. Stevens, who works with Atkeson at the Florida Department of Environmental Protection, and Matthew S. Landis of the Environmental Protection Agency in Research Triangle Park, N.C.

They have since

turned to measuring elemental and oxidized mercury at a ground station on Hawaii's Mauna Loa, where they can sample air at 4,000 m above sea level. Over the past year, they've seen wide swings in air concentrations of oxidized mercury there. Much of it appears to be attached to dustlike particles, which may foster the metal's fallout.



MERCURIAL RAINS. Downpours, like this one crossing the Everglades, effectively scrub water-soluble mercury from the air, thus contaminating the food chain. D. Scheidt

"The elemental mercury completely disappears for long periods," Stevens finds. When that happens, he says, "reactions are going on that are producing a water-soluble form of mercury that can contaminate the oceans of the world.

In smog-chamber experiments, he and Landis showed that sunlight activates certain airborne halogen compounds to convert elemental mercury to reactive gaseous mercury. If the main source of the halogens reacting with elemental mercury is sea spray, Stevens says, this mechanism might increase concentrations of the metal in the water of warm coastal areas, such as Florida.

However, he points out that halogen oxidants also form during the sunlight-triggered breakdown of industrial chemicals such as chlorofluorocarbon refrigerants. What would be the source of such industrial oxidants at Mauna Loa? Plumes of pollution from Asia, Stevens suspects.

Ozone, too

California researchers have been examining the impact of Asian air masses that travel to the U.S. mainland. In this case, ozone and several other compounds carried in that air appear to directly oxidize elemental mercury.

Steding and A. Russell Flegal of the University of California, Santa Cruz, measured mercury in coastal rains and compared events when the air had been relatively clean with storms when plumes of ozone-rich Asian pollution were present. In the Dec. 19, 2002 *Journal of Geophysical Research*, they report that when pollution from China

coincides with a California rainstorm, up to nine times as much mercury rains out of the atmosphere as it does during other storms.

Eight years ago, when Lindberg reported data suggesting that ozone might be oxidizing elemental mercury in ambient air, "nobody believed me," he recalls. Now, he observes, a growing number of scientists are indicting ozone pollution as a potentially important factor in creating reactive gaseous mercury.

After years of study, the Everglades' high mercury fallout appears to have resulted from many unusual factors, such as its shallow waters and South Florida's especially large number of municipal- and medical-waste incinerators, which emitted mercury at a relatively low height. In recent years, new controls on their emissions cut mercury releases to 1 percent of those in the mid-1980s. "Largemouth bass are now carrying around one-third of the mercury that they had in 1990," says Atkeson.

As it turns out, for the Everglades, "everything was in the right juxtaposition to create an exaggerated response," he observes. However, because of the wetlands' heavy mercury contribution from local emitters, cleaning up their releases "allowed these waters to clean up more rapidly than you would expect with other water bodies. So, the Everglades is not a good example of how much success you could have with lakes elsewhere in North America," Atkeson says. "But it does show there is hope for them." The newly recognized role of other pollutants in mercury's fallout increases the challenge. Indeed, Steding says, that task will likely require political and diplomatic solutions that transcend national borders.

Mercury Retirement

The ultimate solution may be to store the metal, not sell it

To limit mercury's fallout, society must reduce the metal's release. Environmentalists have proposed limits on mercury use, but another idea gaining interest is the collection of excess or recovered mercury for long-term—potentially permanent—storage.

Indeed, at a United Nations–sponsored meeting on mercury in Geneva last September, the U.S. State Department

(Attachment #32)

supported a proposal asking nations to formally consider "retiring excess mercury through long-term waste management (terminal storage)."

Not so long ago, mercury was mined throughout the world to meet a growing demand for the metal. What little was retired from use often ended up in landfills, from which it can escape into the atmosphere (SN: 7/7/01, p. 4: http://www.sciencenews.org/20010707/fob1.asp).

But in the 1980s, biologists recognized the toxic impact of chronic, low-level mercury exposure. Now, landfills frequently prohibit products containing mercury. Moreover, use of the metal is falling as recovery programs mushroom. For instance, U.S. mercury demand has decreased to 20 percent of its 1980 level at the same time that recycling of the metal has nearly tripled, notes Michael T. Bender, director of the Mercury Policy Project in Montpelier, Vt. Today, industrial countries—including the United States—usually end up with more mercury than they need.

At issue is what to do with the excess.

A Department of Defense strategic stockpile of almost 5,000 metric tons of mercury—holdings no longer deemed essential—constitutes the nation's largest store. Another 3,000 metric tons of mercury is employed in aging chlorine-production facilities using a so-called chlor-alkali process. These plants are expected to shut down in the coming decades, says Art Dungan of the Chlorine Institute in Rosslyn, Va., an industry group.

Until recently, the Defense Department and the owners of retiring chlor-alkali plants had expected to sell their mercury. Buyers of such low-cost recycled mercury tend to be in the developing world, where few regulations exist to encourage only essential uses and careful management of the toxic material, observes John Gilkeson of the Minnesota Office of Environmental Assistance in St. Paul.

To keep mercury from re-entering the atmosphere, such sales must be prohibited, he argues. Indeed, Bender advocates that the United States halt mercury recycling and trade—"and provide options for long-term, monitored storage."

The Chlorine Institute agrees, in part. "It may be prudent for the United States to consider a national policy to identify which worldwide outlets are acceptable," Dungan says, and halt mercury trading with unacceptable ones. Last May, his institute said that the chlor-alkali industry is willing to work

(Attachment #32)

with federal officials on "how [it] can best ensure that any surplus mercury from idled or converted sites is placed into . . . permanent storage." However, Dungan says his industry wants Uncle Sam to take possession—and responsibility for—its mercury.

The states want that, too. The Quicksilver Caucus—a consortium of state officials—has begun lobbying for centralized storage of excess mercury. For legal and financial reasons, Gilkeson says, "the states believe this must be at the federal level."

To date, Bender notes, the only step toward retiring mercury is storage, last year, of 80 metric tons of the metal from a shut-down Maine chlor-alkali plant. Environmental groups convinced the plant's owner not to sell the mercury but to ship it to a private company for safekeeping for at least 5 years.

****

If you have a comment on this article that you would like considered for publication in *Science News*, please send it to editors@sciencenews.org.

To subscribe to *Science News* (print), go to https://www.kable.com/pub/scnw/subSer

To sign up for the free weekly e-LETTER from *Science News*, go to http://www.sciencenews.org/subscribe_form.asp.

References and sources for this article

References:

2002. Report of the Global Mercury Assessment Working Group on the work of its first meeting. Global Mercury Assessment Working Group. Sept. 23. Available online at http://www.chem.unep.ch/mercury/WGmeeting/K0262760-final-report.doc.

2002. Chlor-alkali industry principles concerning the retirement of mercury. The Chlorine Institute. May 9. Available at http://www.cl2.com/whats_new/Hg%20Retirement%20Discussion%20-%20Industry%20Principles%20final.pdf.

2001. Mercury Update: Impact on Fish Advisories. EPA-823-F-01-011. June. U.S. Environmental Protection

Agency Fact sheet. Available online at http://www.epa.gov/ost/fishadvice/mercupd.pdf.

Bauer, D. . . . and A.J. Hynes. In press. Gas phase elemental mercury: A comparison of LIF detection techniques and study of the kinetics of reaction with the hydroxyl radical. *Journal of Photochemistry and Photobiology A: Chemistry.*

Ebinghaus, R., *et al.* 2002. Antarctic springtime depletion of atmospheric mercury. *Environmental Science and Technology* 36(March 15):1238-1244.

Hightower, J.M., and D. Moore. In press. Mercury levels in high-end consumers of fish. *Environmental Health Perspectives.* Abstract available at http://dx.doi.org/10.1289/ehp.5837.

Lindberg, S.E. . . . M.S. Landis, R.K. Stevens, *et al.* 2002. Dynamic oxidation of gaseous mercury in the arctic troposphere at polar sunrise. *Environmental Science and Technology* 36(March 15):1245-1256.

Steding, D.J., and A.R. Flegal. In press. Mercury concentrations in coastal California precipitation: Evidence of local and trans-Pacific fluxes of mercury to North America. *Journal of Geophysical Research* 107(D24):4764. Abstract available at http://dx.doi.org/10.1029/2002JD002081.

Temme, C. . . . R. Ebinghaus, *et al.* 2003. Measurements of atmospheric mercury species at a coastal site in the Antarctic and over the South Atlantic Ocean during Polar Summer. *Environmental Science and Technology* 37(Jan. 1):22-31. Available at http://pubs.acs.org/cgi-bin/sample.cgi/esthag/2003/37/i01/html/es025884w.html.

Further Readings:

1997. Mercury Study Report to Congress. EPA-452/R-97-010. December. U.S. Environmental Protection Agency. Available online at http://www.epa.gov/oar/mercury.html.

Johnson, J. 2002. Too much of a bad thing: As U.S. companies end mercury use, questions mount over need to limit world access to surplus. *Chemical & Engineering News* 80(July 29):22-23.

Little, M. 2002. Reducing mercury pollution from electric power plants. *Issues in Science and Technology Online.*

Summer. Available at http://www.nap.edu/issues/18.4/p_little.htm.

Lutter, R., and E. Irwin. 2002. Mercury in the environment: A volatile problem. *Environment* 44(November):24.

Natural Resources Council of Maine. 2002. HoltraChem Mercury leaving Maine for good: Agreement reached to place mercury in safe storage, prevent export. *Environews.* Sept. 6. Available at http://www.maineenvironment.org/mercury/holtrachem_sept62002.htm.

Raloff, J. 2002. Mercurial effects of fish-rich diets. *Science News Online* 162(Dec. 21). Available at http://www.sciencenews.org/20021221/food.asp.

_____. 2001. Landfills make mercury more toxic. *Science News* 160(July 7):4. Available at http://www.sciencenews.org/20010707/fob1.asp.

Sources:

Thomas D. Atkeson
Mercury and Applied Science
Florida Department of Environmental Protection
2600 Blair Stone Road
Mailstop 6540
Tallahassee, FL 32399-2400

Michael Bender
Mercury Policy Project
1420 North Street
Montpelier, VT 05602
Web site: http://www.mercurypolicy.org

Arthur E. Dungan
The Chlorine Institute
1300 Wilson Boulevard
Arlington, VA 22209
Web site: http://www.CL2.com

Ralf Ebinghaus
GKSS Forschungszentrum Geesthacht GmbH
Institut für Küstenforschung
Physikalische und Chemische Analytik
Max-Planck-Str. 1
D-21502 Geesthacht
Germany

A. Russell Flegal

(Attachment #32)

WIGS Laboratory Group
Department of Environmental Toxicology
University of California
Santa Cruz, CA 95064

John Gilkeson
Minnesota Office of Environmental Assistance
520 Lafayette Rd., N.
St. Paul, MN 55155-4100

Jane M. Hightower
2100 Webster Street
Suite 418
San Francisco, CA 94115

Anthony J. Hynes
Division of Marine and Atmospheric Chemistry
Rosenstiel School of Marine and Atmospheric Science
University of Miami
4600 Rickenbacker Causeway
Miami, FL 33149

Matthew Landis
E205-03
USEPA Mailroom
Research Triangle Park, NC 27711

Steve Lindberg
Environmental Sciences Division
Oak Ridge National Laboratory
P.O. Box 2008
Oak Ridge, TN 37831-6038

Chester W. Spicer
Atmospheric Science and Applied Technology Department
Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Douglas Steding
c/o A. Russell Flegal
Environmental Toxicology
University of California, Santa Cruz
Santa Cruz, CA 95064

Robert K. Stevens
Florida Dept. of Environmental Protection
U.S. Environmental Protection Agency
NERL, HEASD
Mail Code: E205-01

(Attachment #32)

109 T.W. Alexander Drive
Research Triangle Park, NC 27709

From *Science News*, Vol. 163, No. 5, Feb. 1, 2003, p. 72.

Home | Table of Contents | Feedback | Subscribe | Help/About | Archives | Search

Copyright ©2003 Science Service. All rights reserved.
1719 N St., NW, Washington, DC 20036 | 202-785-2255 | scinews@sciserv.org

Mercury Contamination:
How Effective Are Regulations?

Congressional Briefing Summary
November 2003

Mercury Contamination: How Effective Are Regulations?

Monday, November 17, 2003, 2318 Rayburn House Office Building

PANELISTS

Susannah Foster
Professional Staff Member, Environment, Technology and Standards Subcommittee, House Committee on Science

Dr. Thomas D. Atkeson
Coordinator, Mercury and Applied Science,
Florida Department of Environmental Protection

A November congressional briefing featuring Florida Department of Environmental Protection (FDEP) mercury expert Dr. Thomas Atkeson presented the findings of a recently finished decade-long study sponsored by FDEP and the US Environmental Protection Agency (EPA). The study finds that regulatory efforts to reduce local and regional mercury emissions can translate into dramatic benefits for areas with high levels of methylmercury contamination.

In the mid-1990s state and federal agencies began to regulate out-of-date municipal and medical-waste incinerators in southern Florida. When combined with pollution prevention actions taken in the late 1980's that reduced mercury input to incinerators, these policies achieved a decline in incinerator mercury emissions in south Florida of approximately 92 percent between 1991 and 1999. Mercury found in wildlife in the Everglades also declined by roughly 60-70 percent from its peak in the mid-1990s. Study coordinator Dr. Thomas Atkeson notes that the approach taken in southern Florida has translated into tangible results faster than previous estimates would have predicted.

What is mercury?

Mercury is a naturally-occurring metallic element found in the earth's crust as well as in circulation in terrestrial, marine, and atmospheric environments. As a chemical element, mercury cannot be created or destroyed; it can, however, be circulated through the air and deposited in water and soil. As with all elements, mercury can change chemical states to bond with other elements, to form various compounds. Most mercury on earth is generally found in one such compound, cinnabar (or mercury sulfide, HgS), which has been produced in mines for perhaps two thousand years.

The elemental form of mercury is rarely seen in its pure metallic state, as shiny, silvery droplets that readily flow as a liquid at room temperature. For centuries, when and where it has appeared in this form it has captivated human attention. Ancient peoples ascribed to mercury mythical, magical and religious importance as an element with the dual nature of having both medicinal and poisonous properties. Only in the last century was it realized that the native pharmacopeias based on mercury in various parts of the world were based more in mystique than in medical knowledge.

In the current debate over mercury contamination, three forms of mercury have taken center stage—methyl, elemental, and oxidized. Inorganic, elemental mercury (Hg0) released by combustion sources and mine wastes is not a problematic emission in and of itself. Mercury becomes dangerous to ecosystems through a two-step transformation to the most toxic and bioac-

cumulative form of mercury, methylmercury (MeHg). Elemental mercury in the atmosphere and in watershed runoff is first oxidized by complex organic and inorganic reactions into its reactive, water-soluble form (Hg^{2+}). Only reactive mercury can undergo "methylation," the second set of reactions necessary to form methylmercury from elemental mercury. Methylation is a microbial process controlled by sulfate-reducing bacteria and a handful of other chemical and environmental factors. It is only once mercury is methylated that it enters the ecosystem, traveling up the food chain to humans through the consumption of affected fish. When scientists and commentators talk about the dangers of mercury contamination, they are almost exclusively referring to methylmercury.

How does mercury affect public health?

A strong body of scientific evidence shows that methylmercury is a powerful neurotoxin that poses significant threats to public health. According to EPA, high doses of mercury can impede motor function and cause tremors, convulsions, and even death. More commonly, mercury poisoning occurs at smaller levels and can cause damage to the senses and brain.

Studies also show that it is the developing fetus that is especially vulnerable to mercury contamination. The National Academy of Sciences (NAS) estimates that more than 60,000 U.S. babies born each year are at risk for neurodevelopmental damages caused by methylmercury, and EPA has put that figure between 52,000 and 276,000. Analysis suggests that children of women who were exposed to methylmercury at high levels display a variety of effects, including, but not limited to, delayed onset of walking and talking and reduced neurological test scores. When women are continually exposed to smaller doses of methylmercury, children have exhibited delays and deficits in learning ability.

Contaminations are also played out on a macro-scale. In the 1950s at Minamata Bay in Japan, methylmercury in the effluent from a plastics factory was ingested by fish and, eventually, by people in the fishing communities on the bay. More than 900 victims died in agony, and many babies in the area were born deformed. Thousands of victims were ostracized, first out of a mistaken fear that the disease might be contagious and later because their legal suits drew unwanted attention to the region. Another well known outbreak, this time of alkyl mercury, occurred in Iraq in 1971, resulting in 6,000 hospital admissions and 500 deaths from bread made from imported seed grain dressed with methylmercury fungicide. And, while it is true that progress has been made, the health effects of mercury is still an issue for communities around the country. A January 2003 report by the Centers for Disease Control and Prevention found that 1 in 12 women of childbearing age has mercury levels above the safe health threshold established by the EPA.

Where does extra mercury come from?

One challenge of shaping public policy with regard to mercury has been a lack of knowledge about the amounts of mercury that are in water, sediment, and fish, and the processes by which mercury gets there. To this end, the United States Geological Survey (USGS) has compiled data on mercury and methylmercury in various areas across the country. The sampling studies have produced a large amount of new information that has enabled USGS to extrapolate trends, debunk myths, and establish specific regions of concern.

One possible source of mercury methylation previously unstudied comes from wetland areas. Studies have demonstrated that "drying and rewetting" cycles in the Florida Everglades result in the production and bioaccumulation of a substantial amount of methylmercury. In other words, as the Everglades go through their yearly cycle from water saturation to dryness, a significant amount of methylmercury is released. It appears that the drying and rewetting cycles cause soils and sediments in the Everglades to go through a period of oxidation followed by a period of deoxidation. As a result, mercury methylation becomes exacerbated. In fact, the highest levels of methylmercury ever seen in the Everglades by the USGS resulted from a drying and rewetting cycle, as opposed to any known "mercury-loading" event where mercury is released directly into an ecosystem.

(Attachment #32)

The studies also found that the Northeastern United States is one of the greatest problem areas for methylmercury accumulation. In samples collected from 112 sites, USGS found that 40 percent of fish contained mercury levels higher than the EPA recommended level of .3 ppm (parts per million). Furthermore, as a startling indication of just how much human activity contributes to mercury contamination, sampling in New England found that mercury levels sharply increase the closer one gets to urban areas.

Why is mercury regulation an energy issue?

Rarely are energy concerns divorced from those of the environment, and the issue of mercury contamination is no different. Mercury is emitted as a byproduct of coal and oil combustion for power generation. Emissions from power plants constitute about 40 percent of total U.S. mercury emissions annually. As such, any attempt to regulate overall mercury emissions would likely be associated with significant compliance costs for energy producers.

How does industry view the mercury issue?

The energy industry acknowledges that the bioaccumulative properties of methylmercury can make it dangerous to public health. However, industry advocates and research groups, including the Edison Electric Institute and the Electric Power Research Institute (EPRI), assert that the majority of mercury emitted from power plant smokestacks is of the elemental variety, which tends to circulate globally in the atmosphere for a year or more. They contrast these power plant emissions with waste incinerator emissions of already oxidized mercury, which can be rapidly taken up in rain water, snow, or adsorbed onto small particles, and be subsequently deposited in the environment. They contend that forcing power plants to install antipollution equipment would not necessarily ensure a reduction in methylated mercury levels in the local environment.

Industry backers cite caveats in even the most recent studies on mercury contamination which admit that the environmental factors and chemical processes that determine the rate of methylation of mercury are not completely understood by the scientific community, and argue that accurately predicting the effects of a single mercury standard in different ecosystems is probably not possible without further research. Utilities argue that any legislation must address the scientific uncertainties and complexities unique to the issue of mercury pollution, giving them some flexibility in their response to the issue, and weighing known costs against potentially unknown benefits.

What is the case for greater regulation?

Environmentalists argue that the threat mercury poses to human populations cannot be ignored. They point to fossil fueled power plants as the major remaining source of mercury emissions and argue that reducing mercury emissions from these sources is a necessary step in reducing local deposition of mercury. A recent report released by Northeast States for Coordinated Air Use Management (NESCAUM) contends that mercury emissions from coal-fired power plants could be reduced by more than 90 percent. NESCAUM says that reductions could come by utilizing various existing technologies, such as those that reduce mercury emissions as a co-benefit of limiting emissions of other pollutants, or those that are used to target mercury from municipal waste incinerators, all without undue economic burden.

Although they concede that much uncertainty remains about the process of mercury distribution and methylation, many government officials argue that attempts to dismiss emissions of elemental mercury as harmless are limited by the same scientific uncertainties, noting that elemental mercury can easily turn into oxidized mercury in atmospheric, terrestrial, and marine environments. Proponents of regulation believe that based on the Florida study and others, the processes at work are sufficiently understood to craft abatement policies. While acknowledging that differences in ecosystems and coal combusted in different parts of the country will affect the rates of improvement, they point to the fundamental finding of the Florida study – that reductions in emissions of mercury from local sources will be reflected in proportional reductions in mercury in fish. Noting that 45 States have mercury advisories warning citizens about the mercury content of local fish and wildlife, they argue that action is needed to control mercury emissions from coal-fired power plants. They also argue that by proposing a mercury control rule now that requires application of mercury emission control technologies, EPA can give industry the measure of certainty it needs to spur market forces to adequately protect public health.

Mercury Contamination:
How Effective Are Regulations?

What has already been done to regulate mercury levels in the environment?

The regulation of mercury has historically been a collective effort of several agencies rather than one cohesive set of regulations. Mercury controls are in place at both the state and federal level and are managed by multiple agencies. For example, on the federal level, mercury contamination is monitored by EPA, the Food and Drug Administration (FDA), and the Occupational Safety & Health Administration (OSHA). Thus far, there exists no one statute at a federal level that has singled out mercury as a sole source of concern. Instead, mercury is one substance out of many covered by a variety of statutes in a variety of locations. However, as the effects of mercury on ecosystems and public health become increasingly clear, the call for a national plan on mercury regulation has become stronger. The lead statutory authority for controlling mercury emissions is Section 112 of the 1990 Clean Air Act. Section 112 states that mercury is subject to the MACT (Maximum Achievable Control Technology) and residual risk provisions of Section 112. Together, these provisions ensure that mercury is monitored.

A special provision was included in Section 112 for power plants, requiring EPA to study the public health effects of air toxic emissions from electric power plants that burn fossil fuels and to determine whether it is necessary to regulate those emissions. This resulted in two reports published for Congress by EPA: in 1997, EPA identified fossil fuel plants as the single greatest source of mercury contamination, and a 1998 Air Toxics report found that mercury was the toxic of greatest concern out of a list of roughly 168 pollutants. Further EPA research found that of fossil-fuel burning plants, coal-fired units are the largest source of human-caused mercury emissions in the U.S., releasing roughly 43 tons of mercury each year. The EPA is required by court order to propose regulations to reduce mercury emissions from coal and oil fired plants by December 15, 2003, promulgate a regulation by December 15, 2004, and have it fully implemented by December 15, 2007.

** **NOTE:** On December 3, 2003, news organizations reported that the Bush administration is considering eschewing regulation under Section 112 in favor of a new plan to regulate mercury under Section 111 "New Source Performance Standards."

News sources are reporting that new White House Office of Management and Budget (OMB) documents assert that EPA erred when it declared that mercury was the kind of toxic substance for which the Clean Air Act requires strict pollution controls. The proposed EPA policy revision would rescind a legal document to that effect, signed by Carol Browner, the EPA administrator under President Clinton.

Although administration officials claim that a cap-and-trade system would eventually result in greater emissions reductions, critics argue that the proposed change would effectively exempt all coal-fired power plants from mercury regulation for the foreseeable future. Under the proposed plan, mercury would be subject to a New Source Performance Standard (NSPS) instead of the requirements of Section 112. As the name implies, NSPS applies only to newly-built and modified power generation units. Critics of the proposal argue that because recent EPA rule changes muddle the definition of "modify," as a practical matter, all currently existing coal power plants would be exempted from mercury regulation while still meeting the court-imposed rule deadline.

Under the Administration's proposal, existing fossil fueled power plants would be regulated, if at all, by a cumbersome State-by-State program under Section 111(d) that would require each State to establish its own mercury control program for existing fossil fuel-fired units. The EPA would establish a target for national emissions, and would encourage States to adopt trading programs that would allow individual power companies to meet the State-established limits however they wished. States would be encouraged to issue credits to companies that made greater emission reductions than required which companies could then sell to those unable or unwilling to comply.

(Attachment #32)

The EPA proposal would set a national mercury emissions target from power plants from of about 34 tons by 2010. This target, which EPA could not enforce, is even less ambitious than limits agreed to by both the administration and utilities in the President's Clear Skies Initiative.

Critics worry that even if the proposed policy is ultimately thrown out by the courts, years of litigation would give the power companies additional time to avoid compliance with Clean Air Act provisions regulating toxic air pollution.**

What are the possibilities for future mercury regulation?

Congress has attempted to address mercury pollution by including it in "multipollutant" bills that target Hg (mercury), NOx (nitrogen oxides), SO2 (sulfur dioxide) and, depending on the bill, CO2 (carbon dioxide). Two of three legislative proposals put forward in the 107th Congress would cap mercury pollution from electricity generators – President Bush's Clear Skies Initiative and Sen. Jim Jeffords' (R-VT) bill – were reintroduced in the 108th Congress with updated time tables and some other new features. A third multipollutant bill (S. 843) has been reintroduced by Sen. Tom Carper (D-DE). In terms of mercury contamination, S. 843 represents somewhat of a middle ground between the two bills, setting caps at 24 tons by 2009 and 10 tons by 2013. An additional option is Sen. Patrick Leahy's (D-VT) mercury-only bill, S. 484, which is currently pending in the Senate Committee on Environment and Public Works (EPW).

Clear Skies Act

The President's Clear Skies Act (S. 485, H.R. 999) would establish federally enforceable emissions limits ("caps") for NOx, SO2 and mercury. It does not address CO2. These limits would apply to all fossil fuel-fired electric generators greater than 25 megawatts, although the mercury requirements would only affect units that are coal-fired. The targets for mercury would be a cut from 1999 emissions of 48 tons to a cap of 26 tons in 2010, and to a cap of 15 tons in 2018. The bill would also institute an emissions trading system that would allow power plants to buy and sell pollution credits among each other, as long as they were meeting emission standards.

Also, it should be noted that the residual risk requirements of Section 112(f) of the Clean Air Act, which empower EPA to promulgate more stringent mercury standards if needed to provide "an ample margin of safety to protect public health" as early as 2015, would be eliminated under the Clear Skies bill.

In November, Sen. James Inhofe (R-NE) introduced a rewrite of the President's Clear Skies Act, S. 1844 which would raise the first mercury cap, in 2010, to 34 tons.

Four Pollutant Bill - The Clean Power Act

Introduced in the Senate by Jim Jeffords (I-VT), Susan Collins (R-ME) and Joseph Lieberman (D-CT), S. 366 proposes to cut emissions from all four pollutants: Hg, NOx, SOx, and CO2. It would do so on a much shorter timetable than the Clear Skies bill, with the majority of reductions to be completed by 2008. Proponents of the four-pollutant bill estimate that under S. 366, mercury emissions would be cut 90 percent from 1999 levels by 2008. Unlike Clear Skies, it would not allow power plants to trade mercury emission allowances with each other.

As a point of comparison, S. 366 proposes to reduce the annual national emissions of mercury to not more than 5 tons by 2008; Clear Skies proposes to set a cap of 15 tons by 2018. The Jeffords bill would do so by requiring every power plant to meet the most recent pollution control standards for new pollution sources, given that many of the most polluting power plants still in use today were exempted from the original Clean Air Act requirements enacted more than 30 years ago.

How will scientific questions affect the future of legislation?

Most debate over mercury regulation stems from a few scientific questions that are critical to any final decisions on mercury policy, but have yet to be fully answered. One area of uncertainty is whether newly deposited mercury is more

dangerous to ecosystems than "old" mercury, released during industrial development of the last century.

Findings by the U.S. Geological Survey have contradicted the assumption that "old" mercury that currently exists in soils and sediments of ecosystems could continue to actively cycle in the environment and fuel the current mercury problem. These findings show that "new" mercury from contemporary emissions is more active than old mercury in the environment, and thus more responsible for driving methylmercury production and bioaccumulation. In other words, the longer mercury is in an ecosystem, the less it is seen in food webs, and the less likely it is to affect human health. In one experiment conducted by USGS, two-year old mercury was not even detectable in fish.

This lesson is transferable to the policy realm, where disagreement remains about the timeline under which mercury reductions should be enforced. Because the studies suggest that mercury is much more potent in the beginning of its lifespan, from a public health point of view, it seems clear that policy options ought to be aimed at shorter rather than long-term reduction timelines.

Even more contentious debate centers on how emitted mercury travels in the atmosphere and is deposited to the terrestrial environment. A greater understanding of the extent to which the various forms of mercury deposited on local, regional, and global levels could have a significant effect on any attempt to regulate mercury emissions. "The outcome of this question is important in determining whether mercury emissions should be reduced through a trading scheme or plant-by-plant," says Susannah Foster, a professional staff member for the Environment, Technology and Standards Subcommittee of the House Committee on Science. "Trading schemes assume that the benefit will be the same regardless of where reductions are achieved; that there will be little or no local impact."

The study released by the Florida DEP this month found that the large reductions in mercury emissions from Florida municipal waste and medical incinerators over the last decade has had a significant impact on mercury deposition rates at study sites in the Everglades. Study authors say that during the period when mercury deposition rates were peaking in Florida (1987) conservative estimates put the locally-emitted share of the mercury deposited at over 50 percent.

The Florida study indicates that reductions in mercury deposition in the Everglades during the period 1991-2000 have led to a linear, almost one-to-one reduction in methylmercury bioaccumulation in food webs. This has translated to a 60 percent or greater reduction in mercury levels in fish and wildlife, in accordance with models that predict a 90 percent reduction in the next 20 years with sustained reductions in mercury deposition. The take-home message of the study, says Dr. Atkeson, is that "if you can take the steps to bring those facilities under control, you will see the benefits of it within your local air-shed, and within a reasonable period of years. It will not take forever to see the results of policies to bring down mercury deposition."

[1] Florida DEP, The Everglades Mercury TMDL Pilot Study: Final Report, 2003.

[2] EESI Congressional Briefing: Dr. Thomas Atkeson, Florida Department of Environmental Protection, 11/17/03

(Attachment #32)

Writers:
David Anders and Josh Alban

Edited by Carol Werner

For more information, please contact Josh Alban at 202 662 1885 or jalban@eesi.org.

Copies of Dr. Atkeson's presentation, along with additional materials on mercury can be found at www.eesi.org

Information in the summary also comes from two briefings on mercury contamination hosted by The Environmental and Energy Study Institute (EESI). The first briefing focused on the scientific basics of mercury contamination in the United States, and the second briefing concentrated on regulatory and legislative policy options being proposed to deal with the issue. Details on those two briefings are as follows:

What We Know About Mercury Part I: Sources, Deposition, Methylation and Health Effects (February 28, 2003)

- Dr. David Krabbenhoft, Research Scientist, USGS (Presentation)
- Steve Wordelman, Chair, Water Environment Federation's Government Affairs Committee; President, Jones and Henry Engineers Ltd., Toledo, Ohio

What We Know About Mercury Part II: Regulatory and Legislative Policy Options Being Proposed To Deal with Mercury Contamination (March 7, 2003)

- Ellen Brown, Policy Advisor, Office of Policy, Analysis, and Review (OPAR), Environmental Protection Agency (Presentation)
- Larry Parker, Specialist, Energy and Environmental Policy, Congressional Research Service

Materials from these briefings, along with panelist presentations can be found at www.eesi.org.

(Attachment #32)

USGS science for a changing world
125 years of science for America (1879-2004)
About USGS / Our Science / Publications / Education / Newsroom /
USGS Hor
Ask USGS
Site Map
Search US
Advanced

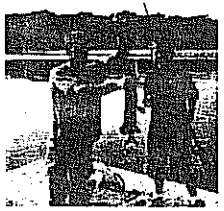
Mercury in the Environment

Fact Sheet 146-00 (October 2000)

Toxic Effects || Risk to People || Risk to Wildlife || Fish Advisories || Sources of Mercury || Environments Where Methylmercury is a Problem || Mercury Contamination - Past, Present, and Future || Information

Mercury is a highly toxic element that is found both naturally and as an introduced contaminant in the environment. Although its potential for toxicity in highly contaminated areas such as Minamata Bay, Japan, in the 1950's and 1960's, is well documented, research has shown that mercury can be a threat to the health of people and wildlife in many environments that are not obviously polluted. The risk is determined by the likelihood of exposure, the form of mercury present (some forms are more toxic than others), and the geochemical and ecological factors that influence how mercury moves and changes form in the environment.

Toxic Effects



Eating contaminated fish and wildlife exposes people and fish-eating wildlife to the most toxic form of mercury, methylmercury.

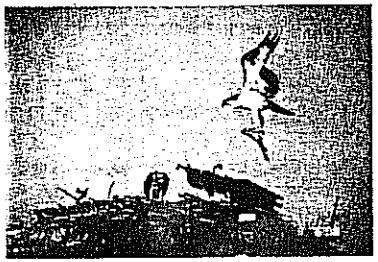
The toxic effects of mercury depend on its chemical form and the route of exposure. Methylmercury [CH_3Hg] is the most toxic form. It affects the immune system, alters genetic and enzyme systems, and damages the nervous system, including coordination and the senses of touch, taste, and sight. Methylmercury is particularly damaging to developing embryos, which are five to ten times more sensitive than adults. Exposure to methylmercury is usually by ingestion, and it is absorbed more readily and excreted more slowly than other forms of mercury. Elemental mercury, Hg(0), the form released from broken thermometers, causes tremors, gingivitis, and excitability when vapors are inhaled over a long period of time. Although it is less toxic than methylmercury, elemental mercury may be found in higher concentrations in environments such as gold mine sites, where it has been used to extract gold. If elemental mercury is ingested, it is absorbed relatively slowly and may pass through the digestive system without causing damage. Ingestion of other common forms of mercury, such as the salt $HgCl_2$, which damages the gastrointestinal tract and causes kidney failure, is unlikely from environmental sources.

Risk to People

People are exposed to methylmercury almost entirely by eating contaminated fish and wildlife that are at the top of aquatic foodchains. The National Research Council, in its 2000 report on the toxicological effects of methylmercury, pointed out that the population at highest risk is the offspring of women who consume large amounts of fish and seafood. The report went on to estimate that more than 60,000 children are born each year at risk for adverse neurodevelopmental effects due to in utero exposure to methylmercury. In its 1997 Mercury Study Report to Congress, the U.S. Environmental Protection Agency concluded that mercury also may pose a risk to some adults and wildlife populations that consume large amounts of fish that is contaminated by mercury.

How can I avoid consuming mercury in fish?

Options for avoiding the mercury in mercury-contaminated fish are more limited than for fish contaminated with PCBs, dioxins and other organic contaminants. Younger fish tend to have lower concentrations of mercury than older, larger fish within the same waterbody. Mercury concentrates in the muscle tissue of fish. So, unlike PCBs, dioxins and other organic contaminants that concentrate in the skin and fat, mercury cannot be filleted or cooked out of consumable game fish.



Fish-eating birds in certain parts of the United States may ingest large amounts of methylmercury in their diet.

Risk to Wildlife

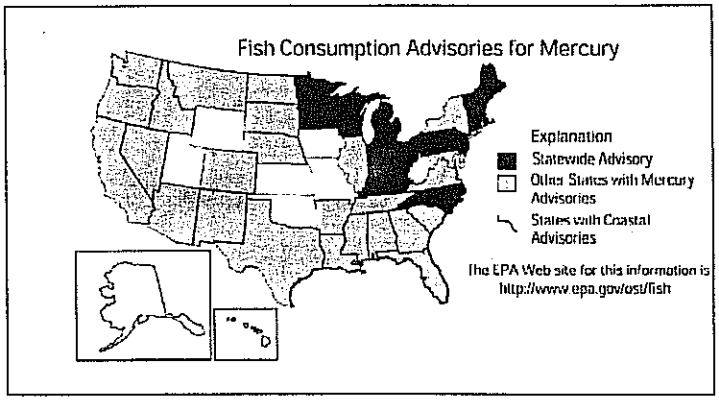
In several areas of the United States, concentrations of mercury in fish and wildlife are high enough to be a risk to wildlife. It is difficult to prove cause and effect in field studies, however, because other factors that may contribute to the biological effect under study (for example, reproductive success) are often impossible to control. Scientists have discovered toxic effects in the field at concentrations of mercury that are toxic in the lab, and controlled lab studies have found toxic effects at concentrations that are common in certain environments. In studies in Wisconsin, reductions in loon chick production has been found in lakes where mercury concentrations in eggs exceed concentrations that are toxic in laboratory studies. At dietary mercury concentrations that are typical of parts of the Everglades, the behavior of juvenile great egrets can be affected. Studies with mallards, great egrets, and other aquatic birds have shown that protective enzymes are less effective following exposure to mercury. Analyses of such biochemical indicators indicate that mercury is adversely affecting diving ducks from the San Francisco Bay, herons and egrets from the Carson River, Nevada, and heron embryos from colonies along the Mississippi River. Finally, other contaminants also affect the toxicity of mercury. Methylmercury can be more harmful to bird embryos when selenium, another potentially toxic element, is present in the diet.

Fish Advisories

(Attachment #32)

The steadily increasing number and geographic extent of State advisories against the consumption of fish because of mercury contamination has raised the awareness of the widespread nature of the mercury hazard. Fish consumption advisories for methylmercury now account for more than three-quarters of all fish consumption advisories in the United States. Forty States have issued advisories for methylmercury on selected water-bodies and 13 states have statewide advisories for some or all sportfish from rivers or lakes. Coastal areas along the Gulf of Mexico, Maine, and the Atlantic Ocean from Florida through North Carolina are under advisories for methylmercury for certain fish.

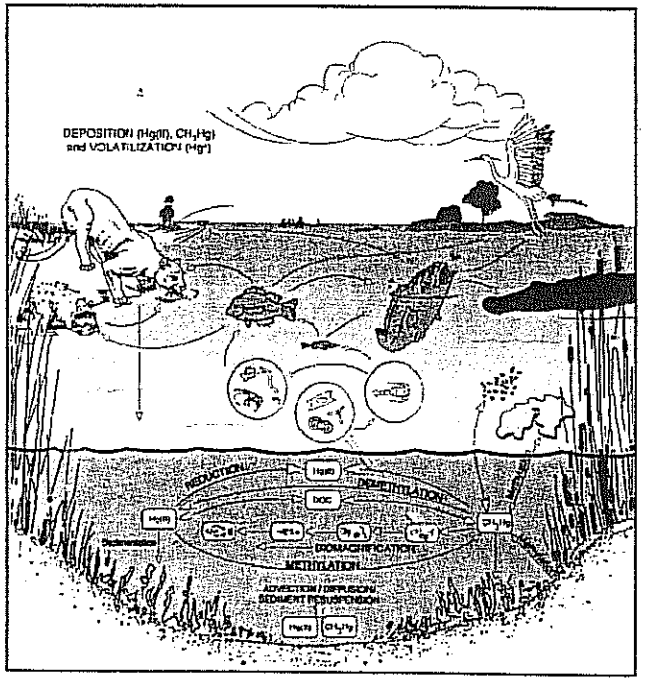
Mercury can cause deformities in developing animals.



Mercury concentrations are high enough to trigger fish consumption advisories in many States.

Sources of Mercury

Alkali and metal processing, incineration of coal, and medical and other waste, and mining of gold and mercury contribute greatly to mercury concentrations in some areas, but atmospheric deposition is the dominant source of mercury over most of the landscape. Once in the atmosphere, mercury is widely disseminated and can circulate for years, accounting for its wide-spread distribution. Natural sources of atmospheric mercury include volcanoes, geologic deposits of mercury, and volatilization from the ocean. Although all rocks, sediments, water, and soils naturally contain small but varying amounts of mercury, scientists have found some local mineral occurrences and thermal springs that are naturally high in mercury.



What factors affect the methylation?

Methylation is a product of complex processes that move and transform mercury. Atmospheric deposition contains the three principal forms of mercury, although inorganic divalent mercury (HgII) is the dominant form. Once in surface water, mercury enters a complex cycle in which one form can be converted to another. Mercury attached to particles can settle onto the sediments where it can diffuse into the water column, be resuspended, be buried by other sediments, or be methylated. Methylmercury can enter the food chain, or it can be released back to the atmosphere by volatilization.

The concentration of dissolved organic carbon (DOC) and pH have a strong effect on the ultimate fate of mercury in an ecosystem. Studies have shown that for the same species of fish taken from the same region, increasing the acidity of the water (decreasing pH) and/or the DOC content generally results in higher mercury levels in fish, an indicator of greater net methylation. Higher acidity and DOC levels enhance the mobility of mercury in the environment, thus making it more likely to enter the food chain.

Mercury and methylmercury exposure to sunlight (specifically ultra-

(Attachment #32)

violet light) has an overall detoxifying effect. Sunlight can break down methylmercury to Hg(II) or Hg(0), which can leave the aquatic environment and reenter the atmosphere as a gas.

Environments Where Methylmercury is a Problem

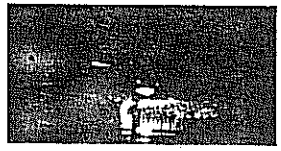
Sampling mercury in water requires extra care to avoid cross contamination because concentrations in water are so low.

Although mercury is a globally dispersed contaminant, it is not a problem everywhere. Aside from grossly polluted environments, mercury is normally a problem only where the rate of natural formation of methylmercury from inorganic mercury is greater than the reverse reaction. Methylmercury is the only form of mercury that accumulates appreciably in fish. Environments that are known to favor the production of methylmercury include certain types of wetlands, dilute low-pH lakes in Northeast and Northcentral United States, parts of the Florida Everglades, newly flooded reservoirs, and coastal wetlands, particularly along the Gulf of Mexico, Atlantic Ocean, and San Francisco Bay.

How does mercury enter the food chain?

The exact mechanisms by which mercury enters the food chain remain largely unknown and may vary among ecosystems. Certain bacteria play an important early role. Bacteria that process sulfate (SO_4=) in the environment take up mercury in its inorganic form and convert it to methylmercury through metabolic processes. The conversion of inorganic mercury to methylmercury is important because its toxicity is greater and because organisms require considerably longer to eliminate methylmercury. These methylmercury-containing bacteria may be consumed by the next higher level in the food chain, or the bacteria may excrete the methylmercury to the water where it can quickly adsorb to plankton, which are also consumed by the next level in the food chain. Because animals accumulate methylmercury faster than they eliminate it, animals consume higher concentrations of mercury at each successive level of the food chain. Small environmental concentrations of methy-lmercury can thus readily accumulate to potentially harmful concentrations in fish, fish-eating wildlife and people. Even at very low atmospheric deposition rates in locations remote from point sources, mercury biomagnification can result in toxic effects in consumers at the top of these aquatic food chains.

Mercury Contamination - Past, Present, and Future



In highly polluted areas where mercury has accumulated through industrial or mining activities, natural processes may

bury, dilute, or erode the mercury deposits, resulting in declines in concentration. In many relatively pristine areas, however, mercury concentrations have actually increased because atmospheric deposition has increased. For instance, concentrations of mercury in feathers of fish-eating seabirds from the northeastern Atlantic Ocean have steadily increased for more than a century. In North American sediment cores, sediments deposited since industrialization have mercury concentrations about 3-5 times those found in older sediments. Some sites may have become methylmercury hot spots inadvertently through human activities. Lake acidification, addition of substances like sulfur that stimulate methylation, and mobilization of mercury in soils in newly flooded reservoirs or constructed wetlands have been shown to increase the likelihood that mercury will become a problem in fish. Although scientists from USGS and elsewhere are beginning to unravel the complex interactions between mercury and the environment, a lack of information on the sources, behavior, and effects of mercury in the environment has impeded identification of effective management responses to the Nation's growing mercury problem.

Loons are especially vulnerable to methylmercury because a high percentage of their diet is fish. (©Copyright Woode Hagge; used with permission.)

Information

For more information on USGS research on mercury, visit http://minerals.usgs.gov/mercury or call Sarah Gerould at 703-648-6895. For information on USGS products and services, visit the USGS home page at www.usgs.gov or ask.usgs.gov, or call 1-888- ASK-USGS, or use the Ask USGS fax service, which is available 24 hours a day at 703-648-4888.

Top

Privacy Statement Disclaimer Accessibility FOIA
U.S. Department of the Interior | U.S. Geological Survey
URL: http://www.usgs.gov/themes/factsheet/146-00/index.html
Ask USGS
Last modified: 26-Sep-2002@10:29

(Attachment #32)

NATIONALGEOGRAPHIC.COM
NATIONAL GEOGRAPHIC NEWS
CheapTickets
Search news.nationalgeographic.com GO Sign up for our free e-mail newsletter Also see: Today's Top Stories

This Story
National Geographic Today
- Related Sites & Stories
- E-mail this story

Make the New Year a Smart Year
Save 43 percent on National Geographic

BONUS: Order online, get FREE collector's edition

Loons Sound Alarm on Mercury Contamination

Sharon Guynup
for National Geographic Today
May 16, 2003

An adult loon floats water. The birds : scientists to measu mercury contaminati resulting impa e

Photograph by Nir courtesy Adirondack C Loo

Stunning photogra month of the year. G get one year Geographic magi

For many North Americans, loons are a much-beloved bird, symbolizing the solitude of the deep-woods wilderness with their distinctive, haunting wail that echoes over the northern lakes where they breed in summertime.

But about 30 years ago, people noticed shrinking numbers of the common loon—a stately black-headed, black-and-white checkered bird—in parts of Northeastern North America. Researchers began capturing loons on their breeding lakes in Southeast Canada in the mid-1990s to study them and monitor reproduction—and discovered high levels of mercury in the birds' blood and feathers.

Additional research showed that birds born in New York State and New England also were being exposed to large quantities of methylmercury, the form of mercury toxic to living things. After winter migration, loons return each year to their birthplace to nest—and these lakes were poisoned.

"The mercury levels in common loons in that part of North

More News
Adventure & Exploration
Archaeology & Paleontology
Kids News
Animals & Nature
Science & Technology
People & Culture
Diary of the Planet
The Environment
Travel
National Geographic Channel

Special Series
Digital Lifestyles: feature by Sony
EarthPulse
Emerging Explorers
National Geographic Out There
Oceans
Volvo Ocean Race
Mount Everest Expedition

America are probably some of the highest levels in living animals anywhere in the world," said Mark Pokras, a veterinarian who runs the wildlife clinic at Tufts University Veterinary School in North Grafton, Massachusetts.

Mercury Alarm

This discovery raised an alarm: pollution in northern lakes posed a significant threat to fish-eating animals—and to people. It also added another dimension to the responsibility of U.S. and Canadian government regulatory agencies.

Now common loons, one of five loon species, are helping scientists better understand the impact of environmental mercury contamination on waterbirds, fish, and other aquatic wildlife. The birds are particularly vulnerable to environmental poisoning for many reasons. They are long-lived—up to 30 years—and they spend their lives in the water, feeding mostly on fish.

"Loons are at the top of the food chain, so they are an excellent indicator of environmental quality," said Nina Schoch, program coordinator for the Adirondack Cooperative Loon Program (ACLP) in Ray Brook, New York. "They are also an extremely charismatic species: people care deeply about them and are concerned about [their welfare]," she said.

These studies have also led to widespread warning for anglers about eating fish from affected regions.

Mercury on the Wind

Most of the mercury pollution that reaches northern lakes is spewed into the atmosphere by large coal-burning power plants and municipal waste incinerators in the Midwest and central Canada.

Wind currents carry mercury hundreds of miles eastward, along with compounds that create acid rain. The pollutants fall to earth in snow, rain, and dust particles, eventually washing into the many lakes and ponds that dot the region.

Map
Map Machine: North America >>

More Informa

Our Top New
Get the latest exploration, di science, anima

Few if any fish survive in acid lakes, so loons have less food for their young. Acid rain also increases mercury levels in wildlife: in acidic environments, mercury converts faster to toxic methylmercury.

Mercury's Toll

The dangers of mercury have been well documented in humans, but are less known in wildlife. Lab studies with other birds show that mercury damages the central nervous system, says Neil Burgess, a wildlife toxicologist with the Canadian Wildlife Service. "It tends to disrupt vision and muscle coordination, and is quite toxic to developing embryos," he said. It also seems to weaken immunity, making the birds susceptible to other diseases.

Biologists noticed that on acid lakes, adults outnumbered chicks and young birds. "We started looking at reproduction rates in loons in relation to blood mercury levels," said Burgess. "The higher the level, the lower the reproduction."

Field studies revealed that loon pairs suffering from mercury poisoning rarely nested or laid eggs. When they did, they incubated the eggs poorly. Few chicks hatched, chicks didn't feed well, and parents had a hard time feeding them. Scientists wonder whether vision problems from mercury poisoning may be affecting the birds' ability to catch fish.

Now, researchers are determining exactly how high mercury levels need to be before reproduction decreases or stops altogether.

In a recent study by the U.S. Fish and Wildlife Service (USFWS) in the Adirondacks, about one-fifth of the loons they caught and tested had mercury levels high enough to endanger breeding success.

Evaluating Environmental Impact

Researchers affiliated with the ACLP are creating a "wildlife criterion value," tracking how mercury moves up the food chain, from water and sediment into plankton, crayfish, fish

travel, adventu more—update weekday by th Geographic on newsroom:

National Geo News: The lat stories.
Go to News>>

Birds: *BirdWa* National Geog news service a and birding.
Go to *BirdWat*

Dinosaurs: Li
Go to Dinosau

Snakes: Scier stories
Go to Snakes>

Sharks: Scien
Go to Sharks>

Oceans: Scie geography, an the sea.
Go to Oceans>

Everest: Adve drama, scienc geography abo highest mount
Go to Everest>

Iraq: News ar about the geo nature, and pe impacted by th
Go to Iraq>>

More Informa

National Geo News Alerts
Register to rec headlines from Geographic Ne to sign up. (W share your pe

(Attachment #32)

and higher predators.

This will show where exposure is highest and how it accumulates. It will also allow scientists to sample water or lake mud and forecast the concentrations in pike and other big fish—or on loons and other species high in the food web, says Schoch.

"It's significant for people, too. We're also eating the fish," she said.

Soon the BioDiversity Research Institute, from Falmouth, Maine, will deliver a report to the USFWS detailing the status of loons, the threats they face—and will present a conservation plan. The Institute is one of ACLP's five partners, which also include the Wildlife Conservation Society, Natural History Museum of the Adirondacks, New York State Department of Environmental Conservation, and the Audubon Society of New York state.

Controlling Air Pollution

Changes to the Clean Air Act (CAA) in 1990 limited sulfur emissions from power plants, regulations which have improved air quality. But research shows that the standards remain too lax—and mercury continues to be unregulated.

Even with an additional 80 percent reduction in emissions beyond those required by law, it will take waters a quarter-century to become non-acidic, according to a 2001 report by the Hubbard Brook Research Foundation in Hanover, New Hampshire.

In December 2000, the Environmental Protection Agency announced that it will regulate mercury emissions from power plants. The EPA proposal is due in December, with final regulations to be issued in 2004.

In April, New York State's environmental board approved the toughest acid rain law in the nation, far surpassing federal regulations. "Scores of lakes and ponds in Adirondack Park are dead and remain the culprit of air pollution from power

Information, a charge for this our privacy po

plants," said Eliot Spitzer, New York State Attorney General. "This problem can only be tackled by a federal and state effort to enforce the Clean Air Act."

"We know the dangers of methylmercury," says Pokras. "We need to dramatically change our regulatory and industrial practices to eliminate the mercury in our environment."

Otherwise the wail of the loons is at risk in the northern wilderness.

National Geographic Today, *7 p.m. ET/PT in the United States, is a daily news journal available only on the National Geographic Channel.* Click here to learn more about it.

Got a high-speed connection? Watch *National Geographic Today* in streaming video.

More Bird Stories by National Geographic News:
Tall As a Deer, Huge U.K. Bird Staging a Comeback
Memory Aids Birds in Migration, Study Finds
Crows Better at Tool Building Than Chimps, Study Says
Extinction Near for Albatross, Experts Warn
51-Year-Old Albatross Breaks N. American Age Record
Are Flashy Male Birds Threats to Their Own Species?
Wild and Escaped Parakeets Captivating City Dwellers
Bright Beaks Signal Health to Female Birds, Study Says
Coot Birds Can Count, Study Says
Falconry Used to Secure North American Airports
Cuckoos, Wrens in Escalating Evolutionary Arms Race
Deer Behind Britain's Great Bird Decline?
"Mysterious Plague" Spurs India Vulture Die-Off
Gamblers Fuel Trade in "Lucky" Vulture Heads in Africa
Ospreys Flock to Cuba, With Conservationists Close By

National Geographic Bird Resources:
Bald Eagles: Come Back From the Brink
Experience the Sights and Sounds of Eagles
Snowy Owls—Muscle & Magic
Attwater's Prairie-Chickens—Down to a Handful

Recent "Birder's Journal" Stories from Robert

(Attachment #32)

Winkler:

Giving Thanks for Wild Turkey Sightings
Birder's Journal: Ghost Town's Curse Haunts New England Forest
Birder's Journal: Looking at a Handy New Guide
Birder's Journal: Learning to Let Birds Come to You
Birder's Journal: A Morning With Migrants
Birder's Journal: This Warbler Is a Master of Deception
Birder's Journal: Seduced by Dueling Thrushes
Birder's Journal: Attack of the Flying Goshawk

Nationalgeographic.com Bird-Watching Sites:

Boston Area
Chicago Area
Florida Keys Area
Maine's Acadia National Park
Mount Rainier
New Orleans Area
New York City Area
North Carolina's Outer Banks
Philadelphia Area
Portland Area
Rocky Mountain National Park
Salt Lake City Area
San Francisco Area
Santa Fe Area
South Dakota's Black Hills
Utah
Washington's Olympic National Park
Wyoming's Grand Teton National Park
Yellowstone National Park
Yosemite National Park

From the National Geographic Store:

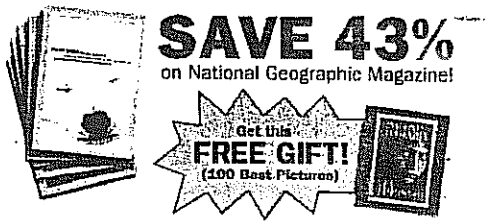
Guide to North American Birds
Portable Birdsong Identifier
Birder's Journal
Songbirds Puzzle

Additional Information from Related Web Sites:

American Bird Center

(Attachment #32)

American Bird Conservancy
Fish and Wildlife Service Bird Web Site
National Audubon Society
Environmental Protection Agency: Bird Conservation



- U.S. price is just $34
- Order now to receive 12 monthly issues of *National Geographic* magazine
- Act now to save 43 percent off the newsstand price and receive a free gift with your paid order
- Send no money now — you will be billed

Fill in all fields
Name
Address1
City
State Select State/Province
Zip Code
E-mail
I would like to receive regular e-mail updates, including newsletters and special offers.
enter order
For Gift Orders, Click Here >>
For International Orders, Click Here >>

Canadian price $38 (C$59), and includes GST. Sales tax will be added where applicable. Savings based on annual U.S. newsstand price of $59.40. While all dues support National Geographic's mission of expanding geographic knowledge, 90 percent is designated for the magazine subscription, and no portion should be considered a charitable contribution.

Related Websites

- Adirondack Cooperative Loon Program
- BioDiversity Research Institute
- U.S. Environmental Protection Agency on mercury

Comments? Contact the news desk.

News Home

Write the Editor | Masthead | nationalgeographic.com E-mail Updates | Press Room | Privacy Policy

More to see at **nationalgeographic.com**

© 2004 National Geographic Society. All rights reserved.

(Attachment #32)

Mercury and the Environment

Environment and Health

Health Concerns

Related Links

Home

Basic Facts

Environment and Health

Chemical Properties

Biogeochemistry

Atmospheric Transport

Global Mercury Budget

Environmental Concerns

Health Concerns

Sources of Mercury

Mercury Management

What Can I Do?

Fish Consumption

Cleaning Up Small Mercury Spills

Mercury Disposal

Links

What's New?

| Introduction | Exposure Due to Food Consumption | Exposure Due to Inhalation | Exposure Due to Contact | Metabolism | Toxic Effects |

Introduction

The health hazards of mercury compounds have been recognized for quite some time. In the early part of the 19th century, hat makers used a solution of mercury salts to soften animal hairs in the production of felt. Hat makers were known to exhibit bizarre behavior and terms such as "hatter's shakes" arose due to the neurological symptoms of chronic (long-term) mercury poisoning. Consequently, the Mad Hatter in "Alice in Wonderland" got his name because hatters in Lewis Carroll's day often displayed quite erratic behaviour.

Today, the main effects of mercury exposure to humans are understood to be neurological, renal (kidney), cardiovascular and immunological impacts. Chronic exposure to mercury can cause damage to the brain, spinal cord, kidneys, liver and developing fetus. Exposure to mercury while in the womb can lead to neurodevelopmental problems in children. Mercury can impair the ability to feel, see, move and taste, and can cause numbness and tunnel vision. Long-term exposure can lead to progressively worse symptoms and ultimately personality changes, stupor, and in extreme cases, coma or death. Recent findings have described adverse cardiovascular and immune system effects at very low levels.

Most people are exposed to mercury as a result of normal activities such as the inhalation of air, contact with water and soil and/or exposure to substances or products containing mercury such as dental amalgam. The main pathways for mercury intake in humans are through the consumption of food, especially fish, and the application of dental amalgams as a tooth restorative. Recent research has indicated that exposure to mercury vapour resulting from past spills of liquid mercury in the home may also be an important pathway.

Top of page

Exposure Due to Food Consumption

Mercury emissions from natural and anthropogenic sources enter the global mercury cycle and are distributed in the environment locally and globally through various processes. Atmospheric emissions of mercury can enter the environment through deposition onto soils and water. When mercury enters fresh water bodies and the oceans, or settles into sediments and soils, it can become involved in biogeochemical cycles, be transformed into the highly toxic form of methylmercury, and bioaccumulate in the food chain. Predatory fish may attain high levels of methylmercury that may be almost completely absorbed by human or animal consumers.

While fish consumption is the main source of exposure to methylmercury, Health Canada advises that the benefits and risks of eating fish should be balanced, since fish are an excellent source of high-quality protein and omega-3 fatty acids, and are low in saturated fat. In order to protect Canadians from mercury poisoning, a guideline of 0.5 parts per million, or 0.5 micrograms (1 microgram = one millionth of a gram) of total mercury per gram of fish tissue (ug/g) has been established by Health Canada for most commercial fish. Commonly consumed marine species such as salmon, cod, pollock, sole, shrimp, mussels, scallops and canned tuna, have mercury levels that generally fall below this limit and are therefore considered safe for consumption. The Canadian Food Inspection Agency is responsible for testing mercury levels in canned tuna and rejects any shipments bound for commercial sale in Canada if the 0.5 ppm limit is exceeded.

Shark, swordfish and fresh or frozen tuna, which generally have concentrations ranging from 0.5 to 1.5 ppm, are exempt from the 0.5 ppm limit because they are considered "gourmet" fish not eaten in quantities sufficient to pose a health hazard. Instead, Health Canada advises a consumption limit of one meal per week of these fish for the average Canadian, and recommends that women of child bearing age, pregnant women, and children should not consume these fish more than once per month. Fish containing over 1.5 ppm are not considered suitable for human consumption at any time.

Predatory, freshwater fish species such as pike, bass and walleye have also been know to attain elevated methylmercury levels in various lakes and river systems. If fish constitutes a staple part of the diet, such as for indigenous peoples and recreational anglers, consumption of these species may pose an elevated risk of mercury exposure. Federal, provincial and territorial agencies have issued fish consumption advisories for the protection of the public, suggesting limited consumption of specific fish species from certain lakes. In Canada, thousands of advisories on fish species from individual water bodies are put in place in every year due to excessive mercury contamination of fish tissues. Province-wide advisories are in effect in New Brunswick and Nova Scotia while other provinces have advisories for specific lakes and/or species.

Top of page

Exposure Due to Inhalation

Based on available science, normal ambient air concentrations of mercury vapour, averaging 1.6 nanograms per cubic meter of air, do not appear to be a cause for concern (1 nanogram = one billionth of a gram). However, inhalation can be a significant route of exposure when mercury-silver amalgam is used in dental fillings, particularly for individuals that are hypersensitive to mercury. Health Canada advises that mercury fillings should not be placed in the teeth of pregnant women or people with impaired kidneys, and wherever possible, non-mercury fillings should be used for children.

Top of page

Exposure Due to Contact

Dermal contact is also a route of exposure to mercury with alkyl mercury compounds being particularly notorious. While few Canadians come into direct contact with mercury or its compounds, skin absorption can be lethal. In 1997, a researcher named Karen Wetterhahn, from Dartmouth College in New Hampshire, died when a single drop of dimethylmercury passed through her protective latex glove and through her skin.

Top of page

Metabolism

When an individual is exposed to mercury, a certain percentage is absorbed, depending on the route of exposure and the form of the mercury. About 80% of elemental mercury is absorbed when inhaled, however less than 1% of ingested liquid mercury is absorbed. Methylmercury, on the other hand, is readily absorbed irrespective of the exposure pathway. Approximately 95% of ingested methylmercury is absorbed, and absorption through the lungs and skin is also believed to be quite high. Both elemental and methylmercury can cross the blood-brain and placental barriers. The critical target organ for elemental mercury is the adult and fetal brain, and the critical target organs for methylmercury are the brain and the kidneys.

Inorganic mercury compounds do not readily migrate through the blood-brain or placental barriers, but do accumulate in the kidneys. Absorption of inorganic mercury varies with the type of inorganic salt. Within the body, the kidneys accumulate the highest concentrations of all forms of mercury, yet mercury can also concentrate in the brain, the central nervous system, the liver, and indeed in most organs in the body.

Mercury is predominantly excreted from the body in urine and feces, but usually at a slower rate than that of uptake, leading to the accumulation of mercury in living tissue. Mercury is deposited in hair as it grows, and it may also be found in breast milk. This may result in high concentrations in infants whose mothers are heavily exposed. The unborn child also receives some of the maternal mercury body burden because mercury compounds cross the placental barrier, yielding equal or higher blood concentrations in the fetus than in the mother.

Top of page

Toxic Effects

The severity of mercury's toxic effects depends on the form and concentration of mercury and the route of exposure. Exposure to elemental mercury can result in effects on the nervous system, including tremor, memory loss and headaches. Other symptoms include bronchitis, weight loss, fatigue, gastro-intestinal problems, gingivitis, excitability, thyroid enlargement, unstable pulse, and toxicity to the kidneys.

Exposure to inorganic mercury can affect the kidneys, causing immune-mediated kidney toxicity. Effects may also include tremors, loss of co-ordination, slower physical and mental responses, gastric pain, vomiting, bloody diarrhea and gingivitis.

Symptoms of methylmercury toxicity, also known as Minamata disease, range from tingling of the skin, numbness, lack of muscle coordination, tremor, tunnel vision, loss of hearing, slurred speech, skin rashes, abnormal behaviour (such as fits of laughter), intellectual impairment, to cerebral palsy, coma and death, depending on the level of exposure. In addition, methylmercury has been classified as a possible human carcinogen by the U.S. Environmental Protection Agency. More recently, additional findings have described adverse cardiovascular and immune system effects at very low exposure levels.

Prenatal exposure to organic mercury, even at levels that do not appear to affect the mother, may depress the development of the central nervous system

(Attachment #32)

and may cause psychomotor retardation for affected children. Mild neurological and developmental delays may occur in infants ingesting methylmercury in breast milk. Affected children may exhibit reduced coordination and growth, lower intelligence, poor hearing and verbal development, cerebral palsy and behavioural problems.

Much of our knowledge of mercury toxicity comes from studying cases of occupational or acute community poisonings. In 1956, Minamata disease (later found to be methylmercury poisoning) was officially "discovered" in a Japanese community near a polyvinyl chloride plastic plant which was discharging untreated effluent containing methyl mercury chloride into Minamata Bay and the Shiranui Sea. Once in the bay's sediments, the mercury was readily absorbed by marine species, which resulted in the contamination of the entire ecosystem. Many of the local residents consumed fish and seafood from the mercury-contaminated waters as a staple part of their diet. Thirty-nine years later, 2 252 patients had been officially diagnosed with Minamata disease, and over 1 000 had died.

The largest ever outbreak of mercury poisoning occurred in Iraq in 1971 and 1972 when the population accidentally ate bread made from seed-grain treated with a mercury-based seed treatment pesticide. About 6 000 cases of mercury poisoning were diagnosed. Over 500 cases were fatal. Instances such as these highlight the critical need for governments to implement mercury management strategies and to educate the public on the risks of mercury exposure.

Related Links

Glossary References Top of Page

| What's New | About Us | Topics | Publications | Weather | Home | | Francais | Contact Us | Help | Search | Canada Site |

The Green Lane™, Environment Canada's World Wide Web site

Last updated: 2004-02-04 Important Notices
Last reviewed: 2004-02-04 .
URL of this page: http://www.ec.gc.ca/MERCURY/EH/EN/eh-hc.cfm

(Attachment #32)

The NEW ENGLAND JOURNAL of MEDICINE

REVIEW ARTICLE

CURRENT CONCEPTS

◄ Previous Volume 349:1731-1737 October 30, 2003 Number 18 Next ►

The Toxicology of Mercury — Current Exposures and Clinical Manifestations

Thomas W. Clarkson, Ph.D., Laszlo Magos, M.D., and Gary J. Myers, M.D.

Mercury has been used commercially and medically for centuries. In the past it was a common constituent of many medications. It is still used in hospitals in thermometers and blood-pressure cuffs and commercially in batteries, switches, and fluorescent light bulbs. Large quantities of metallic mercury are employed as electrodes in the electrolytic production of chlorine and sodium hydroxide from saline. These uses still give rise to accidental and occupational exposures.[1]

Today, however, exposure of the general population comes from three major sources: fish consumption, dental amalgams, and vaccines. Each has its own characteristic form of mercury and distinctive toxicologic profile and clinical symptoms. Dental amalgams emit mercury vapor that is inhaled and absorbed into the bloodstream. Dentists and anyone with an amalgam filling are exposed to this form of mercury. Liquid metallic mercury (quicksilver) still finds its way into homes, causing a risk of poisoning from the vapor and creating major cleanup costs. Humans are also exposed to two distinct but related organic forms, methyl mercury (CH_3Hg^+) and ethyl mercury ($CH_3CH_2Hg^+$). Fish are the main if not the only source of methyl mercury, since it is no longer used as a fungicide. In many countries, babies are exposed to ethyl mercury through vaccination, since this form is the active ingredient of the preservative thimerosal used in vaccines. Whereas removal of certain forms of mercury, such as that in blood-pressure cuffs, will not cause increased health risks, removal of each of the three major

ARTICLE
► Table of Contents
► PDF of this article
► PDA version of this article
► Editor's Summary
► CME Exam
► Find Similar Articles in the Journal
► Notify a friend about this article
SERVICES
► Add to Personal Archive
► Download to Citation Manager
► Alert me when letters appear
► Alert me when this article is cited
ISI Web of Science
► Related Articles
MEDLINE
► Related Articles in Medline
Articles in Medline by Author:
► Clarkson, T. W.
► Myers, G. J.
► Medline Citation
COLLECTIONS
► Child Health

► Health Policy
► Neurologic Disease
► Related Chapters at Harrison's Online

sources described in this article entails health risks and thus poses a dilemma to the health professional.

Exposure to mercury from dental amalgams and fish consumption has been a concern for decades, but the possible risk associated with thimerosal is a much newer concern. These fears have been heightened by a recent recommendation by the Environmental Protection Agency (EPA) that the allowable or safe daily intake of methyl mercury be reduced from 0.5 μg of mercury per kilogram of body weight per day, the threshold established by the World Health Organization in 1978,[2] to 0.1 μg of mercury per kilogram per day.[3]

Table 1 summarizes the clinical toxicologic features of mercury vapor and methyl and ethyl mercury. It also includes data on inorganic divalent mercury, since this is believed to be the toxic species produced in tissues after inhalation of the vapor.[5] It is also responsible for kidney damage after exposure to ethyl mercury, since ethyl mercury is rapidly converted to the inorganic form.[13] Inorganic mercury as both mercuric and mercurous salts was also the chief cause of acrodynia, a childhood disease that is now mainly of historical interest.[14] The clinical symptoms of acrodynia consist of painful, red, swollen fingers and toes in association with photophobia, irritability, asthenia, and hypertension. It is believed to be a hypersensitivity reaction.

View this table: **Table 1.** The Major Clinical Toxicologic Features of Mercury.
[in this window]
[in a new window]

Mercury Vapor from Dental Amalgams

Dental amalgams have been in use for over 150 years. They are inexpensive and thought to be more durable and easier to use than other types of fillings. The amalgam consists of approximately 50 percent mercury combined with other metals such as silver and copper. Since their introduction, dental amalgams have been a source of controversy because of the assumed health risks of mercury. The arguments between the protagonists and antagonists have been referred to as the "amalgam wars" and became more heated around 1970 with the discovery that amalgams can release mercury vapor into the oral cavity in concentrations that are higher than those deemed safe by occupational health guidelines.

Subsequently, it was realized that the actual inhaled dose was small, owing to the small volume of the oral cavity. Nevertheless, amalgam fillings are the chief source of exposure to mercury vapor in the general population.[8] Brain, blood, and urinary concentrations correlate with the number of amalgam surfaces present. It has been estimated that 10 amalgam surfaces would raise urinary concentrations by 1 μg of mercury per liter, roughly doubling the background concentrations.[15] Higher urinary concentrations are found in persons who chew a great deal. For example, the long-term use of nicotine chewing gum will raise urinary concentrations close to occupational health limits.[16] The removal of amalgam fillings can also cause temporary elevations in blood concentrations,[17] since the process transiently increases the amount of mercury vapor inhaled.

What is the health risk from such exposures? Cases of poisoning from inhalation of mercury vapor have been recognized for centuries.[18] Severe cases are characterized by a triad of intentional tremor, gingivitis, and erethism (Table 1). Erethism consists of bizarre behavior such as excessive shyness and even aggression. The Mad Hatter in *Alice in Wonderland* was probably a victim of occupational mercury intoxication.

Today's occupational exposures, such as in the dental office, are lower and may lead to mild, reversible effects on the kidney or mild cognitive changes and memory loss.[5] However, urinary concentrations in people with amalgams (about 2 to 4 μg of mercury per liter) are well below concentrations found in people who are occupationally exposed to mercury (20 to 50 μg of mercury per liter) unless they are also excessive chewers. Current concern arises from claims that long-term exposure to low concentrations of mercury vapor from amalgams either causes or exacerbates degenerative diseases such as amyotrophic lateral sclerosis, Alzheimer's disease, multiple sclerosis, and Parkinson's disease. Speculation has been most intense with respect to Alzheimer's disease after a report that the brains of patients with Alzheimer's disease had elevated mercury concentrations. However, several epidemiologic investigations failed to provide evidence of a role of amalgam in these degenerative diseases, including a long-term study of 1462 women in Sweden,[19] an ongoing Swedish twin study involving 587 subjects,[20] and a study of 129 nuns 75 to 102 years of age, which included eight tests of cognitive function.[21] Nevertheless, in vitro studies have indicated that mercury can affect the biochemical processes believed to be involved in Alzheimer's disease.[22] The problem is that mercury can inhibit various biochemical processes in vitro without having the same effect in vivo.

Patients who have questions about the potential relation between mercury and degenerative diseases can be assured that the available evidence shows no connection. Some will ask whether their mercury fillings should be removed. They should be reminded that the process of removal generates mercury vapor and that blood concentrations will subsequently rise substantially before they eventually decline.[17] There is no clear evidence supporting the removal of amalgams.

Mercury Vapor from Quicksilver in the Home

Recent attempts by power companies to replace pressure-control devices for the domestic gas supply have led to spills of liquid mercury, affecting some 200,000 homes in one incident.[23] Spills of liquid mercury in the home carry a risk of vapor inhalation. Quicksilver is an attractive play object for children and is found in many homes, especially in developing countries. High levels of exposure to mercury vapor can result from the cultural and religious use of elemental mercury, including sprinkling mercury on the floor of a home or car, burning it in a candle, and mixing it with perfume.[24]

Infants and young children, whose breathing zones are closest to the floor, are at highest risk, since mercury vapor is heavy and tends to form layers close to the floor. Ingested liquid mercury passes through the gastrointestinal tract essentially unabsorbed. Centuries ago a tablespoonful of quicksilver was used to treat constipation.[25] It arguably represents one of the first uses of gravity in medicine.

Methyl Mercury

(Attachment #32)

Among humans, the sole source of exposure to methyl mercury is the consumption of fish and sea mammals. Methyl mercury is produced environmentally by biomethylation of the inorganic mercury present in aquatic sediments (Figure 1). It accumulates in the aquatic food chain and reaches its highest concentrations in long-lived, predatory fish such as swordfish and shark in the oceans and pike and bass in fresh water. Concentrations of mercury in ambient air and water are too low to pose a serious risk to the general population.

View larger version (28K): [in this window] [in a new window]

Figure 1. The Global Cycle of Mercury.

In nature, mercury vapor (Hg^0), a stable monatomic gas, evaporates from the earth's surface (both soil and water) and is emitted by volcanoes (Panel A). Anthropogenic sources include emissions from coal-burning power stations and municipal incinerators. After approximately one year, mercury vapor is converted to a soluble form (Hg^{2+}) and returned to the earth in rainwater. It may be converted back to the vapor form both in soil and in water by microorganisms and reemitted into the atmosphere. Thus, mercury may recirculate for long periods.

Mercury attached to aquatic sediments is subject to microbial conversion to methyl mercury (MeHg), whereupon it enters the aquatic food chain. It reaches its highest concentrations in long-lived predatory fish, such as sharks. Panel B indicates the routes of transformation to methyl mercury as originally suggested by Jernelöv.[26]

Panel C depicts the increase in mercury concentrations in feathers of fish-eating birds in Sweden.[27] The period covered by these data corresponds approximately to the growth of industrialization in Sweden.

Exposure in Adults

Cases of severe, even fatal, methyl mercury poisoning date back to the 1860s in England, when such mercurials were first synthesized.[28] Subsequent cases arose through occupational and dietary exposures. Several large outbreaks were caused by the consumption of bread mistakenly made from methyl mercury–coated seed grain; for example, an outbreak in 1971 and 1972 in Iraq caused hundreds of deaths and thousands of cases of severe intoxication.[29] The industrial release of methyl mercury into Minamata Bay and the Agano River in Japan resulted in the accumulation of the toxicant in fish and, subsequently, in two large epidemics related to fish consumption.[30] Overt cases of poisoning are now rare. In the United States, the only reported cases in the past 35 years involved a family that consumed the meat of a pig fed treated grain[31] and a university professor who was accidentally exposed in the laboratory.[11]

The brain is the primary target tissue. Adults present with paresthesias of the circumoral area and hands and feet, followed by visual-field constriction and ataxia. Neuropathological examination reveals regional destruction of neurons in the visual cortex and cerebellar granule cells. There is usually a latent period of weeks or months between exposure and the onset of symptoms.

Several studies have reported statistical associations between cardiovascular disease and mercury, mostly in the form of methyl mercury. One study found a direct relation between mercury concentrations and the risk of myocardial infarction,[32] whereas a nested case–control study of more than 300,000 health professionals found no such association.[33] A third study, from eastern Finland, where the consumption of saturated animal fat is high, found an association, but the authors suggested that their finding might be specific to the region.[34,35] A fourth study among seven-year-old children on the Faeroe Islands found that blood pressure was increased when the blood mercury concentration was below 10 μg per liter but not when it was higher.[36] "Contrary to expectation," as the authors stated, "this association occurred within an exposure range characteristic of communities not depending on marine food" such as the United States.[37] They also pointed out that "the average birth weight in this fishing community is the highest in the world and therefore the community may represent a unique setting."

Thus, firm conclusions about cause and effect cannot be yet made, since cardiovascular disease has multiple risk factors (e.g., family history, stress, dietary habits, smoking, alcohol use, diabetes, and socioeconomic status). The researchers themselves recognize this complication and use extensive statistical measures to correct for these factors. Prospective studies are needed to settle this issue.[38]

Prenatal Exposure

The fetal brain is more susceptible than the adult brain to mercury-induced damage. Methyl mercury inhibits the division and migration of neuronal cells and disrupts the cytoarchitecture of the developing brain. In the past 15 years or so, epidemiologic studies have focused on the effects of prenatal exposure.[39,40,41] As a consequence of these epidemiologic data, the EPA reduced the allowable intake of methyl mercury from 0.5 to 0.1 μg of mercury per kilogram per day.[42] This threshold is lower than those used by other regulatory agencies. Moreover, it translates into a weekly consumption of one 198-g (7-oz) can of tuna for an adult. Given that canned tuna is the cheapest and most widely consumed fish in the United States and is approved by the American Heart Association as part of a diet low in saturated fat and cholesterol, the debate over the safety of tuna and fish in general will continue with some intensity.

It is reassuring that the only clinical reports of mercury poisoning from fish consumption are those from Japan in the 1950s and 1960s.[8] The EPA guideline is derived from reports of subtle and small neuropsychological changes in children in the Faeroe Islands study, whose exposure was mainly from whale consumption.[36] A similar study in the Seychelles found no adverse effects from fish consumption alone.[41] The majority of the general population in the United States has levels of exposure well below the EPA guideline, but 8 percent or so have levels that are slightly higher. Although a National Academy of Sciences committee reported that 60,000 children in the United States were at risk as a result of prenatal exposure,[43] they failed to provide any justification or explanation for that conclusion.

Fish consumption has clear health benefits, and the risk posed by exposure to mercury is currently speculative. The Food and Drug Administration has recommended that pregnant women, nursing mothers, and young children avoid eating fish with a high mercury content (>1 ppm), such as shark, swordfish, tilefish, and king mackerel. Because whale meat contains up to 3 ppm of mercury, about half

(Attachment #32)

of which is in the form of methyl mercury,[44] consumption of whale meat should also be discouraged.

Thimerosal in Vaccines

Thimerosal has been used as a preservative in many vaccines since the 1930s.[45,46] At concentrations found in vaccines, thimerosal meets the requirements for a preservative set forth by the U.S. Pharmacopeia[47] — that is, it kills the specified challenge organisms and can prevent the growth of the challenge fungi. It contains the ethyl mercury radical ($CH_3CH_2Hg^+$) attached to the sulfur group of thiosalicylate and is believed to behave toxicologically like other ethyl mercury compounds. Early toxicity studies found no adverse health effects; recently, however, Ball et al. reevaluated thimerosal by applying the revised EPA guideline for methyl mercury to ethyl mercury.[48] They calculated that infants undergoing the usual U.S. program of vaccines from birth to six months of age would receive more than 0.1 μg of mercury per kilogram per day.[8] Steps were rapidly taken to remove thimerosal from vaccines by switching to single-dose vials that did not require any preservative. This process is now virtually complete in the United States. The decision itself is remarkable, and the speed of execution even more so[49]; however, the EPA guideline is based on epidemiologic data on prenatal exposure to methyl mercury rather than postnatal exposure to ethyl mercury. Ethyl mercury has some similarities to methyl mercury. They are closely related chemically, have a similar initial distribution in the body, and cause similar types of damage to the brain in toxic doses.

They also have differences. Methyl mercury is more potent. Ethyl mercury is metabolized more rapidly to inorganic mercury; perhaps this is why ethyl mercury, unlike methyl mercury, causes kidney damage in humans. Of greater importance is the recent finding that the half-life of ethyl mercury in the body is much shorter.[50] The half-life of methyl mercury in blood, which is assumed to indicate the total body burden, is usually assumed to be about 50 days.[51] In contrast, in children receiving thimerosal in vaccines, the half-life of ethyl mercury in blood was 7 to 10 days, or 1/7 to 1/5 as long as that of methyl mercury.[50] Therefore, in the two-month periods between vaccinations (at birth and at two, four, and six months), all of the mercury should have been excreted, so that there is no accumulation.

Given the short half-life of ethyl mercury, any risks of its damaging either the brain or kidneys would seem remote. A World Health Organization advisory committee recently concluded that it is safe to continue using thimerosal in vaccines.[52] This is especially important in developing countries, where the use of a preservative is essential in multidose vials. The known risk of infectious diseases far exceeds that of the hypothetical risk of thimerosal. Claims have been made that thimerosal in vaccines may be a cause of autism and related disorders, but studies testing that theory have yet to be performed.

All forms of mercury have adverse effects on health at high doses. However, the evidence that exposure to very low doses of mercury from fish consumption, the receipt of dental amalgams, or thimerosal in vaccines has adverse effects is open to wide interpretation. Moreover, attempts to reduce such exposure may pose greater health risks than those hypothesized to occur from mercury.

Supported by grants (R01 ES10219 and P30 ES01247) from the National Institute of Environmental Health Sciences, National Institutes of Health.

We are indebted to Helena King and Joyce Morgan for assistance with the figure.

Source Information

From the Departments of Environmental Medicine (T.W.C.) and Neurology and Pediatrics (G.J.M.), University of Rochester School of Medicine, Rochester, N.Y.; and the Medical Research Council Laboratories, Carshalton, United Kingdom (L.M.).

Address reprint requests to Dr. Clarkson at the Department of Environmental Medicine, Box EHSC, University of Rochester School of Medicine, Rochester, NY 14642, or at twc30@aol.com.

References

1. Toxicological profile for mercury. Atlanta: Agency for Toxic Substances Disease Registry, 1999.
2. Evaluation of certain food additives and contaminants: twenty-second report of the Joint FAO/WHO Expert Committee on Food Additives. World Health Organ Tech Rep Ser 1978;631:1-39.[Medline]
3. Environmental Protection Agency. Reference dose for chronic oral exposure to methylmercury. Greenbelt, Md.: Integrated Risk Information System, 2001.
4. Gossel TA, Bricker JD. Principles of clinical toxicology. 2nd ed. New York: Raven Press, 1990.
5. Inorganic mercury. Vol. 118 of Environmental health criteria. Geneva: World Health Organization, 1991.
6. Second national report on human exposure to environmental chemicals. Atlanta: Centers for Disease Control and Prevention, 2003. (Accessed October 6, 2003, at http://www.cdc.gov/exposurereport/.)
7. Brune D, Nordberg GF, Vesterberg O, Gerhardsson L, Wester PO. A review of normal concentrations of mercury in human blood. Sci Total Environ 1991;100:235-282.[CrossRef][ISI][Medline]
8. Methylmercury. Vol. 101 of Environmental health criteria. Geneva: World Health Organization, 1990.
9. Forman J, Moline J, Cernichiari E, et al. A cluster of pediatric metallic mercury exposure cases treated with meso-2,3-dimercaptosuccinic acid (DMSA). Environ Health Perspect 2000;108:575-577.[ISI][Medline]
10. Bluhm RE, Bobbitt RG, Welch LW, et al. Elemental mercury vapour toxicity, treatment, and prognosis after acute, intensive exposure in chloralkali plant workers. I. History, neuropsychological findings and chelator effects. Hum Exp Toxicol 1992;11:201-210.[ISI][Medline]
11. Nierenberg DW, Nordgren RE, Chang MB, et al. Delayed cerebellar disease and death after accidental exposure to dimethylmercury. N Engl J Med 1998;338:1672-1676.[Full Text]
12. Pfab R, Muckter H, Roider G, Zilker T. Clinical course of severe poisoning with thiomersal. J Toxicol Clin Toxicol 1996;34:453-460.[ISI][Medline]
13. Magos L, Brown AW, Sparrow S, Bailey E, Snowden RT, Skipp WR. The comparative toxicology of ethyl- and methylmercury. Arch Toxicol 1985;57:260-267.[ISI][Medline]
14. Warkany J, Hubbard DM. Acrodynia and mercury. J Pediatr 1953;42:365-386.[ISI][Medline]
15. Kingman A, Albertini T, Brown LJ. Mercury concentrations in urine and whole blood associated with amalgam exposure in a US military population. J Dent Res 1998;77:461-471.[Abstract]
16. Sallsten G, Thoren J, Barregard L, Schutz A, Skarping G. Long-term use of nicotine chewing gum and mercury exposure from dental amalgam fillings. J Dent Res 1996;75:594-598.[Abstract]
17. Molin M, Bergman B, Marklund SL, Schutz A, Skerfving S. Mercury, selenium, and glutathione peroxidase before and after amalgam removal in man. Acta Odontol Scand 1990;48:189-202.[ISI][Medline]

(Attachment #32)

18. Ramazzini B. Diseases of workers. Wright WC, trans. New York: Hafner Publishing, 1964.
19. Ahlqwist M, Bengtsson C, Lapidus L, Gergdahl IA, Schutz A. Serum mercury concentration in relation to survival, symptoms, and disease: results from the prospective population study of women in Gothenburg, Sweden. Acta Odontol Scand 1999;57:168-174.[CrossRef][ISI][Medline]
20. Bjorkman L, Pedersen NL, Lichtenstein P. Physical and mental health related to dental amalgam fillings in Swedish twins. Community Dent Oral Epidemiol 1996;24:260-267.[ISI][Medline]
21. Saxe SR, Snowdon DA, Wekstein MW, et al. Dental amalgam and cognitive function in older women: findings from the Nun Study. J Am Dent Assoc 1995;126:1495-1501.[ISI][Medline]
22. Leong CC, Syed NI, Lorscheider FL. Retrograde degeneration of neurite membrane structural integrity of nerve growth cones following in vitro exposure to mercury. Neuroreport 2001;12:733-737.[ISI][Medline]
23. Gibson R, Taylor TS. Nicor says mercury spilled at more sites: contamination found at 6 new locations, company tells state. Chicago Tribune (Sports Final Edition Section, zone N). September 14, 2000:1.
24. Riley DM, Newby CA, Leal-Almeraz TO, Thomas VM. Assessing elemental mercury vapor exposure from cultural and religious practices. Environ Health Perspect 2001;109:779-784.[ISI][Medline]
25. Goldwater LJ. Mercury: a history of quicksilver. Baltimore: York Press, 1972.
26. Jernelöv A. Conversion of mercury compounds. In: Miller MW, Berg GG, eds. Chemical fallout: current research on persistent pesticides. Springfield, Ill.: Charles C Thomas, 1969:68-74.
27. Johnels AG, Westermark T. Mercury contamination of the environment in Sweden. In: Miller MW, Berg GG, eds. Chemical fallout: current research on persistent pesticides. Springfield, Ill.: Charles C Thomas, 1969:221-41.
28. Hunter D. The diseases of occupations. 4th ed. London: English Universities Press, 1969:314-28.
29. Bakir F, Damluji SF, Amin-Zaki L, et al. Methylmercury poisoning in Iraq. Science 1973;181:230-241.[ISI][Medline]
30. Eto K, Oyanagi S, Itai Y, Tokunaga H, Takizawa Y, Suda I. A fetal type of Minamata disease: an autopsy case report with special reference to the nervous system. Mol Chem Neuropathol 1992;16:171-186.[ISI][Medline]
31. Likosky WH, Hinman AR, Barthel WF. Organic mercury poisoning, New Mexico. Neurology 1970;20:401-401.
32. Guallar E, Sanz-Gallardo MI, van't Veer P, et al. Mercury, fish oils, and the risk of myocardial infarction. N Engl J Med 2002;347:1747-1754.[Abstract/Full Text]
33. Yoshizawa K, Rimm EB, Morris JS, et al. Mercury and the risk of coronary heart disease in men. N Engl J Med 2002;347:1755-1760.[Abstract/Full Text]
34. Salonen JT, Seppanen K, Lakka TA, Salonen R, Kaplan GA. Mercury accumulation and accelerated progression of carotid atherosclerosis: a population-based prospective 4-year follow-up study in men in eastern Finland. Atherosclerosis 2000;148:265-273.[CrossRef][ISI][Medline]
35. Salonen JT, Seppanen K, Nyyssonen K, et al. Intake of mercury from fish, lipid peroxidation, and the risk of myocardial infarction and coronary, cardiovascular, and any death in eastern Finnish men. Circulation 1995;91:645-655.[Abstract/Full Text]
36. Sorensen N, Murata K, Budtz-Jorgensen E, Weihe P, Grandjean P. Prenatal methylmercury exposure as a cardiovascular risk factor at seven years of age. Epidemiology 1999;10:370-375.[ISI][Medline]
37. Blood and hair mercury levels in young children and women of childbearing age -- United States, 1999. JAMA 2001;285:1436-1437.[Full Text]
38. Bolger PM, Schwetz BA. Mercury and health. N Engl J Med 2002;347:1735-1736.[Full Text]
39. Kjellstrom T, Kennedy P, Wallis S, et al. Physical and mental development of children with prenatal exposure to mercury from fish. Stage 2. Interviews and psychological tests at age 6. Report no. 3642. Solna, Sweden: Solna National Swedish Environmental Board, 1989.
40. Grandjean P, Weihe P, White RF, et al. Cognitive deficit in 7-year-old children with prenatal exposure to methylmercury. Neurotoxicol Teratol 1997;19:417-428.[CrossRef][ISI][Medline]
41. Myers GJ, Davidson PW, Cox C, et al. Prenatal methylmercury exposure from ocean fish consumption: 9-year evaluations in the Seychelles child development study. Lancet 2003;361:1686-1692.[CrossRef][ISI][Medline]
42. Water quality criterion for the protection of human health: methylmercury. Washington, D.C.: Environmental Protection Agency, January 2001. (EPA-823-R-01-001.)
43. Board on Environment studies and toxicology. Toxicological effects of methyl mercury. Washington, D.C.: National Research Council, 2000.
44. Grandjean P, Weihe P, Jorgensen PJ, Clarkson T, Cernichiari E, Videro T. Impact of maternal seafood diet on fetal exposure to mercury, selenium, and lead. Arch Environ Health 1991;47:185-195.[ISI]
45. Magos L. Review on the toxicity of ethylmercury, including its presence as a preservative in biological and pharmaceutical preparations. J Appl Toxicol 2001;21:1-5.[ISI][Medline]
46. Clarkson TW. The three modern faces of mercury. Environ Health Perspect 2002;110:Suppl 1:11-23.[ISI][Medline]
47. USP 24–NF 19: U.S. Pharmacopeia and national formulary. 24th ed. Rockville, Md.: United States Pharmacopeial Convention, 1999.
48. Ball LK, Ball R, Pratt RD. An assessment of thimerosal use in childhood vaccines. Pediatrics 2001;107:1147-1154.[Abstract/Full Text]
49. Freed GL, Andreae MC, Cowan AE, Katz SL. The process of public policy formulation: the case of thimerosal in vaccine. Pediatrics 2002;109:1153-1159.[Full Text]
50. Pichichero ME, Cernichiari E, Lopricato J, Treanor J. Mercury concentrations and metabolism in infants receiving vaccines containing thiomersal: a descriptive study. Lancet 2002;360:1737-1741.[CrossRef][ISI][Medline]
51. Smith J, Farris FF. Methyl mercury pharmacokinetics in man: a reevaluation. Toxicol Appl Pharmacol 1996;137:245-252.[CrossRef][ISI][Medline]
52. Vaccines and biologicals: recommendations from the Strategic Advisory Group of Experts. Wkly Epidemiol Rec 2002;77:305-312.[Medline]

ARTICLE
► Table of Contents
► PDF of this article
► PDA version of this article
► Editor's Summary
► CME Exam
► Find Similar Articles in the Journal
► Notify a friend about this article
SERVICES
► Add to Personal Archive
► Download to Citation Manager
► Alert me when letters appear
► Alert me when this article is cited
ISI Web of Science
► Related Articles

(Attachment #32)

MEDLINE
► Related Articles in Medline
Articles in Medline by Author:
► Clarkson, T. W.
► Myers, G. J.
► Medline Citation
COLLECTIONS
► Child Health
► Health Policy
► Neurologic Disease
► Related Chapters at Harrison's Online

HOME | SEARCH | CURRENT ISSUE | PAST ISSUES | COLLECTIONS | HELP

Comments and questions? Please contact us.

The New England Journal of Medicine is owned, published, and copyrighted © 2004 Massachusetts Medical Society. All rights reserved.

(Attachment #32)

U.S. Environmental Protection Agency
Integrated Risk Information System
Recent Additions | Contact Us | Print Version Search: GO
EPA Home > Browse EPA Topics > Human Health > Health Effects > IRIS Home > IRIS Summaries

IRIS
List of IRIS Substances

Select a Substance GO
Full IRIS Summary QuickView

Mercury, elemental (CASRN 7439-97-6)

view QuickView

MAIN CONTENTS

Reference Dose for Chronic Oral Exposure (RfD) GO

0370

Mercury, elemental; CASRN 7439-97-6

Health assessment information on a chemical substance is included in IRIS only after a comprehensive review of chronic toxicity data by U.S. EPA health scientists from several Program Offices and the Office of Research and Development. The summaries presented in Sections I and II represent a consensus reached in the review process. Background information and explanations of the methods used to derive the values given in IRIS are provided in the Background Documents.

STATUS OF DATA FOR Mercury, elemental

File First On-Line 09/07/1988

Category (section)	Status	Last Revised
Oral RfD Assessment (I.A.)	no data	
Inhalation RfC Assessment (I.B.)	on-line	06/01/1995
Carcinogenicity Assessment (II.)	on-line	05/01/1995

_I. Chronic Health Hazard Assessments for Noncarcinogenic Effects

_I.A. Reference Dose for Chronic Oral Exposure (RfD)

Substance Name -- Mercury, elemental
CASRN -- 7439-97-6

Not available at this time.

Back to top

Chronic Health Hazards for Non-Carcinogenic Effects
Reference Dose for Chronic Oral Exposure (RfD)
- Oral RfD Summary
- Principal and Supporting Studies
- Uncertainty and Modifying Factors
- Additional Studies/ Comments
- Confidence in the Oral RfD
- EPA Documentation and Review
Reference Concentration for Chronic Inhalation Exposure (RfC)
- Inhalation RfC Summary
- Principal and Supporting Studies
- Uncertainty and Modifying Factors
- Additional Studies/ Comments
- Confidence in the Inhalation RfC
- EPA Documentation and Review
Carcinogenicity Assessment for Lifetime Exposure
Evidence for Human Carcinogenicity
- Weight-of-Evidence Characterization
- Human Carcinogenicity Data
- Animal Carcinogenicity Data
- Supporting Data for Carcinogenicity
Quantitative Estimate

I.B. Reference Concentration for Chronic Inhalation Exposure (RfC)

Substance Name -- Mercury, elemental
CASRN -- 7439-97-6
Last Revised -- 06/01/1995

The inhalation Reference Concentration (RfC) is analogous to the oral RfD and is likewise based on the assumption that thresholds exist for certain toxic effects such as cellular necrosis. The inhalation RfC considers toxic effects for both the respiratory system (portal-of-entry) and for effects peripheral to the respiratory system (extrarespiratory effects). It is expressed in units of mg/cu.m. In general, the RfC is an estimate (with uncertainty spanning perhaps an order of magnitude) of a daily inhalation exposure of the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime. Inhalation RfCs were derived according to the Interim Methods for Development of Inhalation Reference Doses (EPA/600/8-88/066F August 1989) and subsequently, according to Methods for Derivation of Inhalation Reference Concentrations and Application of Inhalation Dosimetry (EPA/600/8-90/066F October 1994). RfCs can also be derived for the noncarcinogenic health effects of substances that are carcinogens. Therefore, it is essential to refer to other sources of information concerning the carcinogenicity of this substance. If the U.S. EPA has evaluated this substance for potential human carcinogenicity, a summary of that evaluation will be contained in Section II of this file.

of Carcinogenic Risk from Oral Exposure
- Summary of Risk Estimates
- Dose-Response Data
- Additional Comments
- Discussion of Confidence

Quantitative Estimate of Carcinogenic Risk from Inhalation Exposure
- Summary of Risk Estimates
- Dose-Response Data
- Additional Comments
- Discussion of Confidence

EPA Documentation, Review and, Contacts
- Bibliography
- Revision History
- Synonyms

I.B.1. Inhalation RfC Summary

Critical Effect	Exposures*	UF	MF	RfC
Hand tremor, increases in memory disturbance; slight subjective and objective evidence of autonomic dysfunction Human occupational inhalation studies Fawer et al., 1983; Piikivi and Tolonen, 1989; Piikivi and Hanninen, 1989; Piikivi, 1989; Ngim et al., 1992; Liang et al., 1993	NOAEL: None LOAEL: 0.025 mg/cu.m (converted to LOAEL [ADJ] of 0.009 mg/cu.m)	30	1	3E-4 mg/cu.m

*Conversion Factors and Assumptions: This is an extrarespiratory effect of a vapor (gas). The LOAEL is based on an 8-hour TWA occupational exposure. MVho = 10 cu.m/day. MVh = 20 cu.m/day. LOAEL(HEC) = LOAEL(ADJ) = 0.025 mg/cu.m x>MVho/MVh x 5 days/7 days = 0.009 mg/cu.m. Air concentrations (TWA) were measured in the Fawer et al. (1983), Ngim et al. (1992), and Liang et al. (1993) studies. Air concentrations were extrapolated from blood levels based on the conversion factor of Roels et al. (1987) as described in the Additional Comments section for the studies of Piikivi and Tolonen (1989), Piikivi and Hanninen (1989), and Piikivi (1989).

I.B.2. Principal and Supporting Studies (Inhalation RfC)

Fawer, R.F., U. DeRibaupierre, M.P. Guillemin, M. Berode and M. Lobe. 1983.Measurement of hand tremor induced by industrial exposure to metallic mercury. J. Ind. Med. 40: 204-208.

Piikivi, L. and U. Tolonen. 1989. EEG findings in chlor-alkali workers subjected to low long term exposure to mercury vapor. Br. J. Ind. Med. 46: 370-375.

Piikivi, L. and H. Hanninen. 1989. Subjective symptoms and psychological performance of chlorine-alkali workers. Scand. J. Work Environ. Health. 15: 69-74.

Piikivi, L. 1989. Cardiovascular reflexes and low long-term exposure to mercury vapor. Int. Arch. Occup. Environ. Health. 61: 391-395.

Ngim, C.H., S.C. Foo, K.W. Boey and J. Jeyaratnam. 1992. Chronic neurobehavioral effects of elemental mercury in dentists. Br. J. Ind. Med. 49: 782-790.

Liang, Y-X., R-K. Sun, Y. Sun, Z-Q. Chen and L-H. Li. 1993. Psychological effects of low exposure to mercury vapor: Application of a computer-administered neurobehavioral evaluation system. Environ. Res. 60: 320-327.

Fawer et al. (1983) used a sensitive objective electronic measure of intention tremor (tremors that occur at the initiation of voluntary movements) in 26 male workers (mean age of 44 years) exposed to low levels of mercury vapor in various occupations: fluorescent tube manufacture (n=7), chloralkali plants (n=12), and acetaldehyde production (n=7). Controls (n=25; mean age of 44.6 years) came from the same factories but were not exposed occupationally. Personal air samples (two per subject) were used to characterize an average exposure concentration of 0.026 mg/cu.m. It should be noted that it is likely that the levels of mercury in the air varied during the period of exposure and historical data indicate that previous exposures may have been higher. Exposure measurements for the control cohort were not performed. The average duration of exposure was 15.3 years. The measures of tremor were significantly increased in the exposed compared to control cohorts, and were shown to correspond to exposure and not to chronologic age. These findings are consistent with neurophysiological impairments that might result from accumulation of mercury in the cerebellum and basal ganglia. Thus, the TWA of 0.026 mg/cu.m was designated a LOAEL. Using the TWA and adjusting for occupational ventilation rates and workweek, the resultant LOAEL(HEC) is 0.009 mg/cu.m.

Piikivi and Tolonen (1989) used EEGs to study the effects of long-term exposure to mercury vapor in 41 chloralkali workers exposed for a mean of 15.6 +/- 8.9 years as compared with matched referent controls. They found that the exposed workers, who had mean blood Hg levels of 12 ug/L and mean urine Hg levels of 20 ug/L, tended to have an increased number of EEG abnormalities when analyzed by visual inspection only. When the EEGs were analyzed by computer, however, the exposed workers were found to have significantly slower and attenuated brain activity as compared with the referents. These changes were observed in 15% of the exposed workers. The frequency of these changes correlated with cortical Hg content (measured in other studies); the changes were most prominent in the occipital cortex less prominent in the parietal cortex, and almost absent in the frontal cortex. The authors extrapolated an exposure level associated with these EEG changes of 0.025 mg/cu.m from blood levels based on the conversion factor calculated by Roels et al. (1987).

Piikivi and Hanninen (1989) studied the subjective symptoms and psychological performances on a computer-administered test battery in 60 chloralkali workers exposed to mercury vapor for a mean of 13.7 +/- 5.5 years as compared with matched referent controls. The exposed workers had mean blood Hg levels of 10 ug/L and mean urine Hg levels of 17 ug/L. A statistically significant increase in subjective measures of memory disturbance and sleep disorders was found in the exposed workers. The exposed workers also reported more anger, fatigue and confusion. No objective disturbances in perceptual motor, memory or learning abilities were found in the exposed workers. The authors extrapolated an exposure level associated with these subjective measures of memory disturbance of 0.025 mg/cu.m from blood levels based on the conversion factor calculated by Roels et al. (1987).

(Attachment #32)

Both subjective and objective symptoms of autonomic dysfunction were investigated in 41 chloralkali workers exposed to mercury vapor for a mean of 15.6 +/- 8.9 years as compared with matched referent controls (Piikivi, 1989). The quantitative non-invasive test battery consisted of measurements of pulse rate variation in normal and deep breathing, in the Valsalva maneuver and in vertical tilt, as well as blood pressure responses during standing and isometric work. The exposed workers had mean blood levels of 11.6 ug/L and mean urine levels of 19.3 ug/L. The exposed workers complained of more subjective symptoms of autonomic dysfunction than the controls, but the only statistically significant difference was an increased reporting of palpitations in the exposed workers. The quantitative tests revealed a slight decrease in pulse rate variations, indicative of autonomic reflex dysfunction, in the exposed workers. The authors extrapolated an exposure level associated with these subjective and objective measures of autonomic dysfunction of 0.030 mg/cu.m from blood levels based on the conversion factor calculated by Roels et al. (1987).

Two more recent studies in other working populations corroborate the neurobehavioral toxicity of low-level mercury exposures observed in the Fawer et al. (1983), Piikivi and Tolonen (1989), Piikivi and Hanninen (1989), and Piikivi (1989) studies.

Ngim et al. (1992) assessed neurobehavioral performance in a cross-sectional study of 98 dentists (38 female, 60 male; mean age 32, range 24-49 years) exposed to TWA concentrations of 0.014 mg/cu.m (range 0.0007 to 0.042 mg/cu.m) versus 54 controls (27 female, 27 male; mean age 34, range 23-50 years) with no history of occupational exposure to mercury. Air concentrations were measured with personal sampling badges over typical working hours (8-10 hours) and converted to an 8-hour TWA. No details on the number of exposure samples or exposure histories were provided. Blood samples from the exposed cohort were also taken and the data supported the correspondence calculated by Roels et al. (1987). Based on extrapolation of the average blood mercury concentration (9.8 ug/L), the average exposure concentration would be estimated at 0.023 mg/cu.m. The average duration of practice of the exposed dentists was 5.5 years. Exposure measurements of the control cohort were not performed. The exposed and control groups were adequately matched for age, amount of fish consumption, and number of amalgam dental fillings. The performance of the dentists was significantly worse than controls on a number of neurobehavioural tests measuring motor speed (finger tapping), visual scaning, visumotor coordination and concentration, visual memmory, and visuomotor coordination speed. These neurobehavioral effects are consistent with central and peripheral neurotoxicity and the TWA is considered a LOAEL. Using the TWA and adjusting for occupational ventilation rates and the reported 6-day workweek, the resultant LOAEL(HEC) is 0.006 mg/cu.m.

Liang et al. (1993) investigated workers in a fluorescent lamp factory with a computer-administered neurobehavioral evaluation system and a mood inventory profile. The exposed cohort (mean age 34.2 years) consisted of 19 females and 69 males exposed to uninterruptedly for at least 2 years prior to the study. Exposure was monitored with area samplers and ranged from 0.008 to 0.085 mg/cu.m across worksites. No details on how the exposure profiles to account for time spent in different worksites were constructed. The average exposure was estimated at 0.033 mg/cu.m. (range 0.005 to 0.19 mg/cu.m). The average duration was of working was 15.8 years for the exposed cohort. Urinary excretion was also monitored and reported to average 0.025 mg/L. The control cohort (mean age 35.1 years) consisted of 24 females and 46 males recruited from an embroidery factory. The controls were matched for age, education, smoking and drinking habits. Exposure measurements for the control cohort were not performed. The exposed cohort performed significantly worse than the control on tests of finger tapping, mental arithmetic, two-digit searches, switching attention, and visual reaction time. The effect on performance persisted after the confounding factor of chronological age was controlled. Based on these neurobehavioral effects, the TWA of 0.033 mg/cu.m is designated as LOAEL. Using the TWA and adjusting for occupational ventilation rates and workweek, the resultant LOAEL(HEC) is 0.012 mg/cu.m.

The above studies were taken together as evidence for a LOAEL based on eurobehavioral effects of low-level mercury exposures. The LOAEL(HEC) levels calculated on measured air concentration levels of the Ngim et al. (1992) and the Liang et al. (1993) studies bracket that calculated based on the air concentrations measured by Fawer et al. (1983) as a median HEC

level. Extrapolations of blood levels, used as biological monitoring that accounts for variability in exposure levels, also converge at 0.025 mg/cu.m as a TWA which results in the same HEC level. Thus, the TWA level of 0.025 mg/cu.m was used to represent the exposure for the synthesis of the studies described above. Using this TWA and taking occupational ventilation rates and workweek into account results in a LOAEL(HEC) of 0.009 mg/cu.m.

__I.B.3. Uncertainty and Modifying Factors (Inhalation RfC)

UF -- An uncertainty factor of 10 was used for the protection of sensitive human subpopulations (including concern for acrodynia - see Additional Comments section) together with the use of a LOAEL. An uncertainty factor of 3 was used for lack of data base, particularly developmental and reproductive studies.

MF -- None

__I.B.4. Additional Studies/Comments (Inhalation RfC)

Probably the most widely recognized form of hypersensitivity to mercury poisoning is the uncommon syndrome known as acrodynia, also called erythredema polyneuropathy or pink disease (Warkany and Hubbard, 1953). Infantile acrodynia was first described in 1828, but adult cases have also since been reported. While acrodynia has generally been associated with short-term exposures and with urine levels of 50 ug/L or more, there are some cases in the literature in which mercury exposure was known to have occurred, but no significant (above background) levels in urine were reported. There could be many reasons for this, but the most likely is that urine levels are not a simple measure of body burden or of target tissue (i.e., brain levels); however, they are the best means available for assessing the extent of exposure. It was felt that the RfC level estimated for mercury vapor based on neurotoxicity of chronic exposure in workers is adequate to protect children from risk of acrodynia because such exposures of long duration would be expected to raise urine levels by only 0.12 ug/L against a background level of up to 20 ug/L (i.e., such exposures would not add significantly to the background level of mercury in those exposed).

Roels et al. (1987) investigated the relationships between the concentrations of metallic mercury in air and levels monitored in blood or urine in workers exposed during manufacturing of dry alkaline batteries. Breathing zone personal samples were used to characterize airborne mercury vapors. Total mercury in blood and urine samples were analyzed using atomic absorption. The investigation controlled for several key factors including the use of reliable personal air monitoring, quality control for blood and urine analyses, standardization of the urinary mercury concentration for creatinine concentration, and stability of exposure conditions (examined subjects were exposed to mercury vapor for at least 1 year). Strong correlations were found between the daily intensity of exposure to mercury vapor and the end of workshift levels in blood (r=0.86; n=40) or urine (r=0.81; n=34). These relationships indicated a conversion factor of 1:4.5 (air:blood) and 1:1.22 (air:urine as ug/g creatinine). These factors were used to extrapolate blood or urine levels associated with effects in the reported studies to airborne mercury levels.

Sensory and motor nerve conduction velocities were studied in 18 workers from a mercury cell chlorine plant (Levine et al., 1982). Time-integrated urine Hg levels were used as an indicator of mercury exposure. Using linearized regression analysis, the authors found that motor and sensory nerve conduction velocity changes (i.e., prolonged distal latencies correlated with the time-integrated urinary Hg levels in asymptomatic exposed workers) occurred when urinary Hg levels exceeded 25 ug/L. This study demonstrates that mercury exposure can be associated with preclinical evidence of peripheral neurotoxicity.

Singer et al. (1987) studied nerve conduction velocity of the median motor, median sensor and sural nerves in 16 workers exposed to various inorganic mercury compounds (e.g., mercuric oxides, mercurial chlorides, and phenyl mercuric acid) for an average of 7.3 +/- 7.1 years as compared with an unexposed control group using t-tests. They found a slowing of nerve conduction velocity in motor, but not sensory, nerves that correlated with increased

(Attachment #32)

blood and urine Hg levels and an increased number of neurologic symptoms. The mean mercury levels in the exposed workers were 1.4 and 10 ug/L for blood and urine, respectively. These urine levels are 2-fold less than those associated with peripheral neurotoxicity in other studies (e.g., Levine et al., 1982). There was considerable variability in the data presented by Singer et al. (1987), however, and the statistical analyses (t-test) were not as rigorous as those employed by Levine et al. (1982) (linearized regression analysis). Furthermore, the subjects in the Levine et al. (1982) study were asymptomatic at higher urinary levels than those reported to be associated with subjective neurological complaints in the workers studied by Singer et al. (1987). Therefore, these results are not considered to be as reliable as those reported by Levine et al. (1982).

Miller et al. (1975) investigated several subclinical parameters of neurological dysfunction in 142 workers exposed to inorganic mercury in either the chloralkali industry or a factory for the manufacture of magnetic materials. They reported a significant increase in average forearm tremor frequency in workers whose urinary Hg concentrations exceeded 50 ug/L as compared with unexposed controls. Also observed were eyelid fasciculation, hyperactive deep-tendon reflexes and dermatographia, but there was no correlation between the incidence of these findings and urinary Hg levels.

Roels et al. (1985) examined 131 male and 54 female workers occupationally exposed to mercury vapor for an average duration of 4.8 years. Urinary mercury (52 and 37 ug/g creatinine for males and females, respectively) and blood mercury levels (14 and 9 ug/L for males and females, respectively) were recorded, but atmospheric mercury concentration was not provided. Symptoms indicative of CNS disorders were reported but not related to mercury exposure. Minor renal tubular effects were detected in mercury-exposed males and females and attributed to current exposure intensity rather (urinary Hg >50 ug/g creatinine) than exposure duration. Male subjects with urinary mercury levels of >50 ug/g creatinine exhibited preclinical signs of hand tremor. It was noted that females did not exhibit this effect and that their urinary mercury never reached the level of 50 ug/g creatinine. A companion study (Roels et al., 1987) related air mercury (Hg-air)levels to blood mercury (Hg-blood) and urinary mercury (Hg-U) values in 10 workers in a chloralkali battery plant. Duration of exposure was not specified. A high correlation was reported for Hg-air and Hg-U for preshift exposure ($r=0.70$, $p<0.001$) and post-shift ($r=0.81$, $p<0.001$) measurements. Based on these data and the results of their earlier (1985) study, the investigators suggested that some mercury-induced effects may occur when Hg-U levels exceed 50 ug/g creatinine, and that this value corresponds to a mercury TWA of about 40 ug/cu.m.

A survey of 567 workers at 21 chloralkali plants was conducted to ascertain the effects of mercury vapor inhalation (Smith et al., 1970). Mercury levels ranged from <0.01 to 0.27 mg/cu.m and chlorine concentrations ranged from 0.1 to 0.3 ppm at most of the working stations of these plants. Worker exposure to mercury levels (TWA) varied, with 10.2% of the workers being exposed to <0.01 mg/cu.m, 48.7% exposed to 0.01 to 0.05 mg/cu.m, 25.6% exposed to 0.06 to 0.10 mg/cu.m and 4.8% exposed to 0.24 to 0.27 mg/cu.m (approximately 85% were exposed to Hg levels less than or equal to 0.1 mg/cu.m). The duration of employment for the examined workers ranged from one year (13.3%) to >10 years (31%), with 55.7% of the workers being employed for 2 or 9 years. A group of 600 workers not exposed to chlorine served as a control group for assessment of chlorine effects, and a group of 382 workers not exposed to either chlorine or mercury vapor served as the reference control group. A strong positive correlation ($p<0.001$) was found between the mercury TWAs and the reporting of subjective neuropsychiatric symptoms (nervousness, insomnia), occurrence of objective tremors, and weight and appetite loss. A positive correlation ($p<0.001$) was also found between mercury exposure levels and urinary and blood mercury levels of test subjects. No adverse alterations in cardiorespiratory, gastrointestinal, renal or hepatic functions were attributed to the mercury vapor exposure. Additionally, biochemical (hematologic data, enzyme activities) and clinical measurements (EKG, chest X-rays) were no different between the mercury-exposed and non-exposed workers. No significant signs or symptoms were noted for individuals exposed to mercury vapor concentrations less than or equal to 0.1 mg/cu.m. This study provides data indicative of a NOAEL of 0.1 mg Hg/cu.m and a LOAEL of 0.18 mg Hg/cu.m. In a followup study conducted by Buna et al. (1986), however, no significant differences in the frequency of objective or subjective findings such

as weight loss and appetite loss were observed in workers exposed to mercury at levels that ranged between 50 and 100 ug/L. The study by Buna et al. (1986) was limited, however, by the lack of information provided regarding several methodological questions such as quality assurance measures and control of possible confounding variables.

The mercury levels reported to be associated with preclinical and symptomatic neurological dysfunction are generally lower than those found to affect kidney function, as discussed below.

Piikivi and Ruokonen (1989) found no evidence of glomerular or tubular damage in 60 chloralkali workers exposed to mercury vapor for an average of 13.7 +/- 5.5 years as compared with their matched referent controls. Renalfunction was assessed by measuring urinary albumin and N-acetyl-beta-glucosaminidase (NAG) activity. The mean blood Hg level in the exposed workers was 14 ug/L and the mean urinary level was 17 ug/L. The authors extrapolated the NOAEL for kidney effects based on these results of 0.025 mg/cu.m from blood levels using the conversion factor calculated by Roels et al. (1987).

Stewart et al. (1977) studied urinary protein excretion in 21 laboratory workers exposed to 10-50 ug/cu.m of mercury. Their urinary level of mercury was about 35 ug/L. Increased proteinuria was found in the exposed workers as compared with unexposed controls. When preventive measure were instituted to limit exposure to mercury, proteinuria was no longer observed in the exposed technicians.

Lauwerys et al. (1983) found no change in several indices of renal function (e.g., proteinuria, albuminuria, urinary excretion of retinol-binding protein, aminoaciduria, creatinine in serum, beta-2-microglobulin in serum) in 62 workers exposed to mercury vapor for an average of 5.5 years. The mean urinary Hg excretion in the exposed workers was 56 ug/g creatinine, which corresponds to an exposure level of about 46 ug/cu.m according to a conversion factor of 1:1.22 (air:urine [ug/g creatinine]) (Roels et al., 1987). Despite the lack of observed renal effects, 8 workers were found to have an increased in serum anti-laminin antibodies, which can be indicative of immunological effects. In a followup study conducted by Bernard et al. (1987), however, there was no evidence of increased serum anti-laminin antibodies in 58 workers exposed to mercury vapor for an average of 7.9 years. These workers had a mean urinary Hg excretion of 72 ug/g creatinine, which corresponds to an exposure levels of about 0.059 mg/cu.m.

Stonard et al. (1983) studied renal function in 100 chloralkali workers exposed to inorganic mercury vapor for an average of 8 years. No changes in the following urinary parameters of renal function were observed at mean urinary Hg excretion rates of 67 ug/g creatinine: total protein, albumin, alpha-1-acid glycoprotein, beta-2-microglobulin, NAG, and gamma-glutamyl transferase. When urinary Hg excretion exceeded 100 ug/g creatinine, a small increase in the prevalence of higher activities of NAG and gamma-glutamyl transferase was observed.

The mercury levels reported to be associated with preclinical and symptomatic neurological dysfunction and kidney effects are lower than those found to pulmonary function, as discussed below.

McFarland and Reigel (1978) described the cases of 6 workers who were acutely exposed (4-8 hours) to calculated metallic mercury vapor levels of 1.1 to 44 mg/cu.m. These men exhibited a combination of chest pains, dyspnea, cough, hemoptysis, impairment of pulmonary function (reduced vital capacity), diffuse pulmonary infiltrates and evidence of interstitial pneumonitis. Although the respiratory symptoms resolved, all six cases exhibited chronic neurological dysfunction, presumably as a result of the acute, high-level exposure to mercury vapor.

Lilis et al. (1985) described the case of a 31-year-old male who was acutely exposed to high levels of mercury vapor in a gold-extracting facility. Upon admission to the hospital, the patient exhibited dyspnea, chest pain with deep inspiration, irregular infiltrates in the lungs

(Attachment #32)

and reduced pulmonary function (forced vital capacity [FVC]). The level of mercury to which he was exposed is not known, but a 24-hour urine collection contained 1900 ug Hg/L. Although the patient improved gradually over the next several days, 11 months after exposure he still showed signs of pulmonary function abnormalities (e.g., restriction and diffusion impairment).

Levin et al. (1988) described four cases of acute high-level mercury exposure during gold ore purification. The respiratory symptoms observed in these four cases ranged from minimal shortness of breath and cough to severe hypoxemia. The most severely affected patient exhibited mild interstitial lung disease both radiographically and on pulmonary function testing. One patient had a urinary Hg level of 245 ug/L upon hospital admission. The occurrence of long-term respiratory effects in these patients could not be evaluated since all but one refused follow-up treatment.

Ashe et al. (1953) reported that there was no histopathological evidence of respiratory damage in 24 rats exposed to 0.1 mg Hg/cu.m 7 hr/day, 5 days/week for 72 weeks. This is equivalent to a NOAEL[HEC] of 0.07 mg/cu.m.

Kishi et al. (1978) observed no histopathological changes in the lungs of rats exposed to 3 mg/cu.m of mercury vapor 3 hours/day, 5 days/week for 12-42 weeks.

Beliles et al. (1967) observed no histopathological changes in the lungs of pigeons exposed to 0.1 mg/cu.m of mercury vapor 6 hours/day, 5 days/week for 20 weeks.

Neurological signs and symptoms (i.e., tremors) were observed in 79 workers exposed to metallic mercury vapor whose urinary mercury levels exceeded 500 ug/L. Short-term memory deficits were reported in workers whose urine levels were less than 500 ug/L (Langolf et al., 1978).

Impaired performance in mechanical and visual memory tasks and psychomotor ability tests was reported by Forzi et al. (1978) in exposed workers whose urinary Hg levels exceeded 100 ug/L.

Decreased strength, decreased coordination, increased tremor, decreased sensation and increased prevalence of Babinski and snout reflexes were exhibited by 247 exposed workers whose urinary Hg levels exceeded 600 ug/L. Evidence of clinical neuropathy was observed at urinary Hg levels that exceeded 850 ug/L (Albers et al., 1988).

Preclinical psychomotor dysfunction was reported to occur at a higher incidence in 43 exposed workers (mean exposure duration of 5 years) whose mean urinary excretion of Hg was 50 ug/L. Workers in the same study whose mean urinary Hg excretion was 71 ug/L had a higher incidence of total proteinuria and albuminuria (Roels et al., 1982).

Postural and intention tremor was observed in 54 exposed workers (mean exposure duration of 7.7 years) whose mean urinary excretion of Hg was 63 ug/L (Roels et al., 1989).

Verbeck et al. (1986) observed an increase in tremor parameters with increasing urinary excretion of mercury in 21 workers exposed to mercury vapor for 0.5-19 years. The LOAEL for this effect was a mean urinary excretion of 35 ug/g creatinine.

Rosenman et al. (1986) evaluated routine clinical parameters (physical exams, blood chemistry, urinalysis), neuropsychological disorders, urinary NAG, motor nerve conduction velocities and occurrence of lenticular opacities in 42 workers of a chemical plant producing mercury compounds. A positive correlation ($p<0.05$ to $p<0.001$) was noted between urinary mercury (levels ranged from 100-250 ug/L) and the number of neuropsychological symptoms, and NAG excretions and the decrease in motor nerve conduction velocities.

Evidence of renal dysfunction (e.g., increased plasma and urinary concentrations of beta-

galactosidase, increased urinary excretion of high-molecular weight proteins and a slightly increased plasma beta-2-microglobulin concentration) was observed in 63 chloralkali workers. The incidence of these effects increased in workers whose urinary Hg excretion exceeded 50 ug/g creatinine (Buchet et al., 1980).

Increased urinary NAG levels were found in workers whose urinary Hg levels exceeded 50 ug/L (Langworth et al., 1992).

An increase in the concentration of urinary brush border proteins (BB-50) was observed in 20 workers whose mean urinary Hg excretion exceeded 50 ug/g creatinine (Mutti et al., 1985).

Fos et al. (1976) found that 15 out of 81 chloralkali workers exposed to 60-300 ug/cu.m mercury exhibited proteinuria.

An increased excretion of beta-glutamyl transpeptidase, indicative of renal dysfunction, was found in 309 infants dermally exposed to phenylmercury via contaminated diapers (Gotelli et al., 1985).

Berlin et al. (1969) exposed rats, rabbits and monkeys to 1 mg/cu.m of mercury vapor for 4 hours and measured the uptake and distribution of mercury in the brain as compared with animals injected intravenously with the same doses of mercury as mercuric salts. Mercury accumulated in the brain following inhalation exposure to metallic mercury vapor at levels that were 10 times higher than those observed following intravenous injection of the same dose of mercury as mercuric salts. These results demonstrate that mercury is taken up by the brain following inhalation of the vapor at higher levels than other forms of mercury and that this occurs in all species studied.

Limited animal studies concerning inhalation exposure to inorganic mercury are available. The results of a study conducted by Baranski and Szymczyk (1973) were reported in an English abstract. Adult female rats were exposed to metallic mercury vapor at 2.5 mg/cu.m for 3 weeks prior to fertilization and during gestation days 7-20. A decrease in the number of living fetuses was observed in the dams compared with unexposed controls, and all pups born to the exposed dams died by the sixth day after birth. However, no difference in the occurrence of developmental abnormalities was observed between exposed and control groups. The cause of death of the pups in the mercury-exposed group was unknown, although an unspecified percentage of the deaths was attributed by the authors to a failure of lactation in the dams. Death of pups was also observed in another experiment where dams were only exposed prior to fertilization (to 2.5 mg/cu.m), which supports the conclusion that the high mortality in the first experiment was due at least in part to poor health of the mothers. Without further information, this study must be considered inconclusive regarding developmental effects.

The only other study addressing the developmental toxicology of mercury is the one reported in abstract form by Steffek et al. (1987) and, as such, is included as a supporting study. Sprague-Dawley rats (number not specified) were exposed by inhalation to mercury vapor at concentrations of 0.1, 0.5 or 1.0 mg/cu.m throughout the period of gestation (days 1-20) or during the period of organogenesis (days 10-15). The authors indicated the exposure protocols to be chronic and acute exposure, respectively. At either exposure protocol, the lowest mercury level produced no detectable adverse effect. At 0.5 mg/cu.m, an increase in the number of resorptions (5/41) was noted for the acute group, and two of 115 fetuses exhibited gross cranial defects in the chronic group. At 1.0 mg/cu.m, the number of resorptions was increased in acute (7/71) and chronic (19/38) groups and a decrease in maternal and fetal weights also was detected in the chronic exposure group. No statistical analysis for these data was provided. A LOAEL of 0.5 mg/cu.m is provided based on these data.

Mishinova et al. (1980) investigated the course of pregnancy and parturition in 349 women exposed via inhalation to metallic mercury vapors (unspecified concentrations) in the workplace as compared to 215 unexposed women. The authors concluded that the rates of pregnancy and labor complication were high among women exposed to mercury and that the

(Attachment #32)

effects depended on "the length of service and concentration of mercury vapors." Lack of sufficient details preclude the evaluation of dose-response relationships.

In a questionnaire that assessed the fertility of male workers exposed to mercury vapor, Lauwerys et al. (1985) found no statistically significant change in the observed number of children born to the exposed group compared with a matched control group. The urinary excretion of mercury in the exposed workers ranged from 5.1 to 272.1 ug/g creatinine.

Another study found that exposure to metallic mercury vapor caused prolongation of estrus cycles in animals. Baranski and Szymczyk (1973) reported that female rats exposed via inhalation to mercury vapor at an average of 2.5 mg/cu.m, 6 hours/day, 5 days/week for 21 days experienced longer estrus cycles than unexposed animals. In addition, estrus cycles during mercury exposure were longer than normal estrus cycles in the same animals prior to exposure. Although the initial phase of the cycle was protracted, complete inhibition of the cycle did not occur. During the second and third weeks of exposure, these rats developed signs of mercury poisoning including restlessness, seizures and trembling of the entire body. The authors speculated that the effects on the estrus cycle were caused by the action of mercury on the CNS (i.e., damage to the hypothalamic regions involved in the control of estrus cycling).

Renal toxicity has been reported following oral exposure to inorganic mercury salts in animals, with the Brown-Norway rat appearing to be uniquely sensitive to this effect. These mercury-induced renal effects in the Brown-Norway rat are the basis for the oral RfD for mercurial mercury. Several investigators have produced autoimmune glomerulonephritis by administering HgCl2 to Brown-Norway rats (Druet et al., 1978).

The current OSHA standard for mercury vapor is 0.05 mg/cu.m. NIOSH recommends a TWA Threshold Limit Value of 0.05 mg/cu.m for mercury vapor.

__I.B.5. Confidence in the Inhalation RfC

Study -- Medium
database -- Medium
RfC -- Medium

Due to the use of a sufficient number of human subjects, the inclusion of appropriate control groups, the exposure duration, the significance level of the reported results and the fact that exposure levels in a number of the studies had to be extrapolated from blood mercury levels, confidence in the key studies is medium. The LOAEL values derived from these studies can be corroborated by other human epidemiologic studies. The adverse effects reported in these studies are in accord with the well-documented effects of mercury poisoning. The lack of human or multispecies reproductive/developmental studies precludes assigning a high confidence rating to the database and inadequate quantification of exposure levels. Based on these considerations, the RfC for mercury is assigned a confidence rating of medium.

__I.B.6. EPA Documentation and Review of the Inhalation RfC

Source Document -- U.S. EPA, 1995

This IRIS summary is included in The Mercury Study Report to Congress which was reviewed by OHEA and EPA's Mercury Work Group in November 1994. An interagency review by scientists from other federal agencies took place in January 1995. The report was also reviewed by a panel of non-federal external scientists in January 1995 who met in a public meeting on January 25-26. All reviewers comments have been carefully evaluated and considered in the revision and finalization of this IRIS summary. A record of these comments is summarized in the IRIS documentation files.

Other EPA Documentation -- None

Agency Work Group Review -- 11/16/1989, 03/22/1990, 04/19/1990

Verification Date -- 04/19/1990

Screening-Level Literature Review Findings -- A screening-level review conducted by an EPA contractor of the more recent toxicology literature pertinent to the RfC for Mercury, elemental conducted in September 2002 identified one or more significant new studies. IRIS users may request the references for those studies from the IRIS Hotline at hotline.iris@epa.gov or (202)566-1676.

__I.B.7. EPA Contacts (Inhalation RfC)

Please contact the IRIS Hotline for all questions concerning this assessment or IRIS, in general, at (202)566-1676 (phone), (202)566-1749 (fax), or hotline.iris@epa.gov (Internet address).

Back to top

_II. Carcinogenicity Assessment for Lifetime Exposure

Substance Name -- Mercury, elemental
CASRN -- 7439-97-6
Last Revised -- 05/01/1995

Section II provides information on three aspects of the carcinogenic assessment for the substance in question; the weight-of-evidence judgment of the likelihood that the substance is a human carcinogen, and quantitative estimates of risk from oral exposure and from inhalation exposure. The quantitative risk estimates are presented in three ways. The slope factor is the result of application of a low-dose extrapolation procedure and is presented as the risk per (mg/kg)/day. The unit risk is the quantitative estimate in terms of either risk per ug/L drinking water or risk per ug/cu.m air breathed. The third form in which risk is presented is a drinking water or air concentration providing cancer risks of 1 in 10,000, 1 in 100,000 or 1 in 1,000,000. The rationale and methods used to develop the carcinogenicity information in IRIS are described in The Risk Assessment Guidelines of 1986 (EPA/600/8-87/045) and in the IRIS Background Document. IRIS summaries developed since the publication of EPA's more recent Proposed Guidelines for Carcinogen Risk Assessment also utilize those Guidelines where indicated (Federal Register 61(79):17960-18011, April 23, 1996). Users are referred to Section I of this IRIS file for information on long-term toxic effects other than carcinogenicity.

_II.A. Evidence for Human Carcinogenicity

__II.A.1. Weight-of-Evidence Characterization

Classification -- D; not classifiable as to human carcinogenicity

Basis -- Based on inadequate human and animal data. Epidemiologic studies failed to show a correlation between exposure to elemental mercury vapor and carcinogenicity; the findings in these studies were confounded by possible or known concurrent exposures to other chemicals, including human carcinogens, as well as lifestyle factors (e.g., smoking). Findings from genotoxicity tests are severely limited and provide equivocal evidence that mercury adversely affects the number or structure of chromosomes in human somatic cells.

__II.A.2. Human Carcinogenicity Data

(Attachment #32)

Inadequate. A number of epidemiological studies were conducted that examined mortality among elemental mercury vapor-exposed workers. Conflicting data regarding a correlation between mercury exposure and an increased incidence of cancer mortalities have been obtained. All of the studies have limitations that complicate interpretation of their results for associations between mercury exposure and induction of cancer; increased cancer rates were attributable to other concurrent exposures or lifestyle factors.

A retrospective cohort study examined mortality among 5663 white males who worked between 1953 and 1963 at a plant in Oak Ridge, Tennessee, where elemental mercury was used for lithium isotope separation (Cragle et al., 1984). The workers were divided into three cohorts: exposed workers who had been monitored on a quarterly basis for mercury levels in urine (n=2,133); workers exposed in the mercury process section for whom urinalysis monitoring data were not collected (n=270); and unexposed workers from other sections of the nuclear weapons production facility (n=3260). The study subjects worked at least 4 months during 1953-1958 (a period when mercury exposures were likely to be high); mortality data from death certificates were followed through the end of 1978. The mean age of the men at first employment at the facility was 33 years, and the average length of their employment was >16 years with a mean of 3.73 years of estimated mercury exposure. Air mercury levels were monitored beginning in 1955; during 1955 through the third quarter of 1956, air mercury levels were reportedly above 100 ug/cu.m in 30-80% of the samples. Thereafter, air mercury levels decreased to concentrations below 100 ug/cu.m. The mortality experience (i.e., the SMR) of each group was compared with the age-adjusted mortality experience of the U.S. white male population. Among exposed and monitored workers, no significant increases in mortality from cancer at any site were reported, even after the level or length of exposure was considered. A significantly lower mortality from all causes was observed. An excessive number of deaths was reportedly due to lung cancer in the exposed and monitored workers (42 observed, 31.36 expected), but also in the unexposed workers (71 observed, 52.93 expected). The SMR for each group was 1.34; the elevated incidence of lung cancer deaths was, therefore, attributed to some other factor at the plant and/or to lifestyle factors (e.g., smoking) common to both the exposed and unexposed groups. Study limitations include small cohort sizes for cancer mortality, which limited the statistical stability of many comparisons.

Barregard et al. (1990) studied mortality and cancer morbidity between 1958 and 1984 in 1190 workers from eight Swedish chloralkali plants that used the mercury cell process in the production of chlorine. The men included in the study had been monitored for urinary or blood mercury for more than one year between 1946 and 1984. Vital status and cause of death were ascertained from the National Population Register and the National Bureau of Statistics. The cancer incidence of the cohort was obtained from the Swedish Cancer Register. The observed total mortality and cancer incidences were compared with those of the general Swedish male population. Comparisons were not made between exposed and unexposed workers. Mean urinary mercury levels indicated a decrease in exposure between the 1950s and 1970s; the mean urinary mercury level was 200 ug/L during the 1950s, 150 ug/L during the 1960s and 50 ug/L in the 1970s. Mortality from all causes was not significantly increased in exposed workers. A significant increase in deaths from lung tumors was observed in exposed workers 10 years or more after first exposure (rate ratio, 2.0; 95% CI, 1.0-3.8). Nine of the 10 observed cases of lung cancer occurred among workers (457 of the 1190) possibly exposed to asbestos as well as to mercury. No dose response was observed with respect to mercury exposure and lung tumors. This study is limited because no quantitation was provided on smoking status, and results were confounded by exposure to asbestos.

Ahlbom et al. (1986) examined the cancer mortality during 1961-1979 of cohorts of Swedish dentists and dental nurses aged 20-64 and employed in 1960 (3454 male dentists, 1125 female dentists, 4662 female dental nurses). Observed incidences were compared with those expected based on cancer incidence during 1961-1979 among all Swedes employed during 1960 and the proportion of all Swedes employed as dentists and dental nurses. Data were stratified by sex, age (5-year age groups) and county. The incidence of glioblastomas among the dentists and dental nurses combined was significantly increased compared to survival rates (SMR, 2.1; 95% CI, 1.3-3.4); the individual groups had apparently elevated SMRs (2.0-2.5), but the 95% confidence intervals of these groups included unity. By contrast, physicians and nurses

had SMRs of only 1.3 and 1.2, respectively. Exposure to mercury could not be established as the causative factor because exposure to other chemicals and X-rays was not ruled out.

Amandus and Costello (1991) examined the association between silicosis and lung cancer mortality between 1959 and 1975 in 9912 white male metal miners employed in the United States between 1959 and 1961. Mercury exposures were not monitored. Exposures to specific metals among the silicotic and nonsilicotic groups were analyzed separately. Lung cancer mortality in both silicotic and nonsilicotic groups was compared with rates in white males in the U.S. population. Both silicotic (n=11) and nonsilicotic mercury miners (n=263) had significantly increased lung cancer mortality (SMR, 14.03; 95% CI, 2.89-40.99 for silicotics; SMR, 2.66; 95% CI, 1.15-5.24 for nonsilicotics). The analysis did not focus on mercury miners, and confounders such as smoking and radon exposure were not analyzed with respect to mercury exposure. This study is also limited by the small sample size for non-silicotic mercury miners.

A case-control study of persons admitted to a hospital in Florence, Italy, with lung cancer between 1981-1983 was performed to evaluate occupational risk factors (Buiatti et al., 1985). Cases were matched with one or two controls (persons admitted to the hospital with diagnoses other than lung cancer or suicide) with respect to sex, age, date of admission and smoking status. Women who had "ever worked" as hat makers had a significantly increased risk of lung cancer. The duration of employment as a hat maker averaged 22.2 years, and latency averaged 47.8 years. Workers in the Italian hat industry were known to be occupationally exposed to mercury; however, the design of this study did not allow evaluation of the relationship between cumulative exposure and cancer incidence. In addition, interpretation of the results of this study is limited by the small sample size (only 6/376 cases reported this occupation) and by exposure of hat makers to other pollutants including arsenic, a known lung carcinogen.

Ellingsen et al. (1992) examined the total mortality and cancer incidence among 799 workers employed for more than 1 year in two Norwegian chloralkali plants. Mortality incidence between 1953 and 1988 and cancer incidence between 1953 and 1989 were examined. Mortality and cancer incidence were compared with that of the age-adjusted general male Norwegian population. No increase in total cancer incidence was reported, but lung cancer was significantly elevated in the workers (rate ratio, 1.66; 95% CI, 1.0-2.6). No causal relationship can be drawn from the study between mercury exposure and lung cancer because no correlation existed between cumulative mercury dose, years of employment or latency time. Also, the prevalence of smoking was 10-20% higher in the exposed workers, and many workers were also exposed to asbestos.

__II.A.3. Animal Carcinogenicity Data

Inadequate. Druckrey et al. (1957) administered 0.1 mL of metallic mercury to 39 male and female rats (BD III and BD IV strains) via intraperitoneal injection. Among the rats surviving longer than 22 months, 5/12 developed peritoneal sarcomas. The increase in the incidence of sarcomas was observed only in those tissues that had been in direct contact with the mercury. Although severe kidney damage was reported in all treated animals, no renal tumors or tumors at any site other than the peritoneal cavity were observed.

__II.A.4. Supporting Data for Carcinogenicity

Cytogenetic monitoring studies of workers occupationally exposed to mercury by inhalation provide very limited evidence that mercury adversely affects the number or structure of chromosomes in human somatic cells. Popescu et al. (1979) compared four men exposed to elemental mercury vapor with an unexposed group and found a statistically significant increase in the incidence of chromosome aberrations in the WBCs from whole blood. Verschaeve et al. (1976) found an increase in aneuploidy after exposure to low concentrations of vapor, but results could not be repeated in later studies (Verschaeve et al., 1979). Mabille et al. (1984) did not find increases in structural chromosomal aberrations of lymphocytes of exposed workers. Similarly, Barregard et al. (1991) found no increase in the incidence or size

(Attachment #32)

of micronuclei and no correlation between micronuclei and blood or urinary mercury levels of chloralkali workers. A statistically significant correlation was observed between cumulative exposure to mercury and micronuclei induction in T lymphocytes in exposed workers, suggesting a genotoxic effect.

Back to top

_II.B. Quantitative Estimate of Carcinogenic Risk from Oral

None.

Back to top

_II.C. Quantitative Estimate of Carcinogenic Risk from Inhalation Exposure

None.

Back to top

_II.D. EPA Documentation, Review, and Contacts (Carcinogenicity Assessment)

__II.D.1. EPA Documentation

Source document -- U.S. EPA. 1995

This IRIS summary is included in The Mercury Study Report to Congress which was reviewed by OHEA and EPA's Mercury Work Group in November 1994. An interagency review by scientists from other federal agencies took place in January 1995. The report was also reviewed by a panel of non-federal external scientists in January 1995 who met in a public meeting on January 25-26. All reviewers comments have been carefully evaluated and considered in the revision and finalization of this IRIS summary. A record of these comments is summarized in the IRIS documentation files.

__II.D.2. EPA Review (Carcinogenicity Assessment)

Agency Work Group Review -- 01/13/1988, 03/03/1994

Verification Date -- 03/03/1994

Screening-Level Literature Review Findings -- A screening-level review conducted by an EPA contractor of the more recent toxicology literature pertinent to the cancer assessment for Mercury, elemental, conducted in September 2002 did not identify any critical new studies. IRIS users who know of important new studies may provide that information to the IRIS Hotline at hotline.iris@epa.gov or (202)566-1676.

__II.D.3. EPA Contacts (Carcinogenicity Assessment)

Please contact the IRIS Hotline for all questions concerning this assessment or IRIS, in

general, at (202)566-1676 (phone), (202)566-1749 (fax), or hotline.iris@epa.gov (Internet address).

Back to top

_III. [reserved]
_IV. [reserved]
_V. [reserved]

_VI. Bibliography

Substance Name -- Mercury, elemental
CASRN -- 7439-97-6
Last Revised -- 06/01/1995

_VI.A. Oral RfD References

None.

Back to top

_VI.B. Inhalation RfC References

Albers, J.W., L.R. Kallenbach, L.J. Fine, et al. 1988. Neurological abnormalities associated with remote occupational elemental mercury exposure. Ann. Neurol. 24(5): 651-659.

Ashe, W.F., E.J. Largent, F.R. Dutra, D.M. Hubbard and M. Blackstone. 1953. Behavior of mercury in the animal organism following inhalation. Ind. Hyg. Occup. Med. 17: 19-43.

Baranski, B. and I. Szymczyk. 1973. [Effects of mercury vapor upon reproductive functions of female white rats]. Med. Pr. 24(3): 249-261. (Czechoslovakian)

Belilea, R.P., R.S. Clark, P.R. Belluscio, C.L. Yuile and L.J. Leach. 1967. Behavioral effects in pigeons exposed to mercury vapor at a concentration of 0.1 mg/cu.m. Am. Ind. Hyg. J. 28 (5): 482-484.

Berlin, M., J. Fazackerley and G. Nordberg. 1969. The uptake of mercury in the brains of mammals exposed to mercury vapor and to mercuric salts. Arch. Environ. Health. 18: 719-729.

Bernard, A.M., H.R. Roels, J.M. Foldart and R.L. Lauwerys. 1987. Search for anti-laminin antibodies in the serum of workers exposed to cadmium, mercury vapour or lead. Int. Arch. Occup. Environ. Health. 59: 303-309.

Buchet, J.P., H. Roels, A. Bernard and R. Lauwerys 1980. Assessment of renal function of workers exposed to inorganic lead, cadmium or mercury vapor. J. Occup. Med. 22(11): 741-750.

Bunn, W.B., C.M. McGill, T.E. Barber, J.W. Cromer and L.J. Goldwater. 1986. Mercury exposure in chloralkali plants. Am. Ind. Hyg. Assoc. J. 47(5): 249-254.

(Attachment #32)

Druet, P., E. Druet, F. Potdevin, et al. 1978. Immune type glomerulonephritis induced by HgCl2 in the Brown-Norway rat. Ann. Immunol. 129C: 777-792.

Fawer, R.F., Y. DeRibaupierre, M.P. Guillemin, M. Berode and M. Lob. 1983. Measurement of hand tremor induced by industrial exposure to metallic mercury. J. Ind. Med. 40: 204-208.

Foa, V., L. Caimi, L. Amante, et al. 1976. Patterns of some lysosomal enzymes in the plasma and of proteins in urine of workers exposed to inorganic mercury. Int. Arch. Occup. Environ. Health. 37: 115-124.

Forzi, M., M.G. Cassitto, C. Bolgheroni and V. Foa. 1978. Psychological measures in workers occupationally exposed to mercury vapors: A validation study. In: Adverse Effects of Environmental Chemicals and Psychotropic Drugs: Neurophysiological and Behavioral Tests. Vol. 2. H.J. Zimmerman, Ed. Appleton-Century-Crofts, New York, NY. p. 165-171.

Gotelli, C.A., E. Astolfi, C. Cox, E. Cernichiari and T. Clarkson. 1985.Early biochemical effects of an organic mercury fungicide on infants: "Dose makes the poison". Science. 277: 638-640.

Kishi, R., K. Hashimoto, S. Shimizu and M. Kobayashi. 1978. Behavioral changes and mercury concentrations in tissues of rats exposed to mercury vapor. Toxicol. Appl. Pharmacol. 46(3): 555-566.

Langolf, G.D., D.B. Chaffin, R. Henderson and H.P. Whittle. 1978. Evaluation of workers exposed to elemental mercury using quantitative tests of tremor and neuromuscular functions. Am. Ind. Hyg. Assoc. J. 39: 976-984.

Langworth, S., C.G. Elinder, K.G. Sundquist and O. Vesterberg. 1992. Renal and immunological effects of occupational exposure to inorganic mercury. Br. J. Ind. Med. 49: 394-401.

Lauwerys, R., A. Bernard, H. Roels, et al. 1983. Anti-laminin antibodies in workers exposed to mercury vapour. Toxicol. Lett. 17: 113-116.

Lauwerys, R., H. Roels, P. Genet, G. Toussaint, A. Bouckaert and S. De Cooman. 1985. Fertility of male workers exposed to mercury vapor or to manganese dust: A questionnaire study. Am. J. Ind. Med. 7(2): 171-176.

Levin, M., J. Jacobs and P.G. Polos. 1988. Acute mercury poisoning and mercurial pneumonitis from gold ore purification. Chest. 94(3): 554-558.

Levine, S.P., G.D. Cavender, G.D. Langolf and J.W. Albers. 1982. Elemental mercury exposure: Peripheral neurotoxicity. Br. J. Ind. Med. 39: 136-139.

Liang, Y-X., R-K. Sun, Y. Sun, Z-Q. Chen and L-H. Li. 1993. Psychological effects of low exposure to mercury vapor: Application of a computer-administered neurobehavioral evaluation system. Environ. Res. 60: 320-327.

Lilis, R., A. Miller and Y. Lerman. 1985. Acute mercury poisoning with severe chronic pulmonary manifestations. Chest. 88(2): 306-309.

McFarland, R.B. and H. Reigel. 1978. Chronic mercury poisoning from a single brief exposure. J. Occup. Med. 20(8): 532-534.

Miller, J.M., D.B. Chaffin and R.G. Smith. 1975. Subclinical psychomotor and neuromuscular changes in workers exposed to inorganic mercury. Am. Ind. Hyg. Assoc. J. 36: 725-733.

Mishonova, V.N., P.A. Stepanova and V.V. Zarudin. 1980. Characteristics of the course of pregnancy and labor in women coming in contact with low concentrations of metallic mercury vapors in manufacturing work places. Gig Tr Prof Zabol. Issue 2: 21-23.

Mutti, A., S. Lucertini, M. Fornari, et al. 1985. Urinary excretion of a brush-border antigen revealed by monoclonal antibodies in subjects occupationally exposed to heavy metals. Heavy Met Environ. International Conference 5th. Vol.1. p. 565-567.

Ngim, C.H., S.C. Foo, K.W. Boey and J. Jeyaratnam. 1992. Chronic neurobehavioral effects of elemental mercury in dentists. Br. J. Ind. Med. 49: 782-790.

Piikivi, L. 1989. Cardiovascular reflexes and low long-term exposure to mercury vapor. Int. Arch. Occup. Environ. Health. 61: 391-395.

Piikivi, L. and H. Hanninen. 1989. Subjective symptoms and psychological performance of chlorine-alkali workers. Scand. J. Work Environ. Health. 15: 69-74.

Piikivi, L. and A. Ruokonen. 1989. Renal function and long-term low mercury vapor exposure. Arch. Environ. Health. 44(3): 146-149.

Piikivi, L. and U. Tolonen. 1989. EEG findings in chlor-alkali workers subjected to low long term exposure to mercury vapor. Br. J. Ind. Med. 46: 370-375.

Roels, H., R. Lauwerys, J.P. Buchet, et al. 1982. Comparison of renal function and psychomotor performance in workers exposed to elemental mercury. Int. Arch. Occup. Environ. Health. 50: 77-93.

Roels, H., J.P. Gennart, R. Lauwreys, J.P. Buchet, J. Malchaire and A. Bernard. 1985. Surveillance of workers exposed to mercury vapor: validation of a previously proposed biological threshold limit value for mercury concentration in urine. Am. J. Ind. Med. 7: 45-71.

Roels, H., S. Abdeladim, E. Ceulemans and R. Lauwreys. 1987. Relationships between the concentrations of mercury in air and in blood or urine in workers exposed to mercury vapour. Ann. Occup. Hyg. 31(2): 135-145.

Roels, H., S. Abdeladim, M. Braun, J. Malchaire and R. Lauwerys. 1989. Detection of hand tremor in workers exposed to mercury vapor. A comparative study of three methods. Environ. Res. 49: 152-165.

Rosenman, K.D., J.A. Valciukas, L. Glickman, B.R. Meyers and A. Cinotti. 1986. Sensitive indicators of inorganic mercury toxicity. Arch. Environ. Health. 41(4): 208-215.

Singer, R., J.A. Valciukas and K.D. Rosenman. 1987. Peripheral neurotoxicity in workers exposed to inorganic mercury compounds. Arch. Environ. Health. 42(4): 181-184.

Smith, R.G., A.J. Vorwald, L.S. Patil and T.F. Mooney, Jr. 1970. Effects of exposure to mercury in the manufacture of chlorine. Am. Ind. Hyg. Assoc. J. 31(1): 687-700.

Steffek, A.J., R. Clayton, C. Siew and A.C. Verrusio. 1987. Effects of elemental mercury vapor exposure on pregnant Sprague-Dawley rats (abstract only). Teratology. 35: 59A.

Stewart, W.K., H.A. Guirgis, J. Sanderson and W. Taylor. 1977. Urinary mercury excretion and proteinuria in pathology laboratory staff. Br. J. Ind. Med. 34: 26-31.

Stonard, M.D., B.V. Chater, D.P. Duffield, A.L. Nevitt, J.J. O'Sullivan and G.T. Steel. 1983. An evaluation of renal function in workers occupationally exposed to mercury vapor. Int. Arch. Occup. Environ. Health. 52: 177-189.

(Attachment #32)

U.S. EPA. 1995. Mercury Study Report to Congress. Office of Research and Development. Washington DC 20460. EPA/600/P-94/002Ab. External Review Draft.

Verbeck, M.M., H.J.A. Salle and C.H. Kemper. 1986. Tremor in workers with low exposure to metallic mercury. Hyg. Assoc. J. 47(8): 559-562.

Warkany, J. and D.M. Hubbard. 1953. Acrodynia and mercury. J. Pediat. 42:365-386.

Back to top

_VI.C. Carcinogenicity Assessment References

Ahlbom, A., S. Norell, Y. Rodvall and M. Nylander. 1986. Dentists, dental nurses, and brain tumours. Br. Med. J. 292: 662.

Amandus, H. and J. Costello. 1991. Silicosis and lung cancer in U.S. metal miners. Arch. Environ. Health. 46(2): 82-89.

Barregard, L., G. Sallsten and B. Jarvholm. 1990. Mortality and cancer incidence in chloralkali workers exposed to inorganic mercury. Br. J. Ind. Med. 47(2): 99-104.

Barregard, L., B. Hogstedt, A. Schutz, A. Karlsson, G. Sallsten and G. Thiringer. 1991. Effects of occupational exposure to mercury vapor on lymphocyte micronuclei. Scand. J. Work Environ. Health. 17: 263-268.

Buiatti, E., D. Kriebel, M. Geddes, M. Santucci and N. Pucci. 1985. A case control study of lung cancer in Florence, Italy. I. Occupational risk factors. J. Epidemiol. Comm. Health. 39: 244-250.

Cragle, D.L., D.R. Hollis, J.R. Qualters, W.G. Tankersley and S.A. Fry. 1984. A mortality study of men exposed to elemental mercury. J. Occup. Med. 26(11): 817-821.

Druckrey, H., H. Hamperl and D. Schmahl. 1957. Carcinogenic action of metallic mercury after intraperitoneal administration in rats. Z. Krebsforsch. 61: 511-519. (Cited in U.S. EPA. 1985)

Ellingsen, D., A. Andersen, H.P. Nordlingen, J. Efskind and H. Kjuus. 1992. Cancer incidence and mortality among workers exposed to mercury in the Norwegian chloralkali industry. 8th International Symposium on Epidemiology in Occupational Health, Paris, France, September 10-12, 1991. Rev. Epidemiol. Sante Publique. 40(1): S93-S94.

Mabille, V., H. Roels, P. Jacquet, A. Leonard and R. Lauwerys. 1984. Cytogenetic examination of leucocytes of workers exposed to mercury vapor. Int. Arch. Occup. Environ. Health. 53: 257-260.

Popescu, H.I., L. Negru and I. Laneranjan. 1979. Chromosome aberrations induced by occupational exposure to mercury. Arch. Environ. Health. 34(6): 461-463.

U.S. EPA. 1980. Ambient Water Quality Criteria Document for Mercury. Prepared by the Office of Health and Environmental Assessment, Environmental Criteria and Assessment Office, Cincinnati, OH for the Office of Water Regulation and Standards, Washington, DC. EPA/440/5-80/058. NTIS PB 81-117699.

U.S. EPA. 1984a. Mercury Health Effects Update: Health Issue Assessment. Final Report.

(Attachment #32)

Prepared by the Office of Health and Environmental Assessment, Environmental Criteria and Assessment Office, Cincinnati, OH for the Office of Air Quality Planning and Standards, Research Triangle Park, NC. EPA/600/8-84/019F. NTIS PB81-85-123925.

U.S. EPA. 1984b. Health Effects Assessment for Mercury. Prepared by the Office of Health and Environmental Assessment, Environmental Criteria and Assessment Office, Cincinnati, OH for the Office of Emergency and Remedial Response, Washington, DC. EPA/540/1086/042. NTIS PB86-134533/AS.

U.S. EPA. 1985. Drinking Water Criteria Document for Mercury. Prepared by the Office of Health and Environmental Assessment Office, Cincinnati, OH forthe Office of Drinking Water, Washington, DC. EPA/600/X-84/178. NTIS PB86-117827.

U.S. EPA. 1988. Drinking Water Criteria Document for Inorganic Mercury. Prepared by the Office of Health and Environmental Assessment, Environmental Criteria and Assessment Office, Cincinnati, OH for the Office of Drinking Water, Washington, DC. EPA/600/X-84/178. NTIS PB89-192207.

U.S. EPA. 1993. Summary Review of Health Effects Associated with Mercuric Chloride: Health Issue Assessment (Draft). Prepared by the Office of Health and Environmental Assessment, Environmental Criteria and Assessment Office, Cincinnati, OH for the Office of Air Quality Planning and Standards, Research Triangle Park, NC. EPA/600/R-92/199.

U.S. EPA. 1995. Mercury Study Report to Congress. Office of Research and Development, Washington, DC. External Review Draft. EPA/600/P-94/002Ab.

Verschaeve, L., M. Kirsch-Volders, C. Susanne et al. 1976. Genetic damage induced by occupationally low mercury exposure. Environ. Res. 12: 303-316.

Verschaeve, L., J.P. Tassignon, M. Lefevre, P. De Stoop and C. Susanne. 1979. Cytogenetic investigation on leukocytes of workers exposed to metallic mercury. Environ. Mutagen. 1: 259-268.

Back to top

_VII. Revision History

Substance Name -- Mercury, elemental
CASRN -- 7439-97-6

Date	Section	Description
>09/07/1988	II.	Carcinogen summary on-line
09/01/1989	VI.	Bibliography on-line
12/01/1989	I.B.	Inhalation RfD now under review
05/01/1991	II.A.3.	Text edited
01/01/1992	IV.	Regulatory Action section on-line
04/01/1994	II.	Carcinogenicity assessment noted as pending change
04/01/1994	II.D.2.	Work group review date added
05/01/1995	All	Name changed from mercury (inorganic)
05/01/1995	II.	Carcinogen assessment replaced
05/01/1995	VI.C.	Carcinogen assessment references replaced

06/01/1995	I.B.	Inhalation RfC summary on-line
06/01/1995	VI.B.	Inhalation RfC references on-line
04/01/1997	III., IV., V.	Drinking Water Health Advisories, EPA Regulatory Actions, and Supplementary Data were removed from IRIS on or before April 1997. IRIS users were directed to the appropriate EPA Program Offices for this information.
12/03/2002	I.B.6., II.D.2.	Screening-Level Literature Review Findings message has been added.

Back to top

VIII. Synonyms

Substance Name – Mercury, elemental
CASRN – 7439-97-6
Last Revised – 05/01/1995

7439-97-6
hydrargyrum
Mercury
Mercury, elemental
Mercury, inorganic
Mercury, metallic
Mercury (organo) alkyl compounds
Caswell No. 546
COLLOIDAL MERCURY
EPA Pesticide Chemical Code 052301
KWIK [Dutch]
Liquid Silver
Mercure [French]
Mercurio [Italian]
Mercurio [Spanish]
Mercury compounds
Mercury vapor
NCI-C60399
Quecksilber [German]
Quicksilver

Back to top

What's New | Search IRIS | IRIS Home | NCEA Home | ORD Home

EPA Home | Privacy and Security Notice | Contact Us

Last updated on Monday, February 2nd, 2004
URL: http://www.epa.gov/iris/subst/0370.htm

(Attachment #32)

Privacy and Security Notice

Jefferson Lab
HOME | SEARCH | CONTACT JLAB
Science Education
Education Home | Teacher Resources | Student Zone | Games & Puzzles | Programs & Events | Search Education

It's Elemental

⇦ Previous Element Table of Elements Next Element ⇨

80
Hg
Mercury
200.59

Mercury

Atomic Number: 80
Atomic Weight: 200.59
Melting Point: 234.32 K (-38.83°C or -37.89°F)
Boiling Point: 629.88 K (356.73°C or 674.11°F)
Density: 13.5336 grams per cubic centimeter
Phase at Room Temperature: Liquid

What's in a name? Named after the planet Mercury. Mercury's chemical symbol comes from the Greek word hydrargyrum, which means "liquid silver."

Say what? Mercury is pronounced as MER-kyoo-ri.

History and Uses:

Mercury was known to the ancient Chinese and Hindus and has been found in 3500 year old Egyptian tombs. Mercury is not usually found free in nature and is primarily obtained from the mineral cinnabar (HgS). Spain and Italy produce about half of the world's supply of Mercury.

Mercury can be used to make thermometers, barometers and other scientific instruments. Mercury conducts electricity and is used to make silent, position dependent switches. Mercury vapor is used in streetlights, fluorescent lamps and advertising signs.

Mercury easily forms alloys with other metals, such as gold, silver, zinc and cadmium. These alloys are called amalgams. Amalgams are used to help extract gold from its ores, create dental fillings (in the case of silver) and help extend the life of dry cell batteries (in the case of zinc and cadmium).

Mercury forms useful compounds with other elements. Mercuric chloride ($HgCl_2$) is a very poisonous salt and was once used to disinfect wounds. Mercurous chloride (Hg_2Cl_2), also called calomel, is an antiseptic used to kill bacteria. Mercuric sulfide (HgS) is used to make a red paint pigment called vermilion. Mercuric oxide (HgO) is used to make mercury batteries.

Mercury is poisonous and can enter the body through the respiratory tract, the digestive tract or directly through the skin. It accumulates in the body, eventually causing severe illness or death.

Estimated Crustal Abundance: 8.5×10^{-2} milligrams per kilogram
Estimated Oceanic Abundance: 3×10^{-5} milligrams per liter
Number of Stable Isotopes: 7 (View all isotope data)
Ionization Energy: 10.438 eV
Oxidation States: +2, +1
Electron Shell Configuration: $1s^2$

$2s^2$ $2p^6$
$3s^2$ $3p^6$ $3d^{10}$
$4s^2$ $4p^6$ $4d^{10}$ $4f^{14}$
$5s^2$ $5p^6$ $5d^{10}$
$6s^2$

This page is maintained by Steve Gagnon.

Citation and linking information

(Attachment #32)

University of Minnesota
Environmental & Occupational Health

a class project: PubH 5103/5104

environmental hazards

Characteristics of Mercury

Source, Fate, and Transport

Monitoring in the Environment

Exposure Pathways

Measuring Exposures

Strategies to Prevent or Control Exposures

Molecular Action

Dose, Absorption, Distribution, Biotransformation and Excretion

Adverse Health Effects

Risk Assessment

Mercury

Characteristics of Mercury

Mercury is a naturally occurring metallic element noted for its occurrence as a liquid at room temperature. Elemental mercury is a heavy, silver-white liquid metal that can be found at trace levels in many minerals with greater concentrations in fossil fuels. There are three forms of mercury in the environment: elemental, inorganic, and organic mercury. All forms of mercury are toxic.

www.epa.state.oh.us/opp/pq/fall98/merc498.html

Elemental mercury occurs naturally in three valence states: elemental (Hg^0), monovalent-mercurous (Hg^{1+}), and the divalent mercuric (Hg^{2+}). Elemental mercury is the most stable form and is only slightly water-soluble. Both mercuric and mercurous mercury are thermally unstable and readily decompose to elemental mercury. Vapors of elemental mercury can occur at room temperature presenting a hazard if spills occur.

Inorganic mercury compounds contain ionic mercury usually in a salt formation (e.g. mercuric chloride). Many inorganic mercury compounds have been banned from use by the EPA in consumer products and agriculture. Inorganic mercury compounds continue to be used globally as disinfectants and pesticides.

Organic mercury compounds can be chemically synthesized or biologically converted from mercury compounds by bacteria (e.g. methyl mercury). Chemically synthesized organic compounds have been used as fungicides. Some organic mercury compounds are water-soluble and cable of transport in the aquatic food chain through the process of bioaccumulation.

References

Manahan, Stanley E. Environmental Chemistry. Fourth Edition. University of Missouri: Lewis Publishers, 1990.

USEPA "Mercury & compounds", Persistent Bioaccumlative Toxins Website, http://www.epa.gov/opptintr/pbt/mercury.htm

USEPA "Mercury, Health Issues, Fish Advisories in the NE", Region One Website http://www.epa.gov/region1/eco/mercury/index.html

---

Return to Hazards Home Page

(Attachment #32)

SAFETY--Potential Hazards from Exposure to Elemental Mercury and Mercury Salts

In Reply Refer To: July 8, 1982
EGS-Mail Stop 412

WATER RESOURCES DIVISION MEMORANDUM NO. 82.112

Subject: SAFETY--Potential Hazards from Exposure to Elemental Mercury and Mercury Salts

Although most people know that elemental mercury and mercury salts are virulent poisons, it is commonly presumed that the danger is from oral ingestion. However, mercury is extremely volatile and the vapors are readily absorbed through the respiratory tract or unbroken skin. Mercury acts as a cumulative poison because the rate of elimination by body functions is low.

If mercury is spilled in a gage house or field vehicle, concentrations hundreds of times greater than the maximum allowable can be attained. Air saturated with elemental mercury vapor at 20 degrees C contain a concentration which exceeds the maximum allowable concentration of 0.01 mg/m3 (milligrams per cubic meter) by about 1250 times. The saturation vapor concentration increases with increasing temperature. At 60 degrees C, the maximum allowable concentration is exceeded by nearly 25,000 times. Thus, mercury must be handled with the utmost regard for airborne contamination.

According to the Hydrologic Instrumentation Facility (HIF), about 300 pounds per year of elemental mercury is shipped to Districts for replacement of mercury lost from bubble gages. Another use of elemental mercury by WRD is in thermometers, and to a lesser extent in mercury-filled barometers. We have no good estimate of how much elemental mercury is in storage or use by WRD at this time. WRD also uses mercury chloride in tablet form for water-quality sample preservation. Each tablet contains about 13 milligrams of mercuric chloride in a sodium chloride matrix.

Possible sources of exposure to mercury vapor include the following:

o Mercury spilled in a field vehicle or gage house will result in a continuing source of vapor. A drop or two of mercury can produce unsafe conditions. On a hot day the vapor concentration inside the vehicle or gage house may greatly exceed safe levels.

o Mercury stored in metal or glass containers cannot pass through the container walls, but when stored in certain plastic containers, including polethylene bottles, the vapor can pass through the container walls to some degree. Mercury is shipped by HIF in polyethylene bottles.

There are, however, mitigating factors that also need to be considered.

o The concentrations that are attainable in a closed environment are reached slowly. In a partially- or well-ventilated environment the maximum vapor concentration will be considerably lower than saturation.
□

o The maximum concentration criteria are based on a 10-hour exposure. There are few situations where WRD fieldmen would have a continuous 10-hour

exposure to very high mercury-vapor concentrations.

Safety measures that should be inmediately instituted are as follows:

o Mercury and mercuric chloride should be stored in airtight metal containers. An easy solution is to store the plastic bottles of elemental mercury and the preservative tablet packets in army surplus ammunition cans. When used for storage these cans, which have airtight, rubber-gasketed lids, should only be opened out of doors or in a fume hood. Cans should be labeled with an appropriate hazard warning.

o No manometers should be transported with mercury in them.

o Broken thermometers and waste mercury should also be stored in an airtight metal container. When necessary, the container can be shipped to the nearest Central Laboratory for mercury recovery. The disposal container should also be labeled with an appropriate hazard warning.

o Before entering a gage house that is known or suspected to have been contaminated by mercury, field personnel should fan the door back and forth for a minute or two to exchange the stagnant air with fresh air. The time spent in the ventilated gage house should result in negligible exposure because the vapor concentration increases slowly.

o Special care should be taken to prevent contamination of vehicles. They are the most likely places for near-saturation conditions to exist. Fanning of doors or opening windows for the first few minutes after re-entering a contaminated vehicle that has been parked in the sun should quickly remove vapor-laden air. Open windows, or operation of air conditioners or heaters should keep air exchange at a maximum once the vehicle is underway. The air conditioner and heater should be operated in the "outside air" mode as opposed to the "recirculate" mode.

o No special safety precautions are necessary for water samples that have been preserved with tablets containing mercuric chloride beyond the normal mercury recovery and disposal procedures presently being performed at the Central Laboratories.

Please observe the above safety measures.

Thomas A. Buchanan
Assistant Chief Hydrologist
for Operations

Distribution: A, B, S, FO, PO

Key Words: Potential Hazards, Elemental Mercury, Mercury Salts, Mercury

"This memorandum does not supersede any existing memorandum."

(Attachment #32)

Lakes Environmental
Risk Assessment, Air Dispersion, Environmen
HOME PRODUCTS TRAINING SUPPORT STORE SEARCH

PRODUCTS
AUSTAL View
CALPUFF View
CALRoads View
CAM View
EcoRisk View
Emissions View
IRAP-h View
ISC-AERMOD View
RMP View
Screen View
SEVEX View
SLAB 3D View
SLAB View
DOWNLOADS
WRPLOT View
Percent View
RMP Wizard
US EPA Models
Lakes Demos
TRAINING
Upcoming Courses
RESOURCES
Air Toxics Index
Digital Terrain Data
Mercury
Meteorological Data
Regulatory Links
Hot Links
LAKES INFO
Project Experience
News Archive
How To Order
Distributors
About Lakes
Contact Us

MERCURY Speciation

Phase Allocation | Methylation | Mercury Home

Mercury can assume many forms and, through interactions with the environment, can be transformed into a variety of structures. The most commonly known forms of mercury include: Elemental Mercury, divalent mercury (mercuric chloride) and methylmercury.

It is thought that stack emissions of mercury commonly consist of both elemental mercury and divalent mercury (U.S. EPA, HHRAP, 2001). Divalent mercury further evolves through a process called methylation when it comes into contact with the surrounding environment. The following sections are derived from the U.S. EPA-OSW, *Human Health Risk Assessment Protocol*.

Phase Allocation & Speciation of Mercury Exiting the Stack

Stack emissions are thought to include both vapor and particle-bound forms; and speciated as both divalent and elemental mercury. Based on review of mercury emissions data presented for combustion sources in U.S. EPA (1997d) and published literature (Peterson et al. 1995), estimates for the percentage of vapor and particle-bound mercury emissions range widely from 20 to 80 percent. Therefore, at this time U.S. EPA OSW recommends a conservative approach that assumes phase allocation of mercury emissions from hazardous waste combustion of 80 percent of the total mercury in the vapor phase and 20 percent of total mercury in the particle-bound phase. This allocation is:

- Consistent with mercury emissions speciation data for hazardous waste combustion sources reported in literature (Peterson et al. 1995); and
- Believed to be reasonably conservative, since it results in the highest percentage of total mercury being deposited in proximity to the source, and therefore, indicative of the maximum indirect risk.

As indicated in the global cycle mass percentages in Figure 1, mercury exits the stack in both the elemental and divalent vapor forms. Based on U.S. EPA (1997d), a vast majority of mercury exiting the stack does not readily deposit and is transported outside of the U.S. or vertically diffused to the free atmosphere to become part of the global cycle (see Figure 1). The divalent form emitted, either in the vapor phase or particle?bound, are thought to be subject to much faster atmospheric removal than elemental mercury (Lindberg et al. 1992; Peterson et al. 1995; Shannon and Voldner

1994). In addition, vapor phase divalent mercury is thought to be more rapidly and effectively removed by both dry and wet deposition than particle-bound divalent mercury, as a result of the reactivity and water solubility of vapor divalent mercury (Lindberg et al. 1992; Peterson et al. 1995; Shannon and Voldner 1994).

Vapor Phase Mercury

As illustrated in Figure 1, of the 80 percent total mercury in the vapor phase, 20 percent of the total mercury is in the elemental vapor form and 60 percent of the total mercury is in the divalent vapor form (Peterson et al. 1995). A vast majority (assumed to be 99 percent) of the 20 percent vapor phase elemental mercury does not readily deposit and is transported outside of the U.S. or is vertically diffused to the free atmosphere to become part of the global cycle (U.S. EPA 1997d). Only a small fraction (assumed to be one percent) of vapor-phase elemental mercury either is adsorbed to particulates in the air and is deposited or converted to the divalent form to be deposited (assumed to be deposited as elemental mercury, see Figure 1). Of the 60 percent vapor phase divalent mercury, about 68 percent is deposited and about 32 percent is transported outside of the U.S. or is vertically diffused to the free atmosphere to become part of the global cycle (U.S. EPA 1997d).

Particle-bound Mercury

Of the 20 percent of the total mercury that is particle-bound, 99 percent (assumed to be 100 percent in Figure 1) is in the divalent form. U.S. EPA (1997d) indicates that only 36 percent of the particle-bound divalent mercury is deposited, and the rest is either transported outside of the U.S. or is vertically diffused to the free atmosphere to become part of the global cycle.

Deposition and Modeling of Mercury

Consistent with U.S. EPA (1997d) and as shown in Figure 1, it is assumed that deposition to the various environmental media is entirely divalent mercury in either the vapor or particle-bound form. Without consideration of the global cycle, mercury speciations will result in 80 percent of the total mercury emitted being deposited as divalent mercury and the remaining 20 percent being deposited as elemental mercury.

(Attachment #32)

of the total mercury mass that is not deposited, the deposition and media concentration equations (presented in Appendix B), multiply the compound-specific emission rate (Q) for elemental mercury by a default value of 0.002; and divalent mercury by a default value of 0.48. Media equations assume pseudo steady-state conditions.

Consistent with U.S. EPA (1997d) and as shown in Figure 1, it is assumed that deposition to the various environmental media is entirely divalent mercury in either the vapor or particle-bound form. Therefore, divalent mercury is considered for both the indirect exposure and inhalation pathways. A small fraction (assumed to be one percent) of elemental mercury is in the vapor phase and is assumed to be deposited in its original form. Therefore, elemental mercury will only be considered in the inhalation pathway and not the indirect pathways of the risk assessment. Based on these assumptions, human exposure to (1) elemental mercury occurs only through direct inhalation of the vapor phase elemental form, and (2) divalent mercury occurs through both indirect exposure and direct inhalation of the vapor and particle-bound mercuric chloride.

Inhalation of elemental mercury should be assessed using the reference concentration (RfC) for elemental mercury. Exposure to divalent mercury should be assessed using the RfD for mercuric chloride (divalent mercury). Inhalation of divalent mercury should be assessed using the RfC for elemental mercury due to lack of available toxicity data. Appendix A?3 provides the parameter values specific to the various forms of mercury, and Appendix B provides media concentration equations for modeling mercury through the exposure pathways assuming steady-state conditions.

Note: For references please see the U.S. EPA-OSW Human Health Risk Assessment Protocol.

▲ Top

Home | Products | Demos | Support | Online Store | Courses | Contact Us
Digital Terrain Data | Links to Agencies | Air Toxics Index | FREE US EPA Models

Copyright © 1995-2003 Lakes Environmental Software
Send your comments to: webmaster@weblakes.com

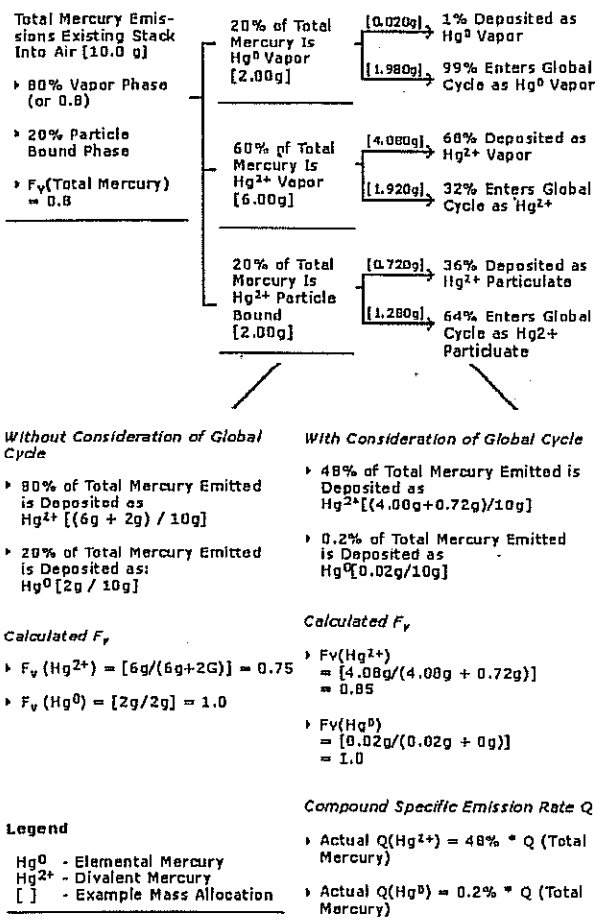


Figure 1 - Phase Allocation and Speciation Overview

U.S. EPA recommends utilizing the percentages provided in U.S. EPA (1997d) to account for the global cycle, the percentage of total mercury deposited is reduced to a total of 48.2 percent (40.8 percent as divalent vapor, 7.2 percent as divalent particle-bound, and 0.2 percent as elemental vapor). As discussed in Appendix A7 3, these speciation splits result in fraction in vapor phase (Fv) values of 0.85 (40.8/48.2) for divalent mercury, and 1.0 (0.2/0.2) for elemental mercury. Also, to account for the remaining 51.8 percent

(Attachment #32)

Illinois Department of Public Health
Environmental Health
FACT SHEET

A Fact Sheet for Health Professionals - Elemental Mercury

Mercury has been known since ancient times and is commonly called quick silver or azogue. It is toxic in all three of its environmental forms: 1) elemental (liquid) mercury, 2) mercury salts and 3) organic mercury. This fact sheet will address the health issues related to elemental (liquid) mercury exposures.

What is elemental mercury and how is it used?

Elemental mercury is a shiny, silver-gray metal that is a liquid at room temperature. It can be found in thermometers, barometers, sphygmomanometers, dental amalgams, batteries, fluorescent lights and electrical switches. It also was commonly found in household latex paint prior to the early 1990s.

In some cultures, elemental mercury is used in rituals, love potions and folk medicines. Some of these activities may include swallowing mercury capsules, sprinkling it in homes around baby cribs, sprinkling it in vehicles, burning it in candles, wearing it in amulets and directly rubbing it on the skin.

How can people be exposed to elemental mercury?

Inhalation of elemental mercury vapor is the most common route of exposure. When liquid mercury is spilled or allowed to come in contact with air, it evaporates. Heating mercury by burning it or spilling it on a hot surface causes evaporation to occur at a much faster rate, making exposure much greater.

When a mercury-containing product breaks or when mercury is used in a cultural practice, it can lead to elevated levels of mercury vapor in the home. These levels can persist in the home for many months, especially if no one has properly removed the mercury.

Exposure also can occur through ingestion or dermal contact, but these routes have a much smaller degree of absorption and are rarely the cause of elemental mercury toxicity.

How is elemental mercury absorbed and metabolized?

When inhaled, about 80 percent of elemental mercury is absorbed into the blood stream through the alveoli. Because it is fat soluble, mercury readily crosses the blood-brain barrier and placenta. When ingested, only a small amount (0.01%) is absorbed through the gastrointestinal tract, making toxicity from this route rare. Dermal absorption also is negligible.

Once in the body, mercury is oxidized and eventually eliminated in the urine and feces. The half-life of elemental mercury in the body is approximately 60 days. Mercury accumulates in the kidneys, erythrocytes, bone marrow, liver, spleen, lungs, skin and hair. The most common effects of mercury exposure are manifested in the central nervous system.

What are the symptoms and health effects of elemental mercury exposure?

Acute exposure to mercury vapor leads to pulmonary and central nervous system effects. Inhalation of high levels of mercury vapor can cause the onset of symptoms such as cough, dyspnea, chest pain, nausea, vomiting, diarrhea, fever and a metallic taste in the mouth. These symptoms can progress to interstitial pneumonitis and pulmonary edema. Young children are at the greatest risk of developing pulmonary toxicity.

Chronic exposure to lower levels of mercury vapor causes effects to the central nervous system. Symptoms of chronic poisoning vary, but may include tremors, psychological changes, insomnia, loss of appetite, irritability, headache and short-term memory loss.

Direct contact with the skin can lead to dermatitis. A rare syndrome called acrodynia, or "pink's disease," can occur in children exposed to mercury vapor. Its symptoms include severe leg cramps, irritability and painful pink fingers with peeling hands. Few children exposed to mercury develop acrodynia.

What tests are available for elemental mercury exposure?

If elemental mercury exposure is suspected, several tests will show the amount of mercury in the body. If an acute exposure to mercury has occurred, a blood analysis will show mercury levels if performed within three days after the exposure. In adults, the background concentration of mercury is normally less than 1.5 micrograms per deciliter (µg/dL) of blood. A level greater than 5 µg/dL exceeds the threshold for symptoms of toxicity.

If a chronic, low-level exposure is suspected, a 24- hour urine specimen is the best measure of mercury. If a 24-hour specimen is not possible, the first morning void is the best substitute. For adults, the normal background concentration of mercury in urine is less than 20 micrograms per liter (µg/L).

What are some possible treatments?

For acute inhalation of mercury vapor, supportive care should be given to relieve and monitor pulmonary symptoms such as edema and pneumonitis. Chelation therapy may be necessary, with British anti-Lewisite (BAL), to decrease effects of mercury toxicity.

Ingestion of small amounts of mercury, such as the amount found in a thermometer, does not typically require treatment. In very rare cases, mercury can become trapped in the appendix or intestine and require surgical removal.

What if I am contacted about how to clean up a mercury spill?

The Illinois Department of Public Health (IDPH) assists in responding to mercury spills in homes. The amount of mercury from a typical broken thermometer would be considered a **small spill.** If more mercury than this is spilled, it would be considered a **large spill**. Some people save mercury from various sources and store the product in containers. This is dangerous because mercury may escape from broken or improperly sealed containers. Individuals may often be exposed without their knowledge.

Sampling conducted by IDPH in homes where small mercury spills have taken place has not shown large amounts of mercury in the air. High levels would not be expected unless the spill took place on a hot surface or into a device like a humidifier that blows liquids into the air. Spills from the breaking of a

(Attachment #32)

blood pressure device or larger sources can produce airborne levels high enough to cause serious poisoning and even death.

Persons involved in a **large** mercury spill should leave the area immediately. Contact your physician for possible treatment and testing. Contact IDPH for information concerning air testing and cleanup.

The following precautions should be taken if a **small** mercury spill occurs:

- People not involved in the cleanup should leave the area.
- Minimize tracking by removing shoes and clothing. Assume that the clothes of a child who played with mercury are contaminated. Place clothes in a sealed plastic bag and put them outside in a safe place until the household trash can be picked up. Plastic can be placed on the floors to minimize tracking.
- Do **NOT** use a vacuum cleaner to clean up the spill. A vacuum cleaner will spread the mercury vapors and tiny droplets will settle throughout the area, increasing the spread of contamination and the chance of exposure.
- Windows and doors in the area of the spill should be opened to ventilate the area.
- Small amounts of mercury can be collected with adhesive tape or an eye dropper and stored in a sealed plastic container until disposal.
- After all visible mercury has been collected, use a mercury cleanup kit to clean the spill area and work it into the cracks with a broom or brush. Do not add water. Materials in the mercury spill kit will rapidly bind to the remaining mercury and can be swept up with a broom and dustpan. Wash the area with trisodium phosphate detergent solution and rinse with water.
- Contaminated carpeting should be removed and discarded, starting with the spill room.
- Contaminated materials and mercury collected from small spills may be discarded along with household trash, but should be placed outside in a safe place until the household trash is picked up.

idph online home
environmental health home
Illinois Department of Public Health
535 West Jefferson Street
Springfield, Illinois 62761
Phone 217-782-4977
Fax 217-782-3987
TTY 800-547-0466
Questions or Comments

mercury resources

· DEP general topics:

understanding mercury

managing mercury containing items

what Massachusetts is doing about mercury

environmental monitoring

additional mercury links

Mercury is a naturally occurring element that is toxic to people and wildlife. When produc containing mercury are broken or thrown in the trash, outdoors or down the drain, the me can pollute our environment and contaminate many kinds of fish. You and your family ca exposed to mercury by breathing its fumes, eating contaminated fish or touching spilled mercury.

DEP has developed this page to provide you with a one-stop resource for learning about mercury, understanding its environmental and public health impacts, safely managing pr and wastes that contain it, and finding out what state government is doing to reduce and ultimately eliminate the mercury threat. Sources of additional information include the foll

Understanding Mercury

Mercury Is Toxic

Summary of the toxic dangers of mercury exposure. Revised 8/02.

overview.pdf 532 KB

Mercury In Massachusetts

An evaluation of sources, emissions, impacts and controls. June 1996.

hgexsum.htm

Mercury in the Home

Lists home products that contain mercury. Revised 8/02.

products.pdf 347 KB

Mercury In Common Household Products

Information about mercury content in everyday items.

merchome.doc 405

(Attachment #32)

Mercury In The Environment

Information on mercury contamination and fish consumption. Revised 8/02.

envnment.pdf 560 KB

Mercury Health Effects

Summary of adverse health effects of mercury exposure. Revised 8/02.

health.pdf 665 KB

Managing Mercury-Containing Items

Mercury links and general information on mercury in products

New England Waste Management Officials Association

http://www.newmoa.org/Newmoa/htdocs/prevention/mercury/

Mercury in home medical devices and liquid mercury

Guidelines for handling and disposal.

mercury.htm

Proper Management of Dental Mercury

This Fact Sheet provides advice for dental offices on managing wastes contai mercury.

dentalhg.htm | dentalhg.doc 63 KB

Mercury in fluorescent lamps

Guidelines for managing spent and broken lamps.

In the home: lamps.htm

At work: llampbiz.htm

Mercury in household batteries

Guidelines for handling and disposal.

batthous.htm

Mercury in paints and stains

Guidelines for handling and disposal.

paint.htm

Mercury spill cleanup

Instructions for cleaning up spilled mercury. Revised 8/02.

spill.pdf 454 KB

Mercury in the Health Care Sector

Information on mercury use and alternatives in the health care sector.

http://www.uml.edu/centers/LCSP/hospitals/HTMLSrc/SiteMap.html
http://pasture.ecn.purdue.edu/~epados/mercury/nopano/src/settings.htm

What Massachusetts is doing about Mercury

Massachusetts Zero Mercury Strategy

In 1998, the New England Governors and Eastern Canadian Premiers adopte Regional Mercury Action Plan, which committed their respective states and provinces to eliminate virtually all man-made releases of mercury into the environment. In 1999, a task force comprised of Massachusetts agencies beg develop a coordinated strategy for achieving the goals of the Regional Action by eliminating virtually all mercury use and releases in the Commonwealth. Th resulting Massachusetts Zero Mercury Strategy (which was issued by the Exe Office of Environmental Affairs in 2000) outlines specific steps that the Commonwealth is taking to control mercury pollution sources, expand outreac education, and ensure continued research and monitoring of mercury in the environment.

Massachusetts Zero Mercury Strategy 351 KB

The New England Governors and Eastern Canadian Premiers Regional Mercury Action Plan

The Conference of New England Governors and Eastern Canadian Premiers (NEG/ECP) adopted the landmark Mercury Action Plan (MAP), which specifie actions to protect its citizens and its environment from the toxin mercury. The was organized into 6 broad action categories including a Mercury Task Force source emission reduction, pollution prevention and waste management, rese and monitoring, education and outreach, and mercury stockpile management.

negecp.pdf 51 KB

Dental Amalgam/Mercury Recycling Program

Amalgam waste from dental practices and clinics is a small but significant sou mercury releases to the environment. A University of Massachusetts study of commercially available amalgam separator technologies confirmed that they effectively remove most mercury from dental wastewater. In cooperation with Massachusetts Dental Society, the Department of Environmental Protection (D implementing a voluntary program to encourage dentists across the state to in and use amalgam separators now, before regulations require them to do so.

dentists.htm

Draft Mercury Regulations for Power Plants

These are the proposed Technical Support Document and Regulations for pul comment, including public hearing dates and locations. These regulations are the state's comprehensive power plant regulations, 310 CMR 7.29, Emissions Standards for Power Plants. (October 2003)

Technical Support Document:

hgtsdx03.doc 554 KB | hgtsx903.pdf 481 KB

Regulations:

hgrevx03.doc 56 KB | hgrevx03.pdf 151 KB

Evaluation of the Technological and Economic Feasibility of Controlling a Eliminating Mercury Emissions from the Combustion of Solid Fossil Fuel

Mercury Control Feasibility Evaluation prepared in accordance with 310 CMR (5)(a)3.a. (December 2002)

mercfeas.doc 728 KB | mercfeas.pdf 534 KB

Department of Environmental Protection: Municipal Waste Combustor Ru (1998)

mwcregs.pdf 196 KB

Municipal Waste Combustor Rule Amendments (2001)

mwcamd.doc 26 KB

Policy for Implementing Mercury Requirements of the Municipal Waste Combustor Rule

(Attachment #32)

mwcpolf.doc 56 KB

Material Separation Plan Guidance for Municipal Waste Combustors

mspfin3.doc 75 KB

Department of Public Health

Freshwater fish consumption advisories.

http://mass.gov/dph/beha/fishlist.htm

Environmental Monitoring

Fish Mercury Levels In Northeastern Massachusetts Lakes - Final Report

This report documents elevated mercury concentrations in freshwater fish in 26 lakes located in northeastern Massachusetts. Overall, mercury levels in largemouth bass were 2.2 times higher in this area compared to more rural p the state. This finding is consistent with elevated rates of atmospheric deposi mercury in the 1990s in this historically industrialized and densely populated Study results support the state's aggressive program to reduce mercury pollu and provide a baseline to track environmental improvements in response to t efforts. December 2003.

fishmerc.doc 1.4 MB | fishmerc.pdf 800 KB

Commissioner's Cover letter comlethg.doc 43 KB | comlethg.pdf 128 KB

Fish Mercury Distribution in Massachusetts Lakes - Final Report

The sediment, water and 3 species of fish from 24 of Massachusetts' relative least- impacted waterbodies were sampled to determine the patterns of varia edible tissue mercury concentrations and the relationships of these patterns t characteristics of the sediment, water and water bodies (lake, wetland and watershed areas). May 1997

fish_hg.pdf 527 KB

Additional Mercury Links

Mercury Related Links

Information on fish consumption advisories.
http://www.state.ma.us/dph/beha/mercury/merchp.htm

(Attachment #32)

Site funded by EOEA and DEP contains general information about mercury a as information on MA public awareness about mercury based on survey data. http://www.healthbenchmarks.org/Mercury .

Extensive information and links about mercury in products and alternatives ar mercury pollution prevention efforts.
http://www.newmoa.org/Newmoa/htdocs/prevention/mercury/

EPA Mercury Study Report to Congress contains extensive information on me and mercury sources.http://www.epa.gov/oar/mercury.html

National Academy of Science report on risks of mercury in the environment. http://books.nap.edu/books/0309071402/html/index.html

Information of global aspects of mercury including UN efforts to develop and implement a global mercury action plan.
http://www.chem.unep.ch/mercury/default.htm

(Attachment #32)

American Lung Association • Clean Air Task Force • Clean Water Action • Clear The Air • Environmental Defense • League of Conservation Voters • National Environmental Trust • National Parks Conservation Association • National Wildlife Federation • Natural Resources Defense Council • Physicians for Social Responsibility • Environmental Integrity Project • Sierra Club • Union of Concerned Scientists • U.S. Public Interest Research Group • World Wildlife Fund

The Bush Administration Air Pollution Plan: Hurts Public Health, Helps Big Polluters, Worsens Global Warming

The Bush administration's air pollution plan would weaken public health protections of the current Clean Air Act. The administration plan would hurt public health and help big polluters by delaying and diluting cuts in power plants' sulfur, nitrogen and mercury pollution compared to timely enforcement of current law. The administration plan would roll back the current law's public health safeguards to protect local air quality, curb pollution from upwind states, and restore visibility in our national parks. The administration plan would do nothing to curb power plants' growing emissions of carbon dioxide, the main cause of global warming.

The Administration Plan Repeals, Weakens, and Delays Clean Air Act Safeguards

Weakens Protection from Dangerous Soot and Smog

Current Clean Air Act: Dangerous levels of soot and smog are causing thousands of premature deaths, hundreds of thousands of asthma attacks, and other illnesses each year. The Environmental Protection Agency and states must clean up dangerous soot and smog and provide most citizens with air that meets public health standards by 2010. Current law requires deep reductions in power plants' sulfur and nitrogen emissions within this decade in order to meet these public health standards. In September 2001, EPA told the industry's main lobby group, the Edison Electric Institute (EEI), that existing law would cut power plants' soot-forming SO_2 pollution from 11 million tons today to 2 million tons by 2012, and cut their smog-forming NO_x pollution from 5 million tons today to 1.25 million tons by 2010 (see notes and table).

Administration plan: Delays deadlines for meeting public health standards, allowing violations of soot and smog health standards to continue until 2015 or later. Power plant pollution cuts are delayed and diluted. Tens of millions of people are denied healthy air, even as late as 2020 and beyond.

- The administration plan allows *more than twice as much* SO_2 for nearly a decade longer (2010-2018), compared with faithful enforcement of the current Clean Air Act. After 2018, SO_2 emissions will still be *one and a half times* higher than if current law is enforced.
- The administration plan allows *more than one and a half times as much* NO_x for nearly a decade longer (2010-2018), and *one third more* NO_x even after 2018.
- The full pollution reductions are likely to be further delayed, to as late as 2025, because of emissions "banking" provisions.

Weakens Protection from Toxic Mercury

Current Clean Air Act: Power plants are the largest uncontrolled source of mercury, a neurological toxin which threatens the health of developing fetuses, children, and other vulnerable populations. Each power plant must install the maximum achievable control technology (MACT) for mercury emissions and other toxic air pollutants by the end of 2007, and then further limit any unacceptable health risks that remain. EPA told EEI in December 2001 that enforcing current law could cut power plant mercury pollution by nearly 90 percent, from 48 tons today to about 5 tons, by 2008.

Administration plan: Eliminates current law's health protections for mercury and other toxic air pollutants. Mercury reductions are delayed and diluted. The administration plan lets power plants emit *more than five times as much* mercury for a decade longer (2010-2018), and *three times as much* after 2018. EPA data show that more than one hundred power plants may actually *increase* mercury emissions, and that parts of New England, the Great Lakes and Gulf Coast regions, and other areas will receive only very small reductions in mercury deposition - and may even suffer increases.

Repeals Safeguards for Local Air Quality

Current Clean Air Act: Requires new power plants to install state-of-the-art pollution controls, and requires older "grandfathered" plants to install modern pollution controls when rebuilt or expanded in ways that increase their pollution output. In areas with dirty air, new or expanded plants must offset their pollution increases.

Administration plan: Effectively repeals these current air quality safeguards. Exemptions are not limited to power plants, but are available to plants in *any* industry sector.

Hamstrings Safeguards for Downwind States

Current Clean Air Act: When power plants in upwind states cause violations of air pollution health standards in downwind states, the downwind states can force those plants to cut their pollution.

Administration plan: Effectively repeals this "state rights" provision. The Bush plan prohibits downwind states from pursuing any pollution reductions from power plants in upwind states before 2012. The administration bill increases the burden of proof after 2012, making nearly impossible to prove that upwind power plants are causing downwind pollution.

Weakens Safeguards for National Parks

Current Clean Air Act: Existing power plants must install modern pollution control equipment to curb the haze they cause in national parks and wilderness areas. Major new industrial sources, including power plants, must not degrade air quality in those areas.

Administration plan: Repeals the haze cleanup requirements for existing sources. Allows new power plants and other industrial sources to disregard any adverse air quality impacts they have on national parks or wildernesses, so long as they are built more than 30 miles away from park boundaries.

The Administration Plan Worsens Global Warming

Power plants are the largest source of U.S. global warming pollution, responsible for 40 percent of U.S. carbon dioxide emissions. The earth's climate is rapidly changing due to the buildup of CO_2 and other heat-trapping pollution. Ignoring power plants' carbon emissions will lead to more global warming *and* higher costs. An integrated four-pollutant bill, with mandatory limits on CO_2, would start curbing this monumental hazard to our health and our environment and, at the same time, *save billions of dollars*.

Administration plan: Allows power plant CO_2 pollution to continue to increase, relying instead on voluntary approaches, long proven to be ineffective. The administration plan would allow another generation of investments in power plants with excessive carbon dioxide emissions – dramatically increasing future costs for utilities and their customers when the need to curb these emissions is finally recognized.

See Table, next page. The EPA September 2001 and December 2001 analyses referenced above can be found at http://cta.policy.net/currentstatus.pdf and http://cta.policy.net/epamercury.pdf .

(Attachment #32)

Comparison of Bush administration air pollution plan with existing Clean Air Act programs

	Sulfur Dioxide (SO_2)	Nitrogen Oxides (NO_x)	Mercury (Hg)
Clean Air Act (implementation of existing law)[1]	2 million ton cap by 2012[2]	1.25 million ton cap by 2010[3]	5 tons per year by 2008[4]
Bush Administration Air Pollution Plan	*1st Step* 4.5 million ton cap by 2010 *2nd Step* 3 million ton cap by 2018	*1st Step* 2.1 million ton cap by 2008 *2nd Step* 1.7 million ton cap by 2018	*1st Step* 26 tons per year by 2010 *2nd Step* 15 tons per year by 2018
Increase allowed by Bush Plan over Clean Air Act existing programs	*2010-2018* 2.5 million tons/yr more SO_2 *after 2018* 1 million tons/yr more SO_2	*2010-2018* 850,000 tons/yr more NO_x *after 2018* 450,000 tons/yr more NO_x	*2010-2018* 21 tons/yr more mercury *after 2018* 10 tons/yr more mercury
% increase allowed by Bush Plan over Clean Air Act existing programs.	*2010-2018* 225% as much SO_2 *after 2018* 150% as much SO_2	*2010-2018* 168% as much NO_x *after 2018* 136% as much NO_x	*2010-2018* 520% as much mercury *after 2018* 300% as much mercury
Delay allowed by Bush Plan over Clean Air Act existing programs	Up to 6 year delay	Up to 8 year delay	Up to 10 year delay

[1] U.S. EPA, "Discussion of Multi-Pollutant Strategy," Meeting with EEI, September 18, 2001; "Comparison of Requirements Under Business-as-Usual and the Straw Proposal," page 10. Available at http://www.cleartheair.org/currentstatus.pdf
[2] Ibid, page 10.
[3] See http://cta.policy.net/relatives/20340.pdf endnote #2.
[4] U.S. EPA, December 4, 2001 (supplementary presentation for EEI on mercury). Available at http://www.cleartheair.org/epamercury.pdf.

Default subsection template for the News section

the region's home page
VisitWest-Hartford.Org
> NEWS > BUSINESS > SPORTS > ARTS & ENTERTAINMENT > LIVING > OPINION

News

Local/State
Obituaries
Nation
Politics
World
Connecticut Headlines
US Headlines
World Headlines
Yahoo News

Got Feedback?
Send a letter to the editor.

You are here: home > news > politics

Bush Administration Tries to Hide Dirty Air Record by Claiming Credit for Clinton Era Clean Cars Says Environment2004

By wire
Posted Tuesday, January 27, 2004

E-mail this page Printer-friendly page

WASHINGTON, Jan. 26 – Leaders from Environment2004 described today's celebration by Environmental Protection Agency (EPA) Administrator Mike Leavitt of cleaner motor vehicles and their fuels as a blatant attempt to take credit for specific Clean Air Act measures adopted by the Clinton Administration while concurrently undermining clean air safeguards.

The stricter emissions standards for vehicles and the requirement to limit sulfur content in gasoline were issued in December 1999 http://www.epa.gov/otaq/regs/ld-hwy/tier-2/frm/speech.pdf .

The limit on sulfur content in diesel fuel was issued in December 2000. These Clinton-era safeguards stand in stark contrast to the Bush Administration's efforts to weaken air pollution standards for 17,000 power plants and other industrial facilities.

Latest articl
Politics

Sullivan Says Governor's Ou Counsel Must Accountable t

Voters Consid Rowland Impe Standard

Youth-Led Ca to Shake Thin Connecticut C

NEWSWEEK Bush's Approv Slips to New L

Bush Adminis Tries to Hide Record by Cla Credit for Clin Clean Cars Sa Environment2

Sullivan Asks Governor's Co Republican St to "Call Off Th

Governor's sca home in state unaccustomed corruption

"We are pleased that the Bush Administration recognizes the health benefits from the Clinton Administration's program to slash air pollution from motor vehicles and their fuels," said Environment2004 Vice Chair Mary Nichols, EPA Assistant Administrator for Air under President Clinton. She is currently Director of the University of California Los Angeles Institute of the Environment.

"These standards will protect children's health by reducing smog from motor vehicles and their fuels. They were a hard won compromise that balanced environmental and industry concerns," added Nichols. "This successful program to reduce motor vehicle pollution is diametrically opposed to the Bush Administration's so-called `Clear Skies Initiative,' which is a misnamed effort to relax air pollution controls on power plants, oil refineries, and other industrial facilities."

"Unfortunately, today's event is simply a smokescreen to obscure the Bush Administration's plans to allow more smog, acid rain, and mercury pollution in our air," said Aimee Christensen, executive director of Environment2004. "In public, the Bush Administration wants to bask in President Clinton's environmental achievements," added Christensen. Behind closed doors, it does polluting interests' bidding by advocating the removal of dangerous mercury from the list of toxic pollutants. EPA's mercury proposal would also significantly delay and weaken limits on mercury from power plants. These latest assaults are just two pieces of the Bush Administration's broader agenda of slashing air pollution clean up requirements."

On Dec. 15, 2003, Administrator Leavitt proposed to remove mercury from the list of toxic pollutants. If adopted, this proposal would allow power plants -- the nation's primary source of airborne mercury emissions-to delay any mercury reductions for 15 years. It is well documented that mercury poses a

(Attachment #32)

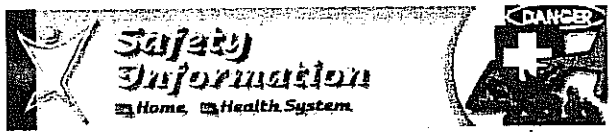
clear and present danger to developing children. In fact, the Food and Drug Administration just warned pregnant women to avoid eating tuna due to its high levels of mercury. The existing Clean Air Act, which the Bush Administration already has undermined, would require a 90 percent reduction in mercury from power plants by 2008.

"This photo-op environmentalism won't fool the American people. During this election year, we expect the Bush Administration to take many opportunities to mislead the American public about their real environmental and public health record," concluded Christensen. The rosy rhetoric from today's attempt to seek credit for President Clinton's achievements does nothing to undo the damage of the Bush Administration's policies."

Since its earliest days in office, the Bush Administration has faithfully rewarded its campaign contributors from the electric, oil, and coal industries by weakening limits on smog, acid rain, and mercury pollution from their facilities. Beginning with its energy plan in May 2001, the Bush Administration targeted the "New Source Review" (NSR) program of the Clean Air Act. This program requires aging power plants, oil refineries and other industrial facilities to reduce their pollution when they refurbish or expand. U.S. PIRG estimates that these changes "will allow 7.1 million tons of soot-forming SO2 1/8sulfur dioxide 3/8 emissions, and 2.7 million tons of smog-forming NOx 1/8nitrogen oxides 3/8 to go unchecked." One of the administration's NSR proposals is so harmful to the public that the U.S. Court Of Appeals blocked its implementation until the Court rules on its legality under the Clean Air Act.

Environment2004 is a political organization dedicated to highlighting the environmental stakes in the 2004 elections. For more information: http://www.Environment2004.org.

E-mail this page



Mercury and its Many Forms

Topics on this page include:

Elemental Mercury

What are sources of exposure to elemental mercury?

How toxic is elemental mercury?

Can elemental mercury be dangerous?

Inorganic Mercury

What are the symptoms of inorganic mercury poisoning?

Organic Mercury

What is the most common source of organic mercury poisoning?

What are the signs and symptoms of organic mercury poisoning?

How is mercury poisoning diagnosed and treated?

How do I clean up a small spill of elemental mercury?

How to safely and correctly clean up a small spill is more complicated

(Attachment #32)

Broken thermometers are the cause of numerous calls to the Poison Center. Thermometers with a silver line contain elemental mercury. Thermometers with a red or blue liquid do NOT contain mercury.

There is much misinformation about mercury, its various forms and its dangers. Three different types of mercury exist, varying in their levels of toxicity. They are elemental mercury, inorganic mercury and organic mercury.

Elemental mercury

Mercury is an extremely heavy, odorless, silver colored liquid. Mercury exists as a natural element in the earth's crust. Elemental mercury is also known as metallic mercury, liquid mercury, liquid silver and quicksilver.

What are sources of exposure to elemental mercury?

Sources of elemental mercury in the home include broken mercury thermometers, broken fluorescent light bulbs, dental amalgam fillings, mercury containing latex paints, extraction of gold from ore using mercury, and contaminated clothing from workers in thermometer making plants. Elemental mercury is also used as a Mexican folk medicine to treat "empacho," a chronic stomach disorder.

How toxic is elemental mercury?

Of all the forms of mercury, elemental mercury is the most commonly swallowed form of mercury, usually from a broken thermometer. Fortunately, elemental mercury from a thermometer is not absorbed from the stomach and will not cause any poisoning in a healthy person.

In a healthy person, the slippery swallowed mercury will roll into the stomach, out in to the bowels and will be quickly eliminated without causing any symptoms. A person with severe inflammatory bowel disease or those with a fistula (hole or opening) in their gut may have problems with mercury if it is not all cleared out, resulting in prolonged exposure.

Handling liquid mercury for a very short period of time usually does not result in any problems. An allergic rash is possible, though. Mercury is not well absorbed across the skin so skin contact is not likely to cause mercury poisoning, especially with a brief one-time exposure. Even if a person has cuts in their skin, mercury is too heavy to be contained by a cut. Merely washing the wound well will wash the mercury out of the wound.

Can elemental mercury be dangerous?

Inhalation of elemental mercury vapors is the main cause of toxicity, as mercury is well absorbed by the lungs. To develop problems by inhalation you need either a large one-time exposure or a long-term exposure. A small, one-time exposure is not likely to cause problems.

What are the symptoms?

After a large, one-time inhalation exposure of mercury vapor, the lungs are the main target of mercury poisoning, although other symptoms develop as well.

Symptoms may develop within a few hours and include chills, metallic taste, mouth sores, swollen gums, nausea, vomiting, abdominal pain, diarrhea, headache, weakness, confusion, shortness of breath, cough, chest tightness, bronchitis, pneumonia and kidney damage.

How does long-term exposure differ from a short-term exposure?

Long-term exposure (usually work-related) of inhaled vapors is generally more dangerous than a one-time short exposure. After long-term inhalation exposure, the nervous system is the main target of toxicity. Symptoms may occur within weeks but usually develop insidiously over a period of years.

Neurologic symptoms include tremors, headaches, short-term memory loss, incoordination, weakness,

loss of appetite, altered sense of taste and smell, numbness and tingling in the hands and feet, insomnia, and excessive sweating. Psychiatric effects are also seen after long-term exposure.

Acrodynia can result from repeated exposures to mercury-containing latex paint fumes. Acrodynia is usually seen in younger children. The symptoms include chills, sweating, body rash, irritability, sleeplessness, leg cramps, swelling of the cheeks, nose, hands and feet, light-sensitivity to the eyes and peeling skin layers on the palms of the hands and soles of the feet.

Inorganic Mercury

Inorganic mercury compounds are known as "mercuric salts." Some of the mercuric salts include: mercuric chloride, mercuric iodide, mercuric nitrate, mercuric sulfide, yellow mercuric oxide, red mercuric oxide, ammoniated mercury, mercurous chloride and mercurous acetate.

What are sources of inorganic mercury compounds?

Some folk medicines from outside the United States contain high amounts of mercury that can cause mercury poisoning. Two common mercury compounds are **calomel** and **cinnabar**.

Chinese herbal drugs with measurable amounts of mercury include:

Tse Koo Choy
Qing Fen
Zhu-Sha
Chen-Fen

Chinese herbal ball preparations containing both mercury and arsenic include:

An Gong Niu Huang Wan
Da Huo Luo Wan
Dendrobium Moniliforme Night Sight pills
Niu Huang Chiang Ya Wan
Niu Huang Chiang Hsin Wan
Ta Huo Lo Tan
Tsai Tsao Wan

Indian and Mexican folk medications containing mercury include:

Creme de Belleza-Manning
Tainan
Ping-tong
Sin-chu

What are the symptoms of inorganic mercury poisoning?

Inorganic mercuric salts are corrosive and they damage the kidneys. Following ingestion, symptoms include nausea, vomiting blood, burns and tissue death in the throat and stomach, abdominal pain, bloody diarrhea, decreased urination and kidney failure.

Long-term application of mercury-containing substances causes skin redness and staining of the skin.

More severe symptoms include nerve damage resulting in weakness, numbness and tingling.

Organic Mercury

What are sources of organic mercury?

Organic mercury compounds are found in a variety of products. They are used medically as fungicides and antibacterials. The most common organic mercury compounds in the home may well be mercurochrome (merbromin) and merthiolate (thimerosal), two common antiseptics. Fortunately, small ingestions by children rarely cause major problems.

What is the most common source of organic mercury poisoning?

In the general population, the main source of mercury poisoning is the ingestion of mercury-contaminated food, usually fish. When lake, river or ocean water is contaminated with methyl-mercury compounds, the mercury accumulates and magnifies in the flesh of the fish. Organic mercury concentrations can be more than 1,000 times greater in the fish than in the surrounding water. People who eat fish as a main component of their diet may be at risk. If a river or lake is known to be polluted with mercury, fish eaters are warned to decrease their weekly intake of fish.

What are the signs and symptoms of organic mercury poisoning?

Organic mercury compounds are very damaging. They are toxic by ingestion, inhalation, and skin and eye contact. These mercury compounds can attack all body systems. They can cause nausea, vomiting, lack of appetite, weight loss, abdominal pain, diarrhea, kidney failure, skin burns and irritation, respiratory distress, swollen gums and mouth sores, drooling, numbness and tingling in the lips, mouth, tongue, hands and feet, tremors and incoordination, vision and hearing loss, memory loss, personality changes and headache. Allergic reactions can also occur.

Methyl-mercury, usually from contaminated food, is very dangerous to pregnant women. Methyl-mercury causes profound mental retardation, cerebral palsy, seizures, spasticity, tremors, and incoordination, along with eye and hearing damage in the unborn baby as a result of the mother's exposure. Organic mercury passes into the breast milk as well.

How is mercury poisoning diagnosed and treated?

Because the number of symptoms is so great and the variety of symptoms is so wide, anyone could pick out at least 2 or 3 symptoms at any given time. If you have any doubt and if you have been or are exposed to mercury compounds, see a physician and get tested. Testing is the only definite way to determine if mercury is the cause of the symptoms.

Mercury poisoning can be diagnosed by special blood and urine collection tests. If levels are high, there is treatment. Medication can be administered to help bind the mercury and increase elimination. Symptoms do not always correspond to blood mercury levels: Many patients with high levels do not have severe symptoms.

If mercury blood levels are going to be tested, it is important NOT to eat any seafood products for at least 30 hours before testing. Even a single meal of seafood can elevate mercury blood levels for as long as 20 to 30 hours after eating. Eating seafood will cause misleading high levels.

(Attachment #32)

How do I clean up a small spill of elemental mercury?

Many people have called the Poison Center asking how to clean up the mercury from a broken thermometer. There are several different ideas on how and how not to clean up the mercury beads. Experts agree on the ways NOT to clean up a spill:

Do not sweep the area with a broom. Sweeping breaks the mercury into smaller droplets, further contaminating the room and the broom.

Vacuuming vaporizes the mercury and increases the concentration of mercury in the air.

NOTE: If you are wearing gold jewelry, either remove the jewelry or wear good protective gloves. If the liquid mercury contacts the gold jewelry, the mercury bonds permanently to the gold and ruins it.

How to safely and correctly clean up a small spill is more complicated

Step One: Using a playing card, credit card or stiff piece of paper, gather up, scrape up or roll up the beads of mercury into one big bead or ball.

Then, several cleanup options are available:

Option A: Using an eyedropper or other squeeze-bulb dropper, carefully suck the mercury droplets up.

Option B: Using a common penny, dip the penny into the mercury and let the mercury adhere or bond to the penny. This may require more than one penny.

Option C: Using duct (duck) tape, place the tape over the mercury ball or beads and lift the mercury off the surface.

Step Two: Place the mercury beads, mercury-coated pennies, or tape with the mercury beads into a zip-lock plastic bag. Seal the bag securely, tape it shut, wrap it in newspaper and dispose properly.

Two other, more complicated ways for cleaning up small spills require the use of granular zinc or sulfur powder. Granular zinc can be obtained from scientific supply houses and sulfur powder can be obtained at garden supply shops.

NOTE: It is important to know that using zinc granules will permanently stain carpets a dark gray that cannot be removed. Sulfur may stain carpets black, but this can often (but not always) be removed with carpet stain cleaners.

Step One: Dust on the zinc or sulfur powder and rub in well with a disposable whisk broom.

Step Two: Sweep up as much of the mixture as possible with the whisk broom.

Step Three: Vacuum up the residual matter with a vacuum cleaner and immediately discard the vacuum cleaner bag.

Step Four: If any mercury beads remain, repeat the process until none is present.

(Attachment #32)

Step Five: Discard the whisk broom after use.

Regardless of the method used for cleanup, there is very little risk of danger if the area is well ventilated. A spill of a large amount of mercury that is not immediately cleaned up can present a problem as the mercury vaporizes and is breathed in by family members.

Call: 1-800-876-4766
anytime, anyplace in California
California Poison Control System

Home | Health System

This page last updated June 1999
©opyright © UC Regents. All rights reserved.

Mercury and the Environment

Fish Consumption

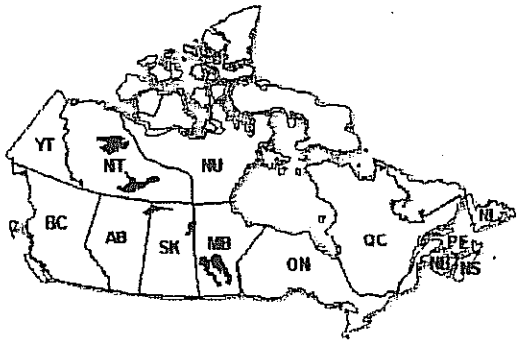
Home
Basic Facts
Environment and Health
Sources of Mercury
Mercury Management
What Can I Do?
Fish Consumption
Cleaning Up Small Mercury Spills
Mercury Disposal
Links
What's New?

Canada is renowned for its pristine lakes and rivers, attracting recreational and subsistence fishers who enjoy and consume the diverse fish species they catch. There is growing concern, however, that certain fish species in some of Canada's freshwater bodies have acquired elevated mercury levels. Mercury released from human activities can be converted in the environment to a highly toxic form called methylmercury, which can bioaccumulate and biomagnify in fish tissue, particularly in predatory species like pike, walleye and bass. The consumption of mercury contaminated fish is one of the main pathways for mercury exposure in humans, and may pose serious health risks, particularly for young children and the developing fetus.

In addition to creating regulatory tools to reduce mercury releases to the environment, federal, provincial and territorial governments have placed fish consumption advisories on individual species, lakes and in some cases on entire regions, in order to prevent high levels of mercury exposure to consumers. The links below provide information on some fish consumption advisories that are available electronically. People who catch and consume fish as a staple part of their diet should consult local fishing and health authorities to obtain information about local advisories.

Examining Fish Consumption Advisories Related to Mercury Contamination in Canada (2001) outlines federal, provincial, and territorial roles, responsibilities and procedures related to fish consumption advisory development across Canada. This document is not intended to serve as a reference guide for these advisories because they can change over time. The links below provide up to date information on current advisories in various regions across Canada and/or contacts for the responsible agencies.

The map below provides links to provincial/territorial fish consumption advisories in Canada



Other North American Fish Advisories

Canadian Food Inspection Agency - Food Facts of Mercury and Fish Consumption

EPA Fish and Wildlife Advisories

Great Lakes Fish Consumption Advisories provided by the Great Lakes Information Network (GLIN)

Health Canada advisory information on mercury levels in fish

Nearshore Waters of the Great Lakes Section 8.4 Fish Consumption Advisories

Alberta

Fish consumption advisories have been published in the *2003 Alberta Guide to Sportfishing Regulations*. Advisories for mercury are located in the "Other Information" section under "Mercury Contamination in Fish."

Back to map

British Columbia

The B.C. Ministry of Water, Land, and Air Protection published provincial fish advisories in the *2003-2004 Freshwater Fishing Regulations Synopsis* . The advisories are located in the "Special Restrictions/Notes" column within the regional water-specific tables.

Back to map

Manitoba

Manitoba Conservation has a website about *Contaminants in Fish*, including mercury. For further information on recommended consumption rates, contact a

(Attachment #32)

Manitoba Conservation Office or phone the Resource Information Service at (204) 945-6784.

Back to map

New Brunswick

The Fish and Wildlife Branch of New Brunswick's Department of Natural Resources and Energy published provincial fish advisories in the *2003 New Brunswick Angling Summary*. *Mercury Contamination of Freshwater Fish* is located under *General Information* on page 2.

Back to map

Newfoundland and Labrador

Various provincial fish consumption advisories have been issued for water bodies in Newfoundland and Labrador. At the following locations it is recommended that the designated fish species be consumed *no more than once per week*:

General Fish Consumption Advisories

Location	Species Affected
Insular Newfoundland	
Cat Arm Reservoir	Arctic charr
Long Pond Reservoir	Ouananiche
Great Burnt Reservoir	Ouananiche
Cold Spring Pond	Ouananiche and brook trout
Labrador	
Smallwood Reservoir	Lake trout and northern pike
Lobstick Forebay	Lake trout and northern pike
Churchill River [1]	Lake trout and northern pike

[1] (between tailrace and outflow of lake Winokapau)

A consumption advisory has been issued for brook trout coming from the **Rose Blanche reservoir.** Women of childbearing age should limit their consumption of brook trout from Rose Blanche to one 10 ounce serving per week. For children aged 5-11 years, the serving should be 4.7 ounces and for children aged 1-4 years, the serving should be 2.5 ounces. The advisory does not apply to all other adults.

There is also a consumption advisory for certain species from **Star Lake.** The following table provides the recommended maximum amount of fish that can be safely consumed per week.

Advisories for Star Lake, Newfoundland and Labrador

Individual	Advisory (ounces / week)	
	Arctic charr	Brook trout
Women (child-bearing age)	3.7	2.6
Children (5-11)	1.6	1.2
Children (1-4)	0.9	0.7
Adult	8.6	6.0

(Attachment #32)

Questions?

Julie Whiteway
Department of Fisheries and Oceans
(709)772-0115

Back to map

Northwest Territories

For fish advisories in the Northwest Territories, contact the Department of Health and Social Services. Phone: (867) 920-3241

Back to map

Nova Scotia

The Nova Scotia Department of Fisheries and Aquaculture published their fish advisories in the *Angler's Handbook and 2003 summary of regulations*. The provincial mercury advisory appears on page 13 of Part 2.

Back to map

Nunavut

There are currently no territorial fish advisories in Nunavut.

Back to map

Ontario

Ontario's Ministry of the Environment published provincial fish consumption advisories in the *2003-2004 Guide to Eating Ontario Sport Fish*.

Back to map

Prince Edward Island

There are currently no provincial fish advisories for mercury in PEI.

Back to map

Quebec

Quebec's *Ministère de l'environnement* publishes provincial fish advisories on their website: *Guide de consommation du poisson de pêche sportive en eau douce*. (Available in French only)

Back to map

Saskatchewan

For fish consumption guidelines, please contact your regional Saskatchewan Environment office. A directory of regional offices has been published along with a summary of fishing regulations, in the *2003 Saskatchewan Anglers' Guide*.

Back to map

Yukon

There are currently no territorial fish advisories for mercury in the Yukon.

Back to map

Glossary References Top of Page

| What's New | About Us | Topics | Publications | Weather | Home |
| Francais | Contact Us | Help | Search | Canada Site |

The Green Lane™, Environment Canada's World Wide Web site
Last updated: 2004-02-04
Last reviewed: 2004-02-04
Important Notices
URL of this page: http://www.ec.gc.ca/MERCURY/EN/fc.cfm

(Attachment #32)

Environment Canada | Environnement Canada | Canada

Français | Contact Us | Help | Search | Canada Site
What's New | Topics | Publications | Weather | Home
About Us

Mercury and the Environment

Sources of Mercury
Introduction

Home
Basic Facts
Environment and Health
Sources of Mercury
Natural Sources
Mercury-containing Products
Canadian Releases
Mercury Management
What Can I Do?
Fish Consumption
Cleaning Up Small Mercury Spills
Mercury Disposal
Links
What's New?

Mercury is a natural element that occurs throughout our solar system. It can be found in small concentrations in many rocks and is the main component of the mineral cinnabar. Natural background levels can be detected in soils, air, and water around the world.

Historically, mercury has been used by many cultures for a variety of symbolic purposes, such as in good luck charms and to ward off evil. Mercury played a predominant role in alchemy, and was thought to have medicinal uses such as curing syphilis in the 19th century. While the majority of these practices are no longer followed, mercury may still be used in certain regions of the world in artisanal jewelry and trinkets for tourist sales, in small-scale gold mining processes, and can be a significant source of pollution in areas surrounding active and inactive mercury mines.

Although humans have extracted and utilized mercury for centuries, mining and industrial applications for the metal have increased significantly since the industrial revolution. In Canada, mercury releases can typically be attributed to waste incineration, coal combustion, base metal smelting, and the chlor-alkali industry. Despite mercury's toxic nature, humans have taken advantage of its unique properties to produce various consumer products, such as fluorescent lights and dental amalgam. Consequently, the amount of mercury mobilized and released due to human activities has greatly increased, leading to elevated concentrations in air, water, soil, sediments, and living organisms.

Glossary References Top of Page

| What's New | About Us | Topics | Publications | Weather | Home |
| Francais | Contact Us | Help | Search | Canada Site |

The Green Lane™, Environment Canada's World Wide Web site
Last updated: 2004-02-04
Last reviewed: 2004-02-04
Important Notices
URL of this page: http://www.ec.gc.ca/MERCURY/SM/EN/sm-i.cfm

Mercury and the Environment

Mercury Management
Introduction

Home
Basic Facts
Environment and Health
Sources of Mercury
Mercury Management
International Initiatives
Federal Legislation and Guidelines
Canadian Programs and Research
Canada-wide Standards
Provinces & Territories
What Can I Do?
Fish Consumption
Cleaning Up Small Mercury Spills
Mercury Disposal
Links
What's New?

As the dangers of mercury and its compounds are becoming increasingly understood, many scientific research studies have examined the environmental and health effects associated with mercury and its releases into the environment. The results demonstrate that there is an urgent and continuing need to reduce anthropogenic sources of mercury to protect human health and the environment. Because mercury can be transported long distances before being deposited on the Earth's surface, it is important to make nationally (and internationally) consistent efforts to reduce releases. In an effort to prevent further pollution, many countries and jurisdictions have implemented laws, regulations, policies, initiatives and agreements designed to lessen the threat of mercury. Proper disposal of mercury-containing products and other actions may also contribute to the reduction of mercury pollution into the environment.

While domestic and international initiatives have already resulted in significant reductions in mercury releases, more remains to be done. There is also a need to ensure that Environment Canada's mercury management initiatives are well-coordinated internally, as well as with the initiatives of other federal departments, other levels of government in Canada, and other governments and organizations. This section outlines current federal and provincial/territorial legislation and guidelines which have been implemented to reduce Canadian emissions. In addition, select Canadian programs and research and international initiatives that deal with mercury management are highlighted. Links to various municipal bylaws and initiatives that relate to mercury are provided on the links page.

Some of the documents are in .pdf format. You will need Adobe's Acrobat Reader to view these files.

Glossary References Top of Page

| What's New | About Us | Topics | Publications | Weather | Home |
| Français | Contact Us | Help | Search | Canada Site |

The Green Lane™, Environment Canada's World Wide Web site
Last updated: 2004-02-04
Last reviewed: 2004-02-04
Important Notices
URL of this page: http://www.ec.gc.ca/MERCURY/MM/EN/mm-i.cfm

(Attachment #32)

action alerts | contact us | site map | volunteer | privacy policy

The Ocea
Cc

Learn : Ocean Issues : Mercury in Fish

Join | Learn | Get Involved | About Us | Pr

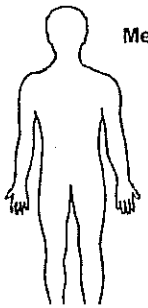
Mercury in Fish

Did you know?
Sugar Sea**star**

Called the walking stomach of the sea, the starfish can change his/her sex when necessary.

Air pollution caused by coal-fired power plants has lead to alarming levels of m contamination in the fish we eat. Eating mercury-tainted fish damages the brain nervous systems of children and can harm cardiovascular, immune and reprod systems in adults.

Mercury Contamination



Methyl-Mercury Health Effects

- ▶ Nervous system deterioration
- ▶ May damage immune and reproductive systems
- ▶ Impaired hearing, vision and speech
- ▶ Involuntary muscle movements
- ▶ Corrosion of skin and mucus membranes
- ▶ Difficulty chewing and swallowing

The case of mercury provides some alarming insights into how we continue to pollute our air, our oceans, and our fish. It also highlights the need to support the Clean Air Act, which sets strong standards to cut pollution from power plants.

In 2002, 45 states and territories had issued fish consumption advisories for mercury, warning citizens to limit how often they eat certain types of fish due to mercury contamination. Seventeen states have issued mercury advisories for fish in every inland water body.

A recent report by the Centers for Disease Control and Prevention found that 1 in 12 women of childbearing age has mercury levels above the EPA's safe health threshold. Nationally, this translates into nearly 4.9 million women of childbearing age with elevated levels of mercury from eating contaminated fish—and approximately 322,000 newborns at risk of neurological effects from being exposed in utero.

How did so much mercury get into the fish we eat?

According to the United Nations Environment Programme (UNEP), 70

Related Li

Public hea
for mercur
Clean the
EPA's mer
Join The C
Conservat
Join our O
Network
Take the C
Wilderne

percent of mercury that humans release into the environment comes from coal-fired power plants. Clouds carry the mercury and, with each rain, drop it onto the ocean or other waterways. It then enters the food chain. Top predators–such as large, long-lived fish–have the highest concentrations of mercury in their tissues.

In 2001, the Mobile Register newspaper sponsored testing of 65 fish consumers in coastal Alabama to determine their levels of mercury. Most of the participants had levels five to 10 times higher than what the EPA has determined is safe. That same year, the Food and Drug Administration advised women of childbearing age not to eat shark, swordfish, king mackerel, and tilefish. Moreover, ten states posted advisories against pregnant women eating canned tuna, the most consumed fish in the U.S.

In San Francisco, physician Jane Hightower found that a number of her patients were suffering neurological ailments including depression, headaches, arthritic pain, irritability, numbness, and tremors, as well as pronounced memory loss, confusion, and difficulties talking. "When we pulled fish out of the diet," said Hightower in an interview with the Mobile Register. "the mercury levels went down and the symptoms went away."

The current Clean Air Act provides critical tools that the states and the Environmental Protection Agency can use to achieve clean air. However, the Bush administration — through its so-called "Clear Skies Initiative" — would weaken the Clean Air Act. It would delay any mercury reductions to 2010 and then allow 26 tons of mercury emissions in 2010 and 15 tons in 2018. That's five times as much power plant mercury pollution through 2017, and three times as much mercury each year after, indefinitely. From 2008 through 2020, that's 284 tons more mercury under the Bush plan. The Clear Skies Initiative is only sunny for the coal industry.

Which fish should be avoided?

The Food and Drug Administration advises pregnant women and women of childbearing age who may become pregnant not to eat the following large fish that can contain high levels of mercury:

- Shark
- Swordfish
- King mackerel
- Tilefish (often sold as "golden snapper" or "golden bass")

It is *prudent* for nursing mothers and young children not to eat these fish as well. This is a national standard. In addition to national standards, state or local health departments may post their own warnings about mercury and other contaminants. Check EPA's website at www.epa.gov/ost/fish for a comprehensive list of these advisories.

What We're Doing to Help

The Ocean Conservancy is alarmed at the mercury pollution problem and the failure of the Environmental Protection Agency and Food and Drug Administration to warn fish consumers of the dangers associated with eating certain fish. We are doing outreach to local coastal groups to help alert members of the public to the dangers of certain fish consumption. We are

also very concerned that the "Clear Skies Initiative" will erase years of hard work to cut back the mercury emissions from their source, the coal-fired power plants. We have joined with a coalition of environmental and health organizations to fight the "Clear Skies Initiative" and support the Clean Air Act's approach to seriously reducing mercury emissions.

How You Can Help

Contact your senator or representative
Support the Clean Air Act or other legislation that will uphold the stringent requirements of the Clean Air Act to reduce mercury emissions significantly. Call your senator or representative and deliver that message. Tell them that the so-called "Clear Skies Initiative" being put forth by the White House will not yield clean enough skies and waters over time. The telephone number for the U.S. Capitol Switchboard is 202-224-3121.

How You Can Help
Call the White House and leave a message that you are against the Clear Skies Initiative, and that to reduce mercury, the United States should follow the Clean Air Act. The White House's phone number for comments is 202-456-1111.

Other Resources

http://www.atsdr.cdc.gov/toxprofiles/phs46.html: Public Health Statement for Mercury by the U.S. Agency for Toxic Substances and Disease Registry.

http://www.epa.gov/mercury/index.html: Environmental Protection Agency's index of actions and documents on mercury.

http://cta.policy.net/mercury: Clear the Air's site with reports and information about mercury contamination is part of its National Campaign Against Dirty Power.

action alerts | contact us | site map | volunteer | privacy policy Copyright 2001-2003 © The Ocean

(Attachment #32)

Department of Natural Resources

Home | Search | Feedback | What's New?

Cooperative Environmental Assistance Bureau

Fish Consumption Advisories

Mercury - The Element
- Properties
- Forms
- Transport

Impacts
- Impacts
- Environmental
- Human Health

Mercury Spills and Clean-up

Sources & Alternative
- Industrial & Product Sources
- Domestic Sources

Mercury in the Air

Mercury & Wastewater Treatment Plants

Sampling/Testing

Laboratory Certification and Low-Level Mercury

Disposal

Wisconsin Mercury Reduction Program
- Medical
- Dental
- Schools
- HVAC

Mercury

Mercury is a hazardous material that causes serious environmental and health problems. Although it is found naturally, problems arise from its release from man-made products and energy production. Once mercury is released into the environment, it cycles and converts to the toxic form, methylmercury, and is virtually impossible to remove.

Mercury is a persistent, bioaccumulative pollutant. Its use is unnecessary since there are many mercury-free alternatives. The Department of Natural Resources is working cooperatively with many Wisconsin communities to keep mercury out of the environment through recycling and promotion of mercury-free alternatives.

For a complete description of mercury and mercury reduction, refer to the *Wisconsin Mercury Sourcebook (Exits DNR)*.

Interactive House

Find the hidden Mercury!
Click to enlarge.

We Want Your Input

Tell us what you think of CEA's redesigned website! Please submit your feedback.

Contact Information
- Mercury Contacts

Quick Links
- What's New?
- Publications

Related Sites
- WI Pollution Prevention Partnership (WIP2)
- WasteCap Wisconsin
- More...

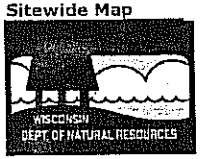
(Attachment #32)

- Dairy Farms
- Automotive
- Thermometers
- Household
- Collections/Recycling
- Legislation

Contacts

More Information about Mercury

Lost? Try the CEA Sitewide Map



Back to Top

Last Revised: Wednesday February 18 2004

http://dnr.wi.gov/
Legal notices and disclaimers

USGS

USGS Home | Biology | Geology | Geography | Water | Contact Us | Ask USGS | Search USGS

Mercury Research

Mercury Research in the USGS

Announcements

- North American Regional Action Plan
- **Mercury Roundtable**
  - The next meeting is scheduled for February 11, 2004
  - About the Mercury Roundtable
  - Mercury Roundtables, Past and Future
- Mercury in the News
- Upcoming Meetings
  - 7th International Conference on Mercury as a Global Pollutant, Ljubliana, Slovenia, June 27-July 2, 2004

Science Activities

- USGS Mercury Activities [PDF Format] or [XLS Format]
  - Sources of Mercury: Contributions from Natural and Anthropogenic Sources
  - Biogeochemical cycling to predict what ecosystems will have high biaccumulation and net mercury methylation rate
  - Toxic effects, and associated bioaccumulation studies
  - National/Regional-scale assessments
  - Identification of management options and areas where management would be effective
- International Activities - METAALICUS

Why study mercury?

- Mercury is a widespread contaminant
- Advisories against consumption of fish because of mercury contamination are widespread.
- Mercury contamination is increasing
- Regulation of mercury requires better information
- Many scientific questions remain to be answered before scientists will be able predict how mercury will affect the environment.

The USGS Role

Improved information on mercury sources, cycling and toxicity will help land and resource managers understand what can be done to reduce mercury hazards to people and the environment. The large geographic scope and consequences of mercury contamination, and enormous complexity of the problem require a scientific approach that integrates many scientific disciplines. USGS investigations provide information to guide environmental planning and management. This information helps managers reduce mercury contamination of our biological resources and the associated threats to humans and wildlife.

In the last five years there have been growing efforts to strengthen the coordination between scientists working on mercury in the USGS. Through USGS workshops and meetings, scientists have assembled the scientific substance for the development of a research agenda that is nearing completion. The agenda identifies research that is needed to move forward the state of the art and to answer fundamental management questions regarding mercury hazards and risks.

Further information on Mercury

Publications

- New Publications
  - The Materials Flow of Mercury in the Economies of the United States and the World
- EPA Mercury Report to Congress
- Factsheet
  - Mercury in the Environment
- Miscellaneous Field Studies Map
  - Distribution of a Suite of Elements Including Arsenic and Mercury in Alabama Coal (MF-2333)
- Statistics and Information
- Selected USGS Publications - Reference List

Links to Programs and Agencies

- USGS Programs that Support Mercury Science
- Information from Other Agencies
- Mercury Related EPA Websites

Skip Navigation Links

MINERAL RESOURCES | Eastern | Central | Western | Crustal Imaging & Characterization | Minerals Information | Spatial Data

U.S. Department of the Interior
U.S. Geological Survey
Mineral Resources Program
Reston, VA 20192 USA

FIRSTGOV
Your First Click to the U.S. Government

URL: http://minerals.usgs.gov/mercury/index.html
Email comments/questions to: sgerould@usgs.gov
Maintained by: jgambogi@usgs.gov
Last modification: 13-Jan-2004@09:56
Privacy Statement || *Disclaimer* || *FOIA* || *Accessibility*

(Attachment #32)

back

GREAT LAKES STATES TOP MERCURY CONTAMINATION LIST

Erin Toner
January 12, 2004

Four Great Lakes states have some of the most severe cases of mercury contamination in the country. That's according to a recent report by the group "Environmental Defense." The Great Lakes Radio Consortium's Erin Toner has more:

Michigan, Indiana, Illinois and Pennsylvania made the group's top 10 list of places with the worst mercury pollution. Mercury can cause brain damage in babies whose mothers eat contaminated fish. The report says mercury in the ground and water often comes from local sources, such as power plants.

The U.S. Environmental Protection Agency is working on new mercury rules for power plants. But Michael Shore, of Environmental Defense, says the rules aren't strong enough.

Other sectors have been required to reduce their mercury pollution by 90 percent. These standards would only reduce mercury pollution by 70 percent. Also, these standards wouldn't be in place until 2018.

The EPA's policy could use a market-based approach. That allows companies to buy pollution credits from others that have emission controls in place. Environmentalists say instead, the EPA should force all power companies to pollute less.

For the Great Lakes Radio Consortium, I'm Erin Toner.

© 2003 Great Lakes Radio Consortium

back

(Attachment #32)

looksmart DIRECTORY WEB ARTICLES Home · Search · Advanced Search · H

SEARCH all magazines FOR

YOU ARE HERE: Articles > Environment > Nov, 2002 > Article

Print article Tell a friend Find subscription deals

Mercury in the environment: a volatile problem.

Environment, Nov, 2002, by Randall Lutter, Elisabeth Irwin

Continued from page 6

Florida panthers also may be at risk of methylmercury poisoning, because high mercury concentrations in their habitat have caused high mercury concentrations in their prey. According to EPA, "Mercury levels found in tissues obtained from dead panthers are similar to levels that have been associated with frank toxic effects in other feline species." (66) Over the last decade, however, the Florida panther population apparently has increased to 80 from between 30 and 50 as a result of introducing new panthers into the area to reduce inbreeding. (67)

Although a recent screening-level assessment of mercury in southern Florida food webs suggested that 100 percent of alligators are exposed to methylmercury at concentrations that exceed toxic reference values for sensitive bird and mammal species, no data on its toxicity to alligators are available. (68) No studies that quantitatively estimate the effect of methylmercury on the population of alligators or other indicator species are apparent.

Mercury Controls

Policy makers should take into account the environmental and health effects of mercury when they design new regulations to limit mercury releases. In the past several years, EPA has issued three regulations to limit mercury emissions (as shown in Table 2). The U.S. government has regulated a diverse set of possible uses of mercury under other laws, as listed in Table 3 on page 33. Concern about the environmental effects of mercury has prompted a variety of industry and state efforts to restrict the sale of certain products and implement disposal programs; these measures reduced industrial demand for mercury by 75 percent between 1988 and 1997. (69) To date, 18 states have proposed 49 bills that would restrict or prohibit products that contain mercury; limit mercury emissions from power plants; or establish product-labeling requirements, health-warning standards for water bodies, or waste-management programs. (70) Currently, only Indiana, Maryland, Minnesota, and Maine have enacted these laws, but some states have instituted special programs to remove from use thermometers or other devices that contain

Sponsor
Ads by Goo

Verify Yo
Levels
Ozone mo
determine
workplace
Compliant
www.ozonen

Florida P
Jersey
Great Sel
Low Price
Shipping
Order Nov
www.dickssp

Panthers
Pennants
Buy Panth
Team Ge
Pennants
Licensed
NHL.
www.teamla

Discount
apparel
NHL jerse
tees, baby
youth app
www.nhlappr

Content p
partners
THOM
GA

mercury. (71) The box on pages 34 and 35 provides an overview of international regulation.

EPA expressed its recent water-quality criteria for methylmercury in terms of fish tissue concentration--0.3 ppm-- because fish consumption is the primary means of human exposure to methylmercury. EPA intends for its water-quality criteria program to provide a science-based maximum level for methylmercury that can be used by states and localities to promulgate local water-quality standards and by EPA as a basis for federal rulemaking to reduce mercury discharges under the Clean Water Act. States are not forced to adopt the EPA criteria, but under the Clean Water Act, they must adopt water-quality standards that are adequate for each water body's designated use--such as swimming-- and commensurate with "sound scientific rationale." (72) In addition, EPA must approve states' standards. Thus, the practical impact of EPA's criteria is likely to be high even though, strictly speaking, the criteria are not legally binding. However, because 55 percent of fish have mercury concentrations that exceed EPA's water-quality criteria and there is no model predicting how much mercury emissions must be cut to reduce concentrations in fish tissue, compliance with EPA-approved water-quality standards might be quite difficult. (73)

« Previous | 1 · 2 · 3 · 4 · 5 · 6 · 7 · 8 · 9 · 10 ... | Next »

DIRECTORY WEB ARTICLES
SEARCH all magazines FOR Search · Advanced Search · H

©2003 LookSmart, Ltd. All rights reserved. - About Us - Advertise with Us - Advertiser Log-In - Privacy Policy - Terms of

(Attachment #32)

large SUVs, by about 54,000 tons of hydrocarbons and nitrogen oxides per year. Starting in 2006, manufacturers of highway motorcycles, small scooters and mopeds will be required to reduce emissions of those two chemicals by 60% by using improved technologies such as secondary air injection, electronic fuel injection systems and catalytic converters. (Milwaukee Journal Sentinel, 12/24/03, Rick Barrett)

top

Social Justice

top

Transportation

top

Water

EPA mercury rule could pre-empt stronger state action
Under the U.S. Environmental Protection Agency proposal, power plant owners could postpone, in some cases for as long a decade, requirements that they install specific technology designed to reduce mercury pollution. Instead, they would be allowed to trade emissions under a national "cap and trade" program. The state rule, proposed by the Department of Natural Resources earlier this year, would have forced Wisconsin utilities to drastically cut their mercury emissions. (Baraboo News Republic, 12/26/03, Washington AP)

Alliant sued for polluting state river
Alliant Energy Corp. has discharged pollutants from its Columbia power plant near Portage into a Wisconsin River tributary in violation of water quality standards and in excess of permitted levels since 1998, according to a lawsuit filed Monday in federal court by a group of UW-Madison law students. Alliant also has violated permitted levels for effluent toxicity and its quarterly monitoring requirements on numerous occasions since July 2001, the suit stated.(The Capital Times, 12/30/03, Kevin Murphy)

Can Cherokee Marsh be saved? (No Link Available)
New findings document a major ongoing loss of wetland habitat

Safety Information
Home Health System

Mercury and its Many Forms

Topics on this page include:

Elemental Mercury

What are sources of exposure to elemental mercury?

How toxic is elemental mercury?

Can elemental mercury be dangerous?

Inorganic Mercury

What are the symptoms of inorganic mercury poisoning?

Organic Mercury

What is the most common source of organic mercury poisoning?

What are the signs and symptoms of organic mercury poisoning?

How is mercury poisoning diagnosed and treated?

How do I clean up a small spill of elemental mercury?

How to safely and correctly clean up a small spill is more complicated

Broken thermometers are the cause of numerous calls to the Poison Center. Thermometers with a silver line contain elemental mercury. Thermometers with a red or blue liquid do NOT contain mercury.

There is much misinformation about mercury, its various forms and its dangers. Three different types of mercury exist, varying in their levels of toxicity. They are elemental mercury, inorganic mercury and organic mercury.

Elemental mercury

(Attachment #32)

Mercury is an extremely heavy, odorless, silver colored liquid. Mercury exists as a natural element in the earth's crust. Elemental mercury is also known as metallic mercury, liquid mercury, liquid silver and quicksilver.

What are sources of exposure to elemental mercury?

Sources of elemental mercury in the home include broken mercury thermometers, broken fluorescent light bulbs, dental amalgam fillings, mercury containing latex paints, extraction of gold from ore using mercury, and contaminated clothing from workers in thermometer making plants. Elemental mercury is also used as a Mexican folk medicine to treat "empacho," a chronic stomach disorder.

How toxic is elemental mercury?

Of all the forms of mercury, elemental mercury is the most commonly swallowed form of mercury, usually from a broken thermometer. Fortunately, elemental mercury from a thermometer is not absorbed from the stomach and will not cause any poisoning in a healthy person.

In a healthy person, the slippery swallowed mercury will roll into the stomach, out in to the bowels and will be quickly eliminated without causing any symptoms. A person with severe inflammatory bowel disease or those with a fistula (hole or opening) in their gut may have problems with mercury if it is not all cleared out, resulting in prolonged exposure.

Handling liquid mercury for a very short period of time usually does not result in any problems. An allergic rash is possible, though. Mercury is not well absorbed across the skin so skin contact is not likely to cause mercury poisoning, especially with a brief one-time exposure. Even if a person has cuts in their skin, mercury is too heavy to be contained by a cut. Merely washing the wound well will wash the mercury out of the wound.

Can elemental mercury be dangerous?

Inhalation of elemental mercury vapors is the main cause of toxicity, as mercury is well absorbed by the lungs. To develop problems by inhalation you need either a large one-time exposure or a long-term exposure. A small, one-time exposure is not likely to cause problems.

What are the symptoms?

After a large, one-time inhalation exposure of mercury vapor, the lungs are the main target of mercury poisoning, although other symptoms develop as well.

Symptoms may develop within a few hours and include chills, metallic taste, mouth sores, swollen gums, nausea, vomiting, abdominal pain, diarrhea, headache, weakness, confusion, shortness of breath, cough, chest tightness, bronchitis, pneumonia and kidney damage.

How does long-term exposure differ from a short-term exposure?

Long-term exposure (usually work-related) of inhaled vapors is generally more dangerous than a one-time short exposure. After long-term inhalation exposure, the nervous system is the main target of toxicity. Symptoms may occur within weeks but usually develop insidiously over a period of years.

Neurologic symptoms include tremors, headaches, short-term memory loss, incoordination, weakness,

loss of appetite, altered sense of taste and smell, numbness and tingling in the hands and feet, insomnia, and excessive sweating. Psychiatric effects are also seen after long-term exposure.

Acrodynia can result from repeated exposures to mercury-containing latex paint fumes. Acrodynia is usually seen in younger children. The symptoms include chills, sweating, body rash, irritability, sleeplessness, leg cramps, swelling of the cheeks, nose, hands and feet, light-sensitivity to the eyes and peeling skin layers on the palms of the hands and soles of the feet.

Inorganic Mercury

Inorganic mercury compounds are known as "mercuric salts." Some of the mercuric salts include: mercuric chloride, mercuric iodide, mercuric nitrate, mercuric sulfide, yellow mercuric oxide, red mercuric oxide, ammoniated mercury, mercurous chloride and mercurous acetate.

What are sources of inorganic mercury compounds?

Some folk medicines from outside the United States contain high amounts of mercury that can cause mercury poisoning. Two common mercury compounds are **calomel** and **cinnabar**.

Chinese herbal drugs with measurable amounts of mercury include:

Tse Koo Choy
Qing Fen
Zhu-Sha
Chen-Fen

Chinese herbal ball preparations containing both mercury and arsenic include:

An Gong Niu Huang Wan
Da Huo Luo Wan
Dendrobium Moniliforme Night Sight pills
Niu Huang Chiang Ya Wan
Niu Huang Chiang Hsin Wan
Ta Huo Lo Tan
Tsai Tsao Wan

Indian and Mexican folk medications containing mercury include:

Creme de Belleza-Manning
Tainan
Ping-tong
Sin-chu

What are the symptoms of inorganic mercury poisoning?

Inorganic mercuric salts are corrosive and they damage the kidneys. Following ingestion, symptoms include nausea, vomiting blood, burns and tissue death in the throat and stomach, abdominal pain, bloody diarrhea, decreased urination and kidney failure.

Long-term application of mercury-containing substances causes skin redness and staining of the skin.

More severe symptoms include nerve damage resulting in weakness, numbness and tingling.

Organic Mercury

What are sources of organic mercury?

Organic mercury compounds are found in a variety of products. They are used medically as fungicides and antibacterials. The most common organic mercury compounds in the home may well be mercurochrome (merbromin) and merthiolate (thimerosal), two common antiseptics. Fortunately, small ingestions by children rarely cause major problems.

What is the most common source of organic mercury poisoning?

In the general population, the main source of mercury poisoning is the ingestion of mercury-contaminated food, usually fish. When lake, river or ocean water is contaminated with methyl-mercury compounds, the mercury accumulates and magnifies in the flesh of the fish. Organic mercury concentrations can be more than 1,000 times greater in the fish than in the surrounding water. People who eat fish as a main component of their diet may be at risk. If a river or lake is known to be polluted with mercury, fish eaters are warned to decrease their weekly intake of fish.

What are the signs and symptoms of organic mercury poisoning?

Organic mercury compounds are very damaging. They are toxic by ingestion, inhalation, and skin and eye contact. These mercury compounds can attack all body systems. They can cause nausea, vomiting, lack of appetite, weight loss, abdominal pain, diarrhea, kidney failure, skin burns and irritation, respiratory distress, swollen gums and mouth sores, drooling, numbness and tingling in the lips, mouth, tongue, hands and feet, tremors and incoordination, vision and hearing loss, memory loss, personality changes and headache. Allergic reactions can also occur.

Methyl-mercury, usually from contaminated food, is very dangerous to pregnant women. Methyl-mercury causes profound mental retardation, cerebral palsy, seizures, spasticity, tremors, and incoordination, along with eye and hearing damage in the unborn baby as a result of the mother's exposure. Organic mercury passes into the breast milk as well.

How is mercury poisoning diagnosed and treated?

Because the number of symptoms is so great and the variety of symptoms is so wide, anyone could pick out at least 2 or 3 symptoms at any given time. If you have any doubt and if you have been or are exposed to mercury compounds, see a physician and get tested. Testing is the only definite way to determine if mercury is the cause of the symptoms.

Mercury poisoning can be diagnosed by special blood and urine collection tests. If levels are high, there is treatment. Medication can be administered to help bind the mercury and increase elimination. Symptoms do not always correspond to blood mercury levels: Many patients with high levels do not have severe symptoms.

If mercury blood levels are going to be tested, it is important NOT to eat any seafood products for at least 30 hours before testing. Even a single meal of seafood can elevate mercury blood levels for as long as 20 to 30 hours after eating. Eating seafood will cause misleading high levels.

(Attachment #32)

How do I clean up a small spill of elemental mercury?

Many people have called the Poison Center asking how to clean up the mercury from a broken thermometer. There are several different ideas on how and how not to clean up the mercury beads. Experts agree on the ways NOT to clean up a spill:

Do not sweep the area with a broom. Sweeping breaks the mercury into smaller droplets, further contaminating the room and the broom.

Vacuuming vaporizes the mercury and increases the concentration of mercury in the air.

NOTE: If you are wearing gold jewelry, either remove the jewelry or wear good protective gloves. If the liquid mercury contacts the gold jewelry, the mercury bonds permanently to the gold and ruins it.

How to safely and correctly clean up a small spill is more complicated

Step One: Using a playing card, credit card or stiff piece of paper, gather up, scrape up or roll up the beads of mercury into one big bead or ball.

Then, several cleanup options are available:

Option A: Using an eyedropper or other squeeze-bulb dropper, carefully suck the mercury droplets up.

Option B: Using a common penny, dip the penny into the mercury and let the mercury adhere or bond to the penny. This may require more than one penny.

Option C: Using duct (duck) tape, place the tape over the mercury ball or beads and lift the mercury off the surface.

Step Two: Place the mercury beads, mercury-coated pennies, or tape with the mercury beads into a zip-lock plastic bag. Seal the bag securely, tape it shut, wrap it in newspaper and dispose properly.

Two other, more complicated ways for cleaning up small spills require the use of granular zinc or sulfur powder. Granular zinc can be obtained from scientific supply houses and sulfur powder can be obtained at garden supply shops.

NOTE: It is important to know that using zinc granules will permanently stain carpets a dark gray that cannot be removed. Sulfur may stain carpets black, but this can often (but not always) be removed with carpet stain cleaners.

Step One: Dust on the zinc or sulfur powder and rub in well with a disposable whisk broom.

Step Two: Sweep up as much of the mixture as possible with the whisk broom.

Step Three: Vacuum up the residual matter with a vacuum cleaner and immediately discard the vacuum cleaner bag.

Step Four: If any mercury beads remain, repeat the process until none is present.

(Attachment #32)

Step Five: Discard the whisk broom after use.

Regardless of the method used for cleanup, there is very little risk of danger if the area is well ventilated. A spill of a large amount of mercury that is not immediately cleaned up can present a problem as the mercury vaporizes and is breathed in by family members.

Call: 1-800-876-4766
anytime, anyplace in California
California Poison Control System

[redacted]

Home | Health System

This page last updated June 1999
Copyright © UC Regents. All rights reserved.

What Are its Health Effects? When inhaled, SO2 and its by-products (e.g., acid aerosols) may cause a range of health effects. At high levels, it can reduce lung function in healthy people. Asthmatics, particularly children, are very vulnerable. SO2 triggers swelling in airways that chokes off breathing. SO2 combines to form ammonium sulfate aerosols, a major component in fine PM pollution discussed above.

Nitrogen Oxides (NOx)

What Is It? NOx is a family of chemical compounds; two principal chemicals are nitric oxide (NO) and nitrogen dioxide (NO2).

How Is it Produced? Nitric oxide is emitted from cars and power plants and changed in the air to nitrogen dioxide, which is then changed to fine particle (PM) nitrates or gaseous nitric acid. When exposed to sunlight, NOx reacts with other chemicals to form ozone smog.

What Are its Health Effects? NOx is a potent pollutant by itself, and it also is an essential component in the formation of other dangerous pollutants. Like ozone, NOx corrodes lung tissue. Studies show that animals exposed to NOx are less able to fight bacterial infections and their risk of viral infection increases.

The Electric Power Connection

Electric utilities are required to report emissions of **SO2 and NOx** to EPA. The graphs below [Figures 1-4] show the total tons and the rate at which Florida's dirtiest dozen power plants emitted those pollutants in 1997. While many people think only of cars as contributors to ozone, Table 1 shows that electric utility NOx pollution is significant compared to cars. Generally, power plants exempt from the Clean Air Act produce these pollutants at 4 to 10 times the rate of new facilities (see Figures 1-4):

Hazardous Air Pollutants

Congress, in 1990, classified more than 160 substances as **hazardous air pollutants** (HAPs or air toxins) that are known to cause irreversible and serious illness. Health effects that may result from long-term exposure to HAPs include birth defects, cancer, reproductive problems, nerve disease and poisoning. Coal-fired power plants emit many air toxins, including **arsenic, chromium,** and **mercury**. Oil-fired plants are also sources of **nickel**.

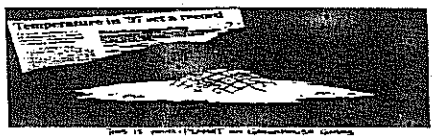
MERCURY

Mercury is a pollutant of great concern because it is highly toxic and accumulates in the body. One main way mercury gets in the human body is through fish that people eat from lakes, rivers and coastal waters where mercury has contaminated the fish. Mercury builds up in the food chain, from microscopic animals to the fish we eat. Mercury is so powerful that a 20-acre lake can be contaminated by as little as 1/70th of a teaspoon of mercury. While many foreign governments have made the phase-out of mercury a priority, power plant emissions of mercury are not currently monitored or regulated in the U.S.

At high levels, mercury can disrupt nervous, immune, hormone and enzyme functions of human cells. Mercury can harm the central nervous system and can result in mental retardation and blindness in fetuses and small children. (See Table 2 for a list of health effects). Studies consistently find that fetuses and children are more at risk because their bodies and brains are still developing. Mercury particularly affects language, attention and memory abilities in children. People who rely on self-caught fish for food (subsistence fishers), recreational anglers and Native Americans are also at high risk.

Health advisories for many waterbodies in Florida warn pregnant women and children from eating fish; other waterbodies also have advisories against eating certain types of fish from those waters or eating it more frequently that once a week. More than 2000 miles of rivers and 183,000 acres of lakes are under mercury health warnings in Florida. Unfortunately, most of those waterbodies have no warning signs posted. Regional DEP offices, state Health Department offices and the Florida Freshwater Fish and Game Commission can provide specific information. **(See also: http://www.state.fl.us/gfc/fishing/health.)** See Table 3 for mercury levels in commonly consumed fish.

EPA issued a 1997 report to Congress showing that coal-fired power plants are the largest source of mercury air pollution in the U.S. – about 32% of mercury in the environment comes from coal plants. Older coal power plants, exempt from modern clean air standards, generally pollute the most. EPA has proposed to issue an information request to electric utilities to monitor mercury in coal and in some emissions and to report that information publicly to EPA. Utilities strongly oppose EPA's request to gather that information or to make it public.



Global Warming, Power Plants and Our Health

The Earth's climate is changing in significant part because human activities, such as burning coal, oil and natural gas in power plants, are altering the chemical make-up of our atmosphere through the build-up of "greenhouse gases" – **carbon dioxide (CO2)**, methane, nitrous oxide and chlorofluorocarbons (CFCs). Although there is uncertainty about exactly how and over what time period this will happen, climate experts are sure it is happening and observations indicate that detectable changes are underway. Even some major CO2 polluters like 3M, Lockheed and British Petroleum recognize the problem and are urging action. However, the vast majority of electric utilities still deny global warming is real.

In the last century, average temperatures in Florida have increased by two degrees and are projected to increase by three to four degrees by 2100. Such seemingly small changes can make a big difference. The frequency of extremely hot days in summer is expected to increase; it is likely that severe storms and hurricanes may intensify. The intense drought, fires and flood experienced in 1998 may be examples of global warming's effects.

Global climate change poses serious risks to human health. Higher temperatures may increase heat-related deaths and illness. Scientists recently suggested that 28 people die in Tampa each year from heat-related causes; as many as 68 additional deaths could occur with a three degree temperature increase. People at risk include the very old, the very young, and those with pre-existing heart and lung disease. State and federal programs will be strained to provide assistance, including social and health services, Medicare and Medicaid and health insurance.

(Attachment #32)

(Attachment #32)

★★★★
CLARK04
NEW AMERICAN PATRIOTISM

SET TOUGH STANDARDS FOR THE WORST SOURCES OF AIR POLLUTION, STARTING WITH ELECTRIC POWER PLANTS

Tens of millions of Americans live in areas where the air pollution is so severe that it is considered to be a health hazard. Among the most serious kinds of pollution are smog, soot and toxic metals.

Power plants produce huge amounts of air pollutants that threaten the health of millions of Americans each year. Power plants' sulfur dioxide (SO_2) and nitrogen oxides (NO_x) emissions create dangerous concentrations of fine particles and ozone (soot and smog) in the air where 175 million people live and work. Fine particles formed from power plant emissions cause 30,000 premature deaths from lung disease and cancer, hundreds of thousands of asthma attacks, and millions of days of illness and lost work each year, according to the EPA. Mercury pollution from power plants contaminates lakes, rivers, and coastal waters and accumulates in fish to such a degree that forty-four states and territories have issued warnings against fish consumption because of mercury contamination. Carbon pollution is the main cause of global warming, and power plants are the nation's largest carbon polluters.

- **President Bush puts polluters' interests first.** Instead of using our clean air laws to protect the public health, the Bush administration has rolled back existing protections and issued weak new standards for dangerous pollutants.

  Just last week the Bush White House and EPA proposed weak power plant standards that would allow far more pollution than the Clean Air Act permits -- more than seven times as much toxic mercury, more than twice as much dangerous sulfur dioxide, and more than one-and-a-half times as much smog-forming nitrogen oxides over the next ten years, compared with faithful enforcement of the Clean Air Act. The administration has given power plants and other factories carte blanche to make multi-million dollar expansions – and huge pollution increases – without installing modern pollution controls.

  When it comes to toxic and carcinogenic pollutants, the Bush administration has a record of failure. In yet another recent action, the Bush administration proposed a do-nothing approach to the problem of mercury, a toxic metal known to cause neurological damage to young children.

Finally, the Bush administration has refused to accept any limits on emissions of carbon dioxide, the main cause of global warming. The White House even welcomed a voluntary pledge from the power industry under which its global warming pollution would actually increase faster than official Energy Department projections.

Paid for by Clark for President, Inc.
Contributions and gifts to Clark for President are not deductible for federal income tax purposes.

Source: Physicians for Social Responsibility, various groups
Posted by: EMS.org website editor - archive
Posted on: Thursday, January 29, 2004 at 4:00 PM

Press Conference Call
Friday, January 30, 2004

Public Health, Clean Air Groups React:
EPA Mercury Rollback Out On Friday

What: On Friday, EPA is expected to publish in the Federal Register new rules dealing with air pollution from power plants, including emissions of toxic mercury. Unfortunately, EPA's proposed mercury standards are not protective of public health, and will allow power plants to emit far more mercury into the air, for a decade longer, than EPA had previously said was possible with existing control technologies.

In response, clean air and public health groups will hold a phone briefing on the serious health impacts of the rule on women, children and families. They will discuss any substantive changes to the rule, and will announce an extensive new initiative to educate the public and gather public comments.

Who:
Susan West Marmagas, Physicians for Social Responsibility
Eric Schaeffer, Environmental Integrity Project
Navis Bermudez, Sierra Club
Zach Corrigan, US PIRG (Moderator)
Other environment and health policy experts will also be on hand to answer questions.

When:
Friday January 30, 2004
12:00 PM

Background:
In December, a copy of a Bush Administration rule for controlling toxic mercury from power plants was leaked to the press. The rule had been dramatically weakened from what EPA had originally considered, and ignored the advice of a specially-created Task Force that had recommended a tough standard.

One in twelve women of child-bearing age in the U.S. already has unsafe levels of mercury in her blood. That means that more than 300,000 babies born each year are exposed to unsafe levels of the neurotoxin, which can cause developmental defects.

Contact:
Joel Finkelstein, NET, (202) 887-1345
Liz Hitchcock, US PIRG, (202) 546-9707 x316
Wendy Balazik, Sierra Club, (202) 675-2383

Environmental Media Services
1320 18th Street NW 5th Floor
Washington, DC 20036
(202) 463-6670
Website comments: ryan@ems.org
Copyright © 2003 Environmental Media Services

(Attachment #32)

BNA
Essential information. Expert analysis.
Professional Information Center
Environment, Health & Safety
www.bna.com | Home | Search | Contact The Editor

BNA Catalog
> About Daily Environment Report
> Environment & Safety Products

BNA Analysis
> EPA's 'Common Elements' Guidance: A Work in Progress

This article highlights EPA's recently issued "Common Elements" Guidance. While the guidance clearly shows EPA's willingness and desire to help demystify the vague language contained in the Small Business Liability Relief and Brownfields Revitalization Act, the guidance leaves key questions unanswered. As such, the liability protections that Congress thought would help promote contaminated property redevelopment have not been utilized and will remain untapped until more precise agency guidance is issued, according to the author.

All
Primary Source
> Brownfields

All
Events
> Conferences
All Events

Links
> BNA's EHS News
> BNA Contacts
> Federal Agencies
> Trade Associations (Environment)
> Trade Associations (Worker Safety)
All Links

Daily Environment Report

Volume: 2003 Number: 241
December 16, 2003

Leavitt Signs Emissions Trading Proposal To Cut Mercury Emissions at Power Plants

Environmental Protection Agency Administrator Mike Leavitt signed a proposal Dec. 15 to contro of mercury and other hazardous air pollutants from power plants through emissions trading.

The proposal would establish a regulatory framework closely resembling President Bush's Clear Initiative (S. 485, H.R. 999), which would require power plants to reduce emissions of mercury, a sulfur dioxide and nitrogen oxides, by about 70 percent by 2018.

In doing so, however, the proposal pushes back a December 2007 compliance deadline and reje technology-based standards, which could have resulted in mercury reductions of up to 90 percen were endorsed by EPA in 2000.

Leavitt said the Utility Mercury Reductions proposal and two others being proposed this week to dioxide and nitrogen oxide emissions "represent the largest air pollution reductions of any kind n mandated by the Congress. They strengthen Clean Air Act regulations and standards to bring An most rapid and significant air quality improvement in a decade."

"Mercury is a toxic, persistent pollutant that Americans are exposed to primarily through eating m contaminated fish," according to EPA.

The agency said its Interstate Air Quality Rule, being proposed later this week, would reduce sulf and nitrogen oxide emissions in the eastern United States where these pollutants contribute sign unhealthy air quality.

Initial Reaction to EPA Proposal.

Environmental groups attacked the proposal as a Clean Air Act rollback.

"It is astonishing that while the Bush administration is warning people about the increased health eating mercury-laden fish, it is weakening the very clean air protections that would reduce mercu said Sierra Club President Carl Pope.

"Despite mounting scientific evidence, the Bush EPA is still trying to pretend mercury is not as da it really is," said Angela Ledford, director of Clear the Air.

Scott Segal, director of the Electric Reliability Coordinating Council, said the EPA proposal was a forward, pointing out that mercury emissions from power plants are unregulated now.

Proposal Meets Dec. 15 Deadline.

questions they had contracted be assessed. I asked what he meant and he seemed surprised that I did not know. I told him I had not seen anything in the paper on this. Anyways, he went on to explain that at the last regular Planning Commission meeting (on February 6th) that the Planning Commission had directed Brian Sousa to contract for an independent review/analysis of nine questions, to be reported back to the Planning Commission. The City has since hired MACTECH, a large environmental engineering firm, to analyze the nine questions and to submit their findings to the Commission ASAP. MACTECH's report has not come in yet, and Jon doubted that the report would be received in time for the Commission to have or review prior to the March 4th meeting. This would at least suggest that there is a higher than anticipated probability that the Planning Commission will not be making any decision on the Special Use Permit on March 4th. Jon emphasized that MACTECH does not have any contractual relationships with either Tondu, the City of Manistee, or any of the other Municipals that constitute the potential purchasers (MPPA/MSCPA) of electricity under the proposed Northern Lights Project. These are the nine questions and they are cited as Item 159 under the Special Use Permit Request document of the City:

1. What is the expected particulate dispersion and dropout percentage, as related to distance from the point source (stack) for the particulates listed in the air quality permit? Please limit the dispersion distance to 300 miles and provide the information in a "bull eye" map format.
2. What mercury emission standard is expected to evolve from the reviews currently conducted by the USEPA? What is it expected to be in place?
3. What other emissions could be expected from the plant other than those addressed above and what would their dispersion rate be?
4. What are the potential effects of fly ash? Does fly ash pose a health problem with becoming airborne?
5. Compare the impact of this plant on the local community with existing emission around the area.
6. What air quality impact does the City of Manistee currently see from industrial plants outside the area?
7. What is the expected amount of particulate matter entering the air from coal dust during unloading and handling operations? Please provide this in tons per year. Also, please indicate the dropout rate of coal dust with a dispersion map.
8. Please discuss the potential effects of warm water discharge in the receiving waters.
9. What effects could be expected from pumping 5 million gallons per day of water out of Manistee Lake?

I think that the nature and substance of these questions are a hopeful reflection of the impact that the citizens have had on this process. We will FOIA this report as soon as it is turned into the City. Mark

---

Yahoo! Groups Links

- To visit your group on the web, go to:
  http://groups.yahoo.com/group/cfrd/
- To unsubscribe from this group, send an email to:
  cfrd-unsubscribe@yahoogroups.com

(Attachment #32)

bill.dean2@earthlink.net

From: Mark Dougher [mdougher@lrbol.com]
Sent: Friday, February 20, 2004 2:48 PM
To: cfrd@yahoogroups.com
Cc: susan@envlaw.com; ajs@sagady.com; chris@envlaw.com; wolfclan@toast.net; rpowell@powellassociates.com; Teresa Romero; Bill Brooks; Bill Rastetter; Dan Shepard; Frank Beaver; Joanne House; June Mamagona Fletcher; Lee Sprague; Mark Dougher; Mark Knee; Marty Holtgren; Mary Thomas; Monica Cabot; Nate Svoboda; Patricia Ruiter; Robert E. Hardenburgh; Rory Snowarrow Flint Knife; Stephanie Ogren
Subject: [cfrd] MACTECH

I had a good conversation with Jon Rose, Community Development Director for the City of Manistee today. Initially, I shared with him that a lot of people were upset that Tondu had and took so much time at the beginning of the meeting last night. I asked if that was standard practice under the circumstances – meaning, does the developer/applicant always get the first opportunity to speak/present their project at the public hearing once a Special Use Permit Application is ruled "complete," and does the developer usually get extended time to give such a presentation?

Jon's answer to both questions was "yes." It is standard practice for this City Planning Commission to allow the developer/applicant to do so, although Jon qualified that the Chair of the Planning Commission should have explained that, and that it was unusual for the developer to take so much time. Jon acknowledged that Tondu and Del Rector took an inordinate amount to time, and he recognized that they should not have been allowed *that* much time by the Commission.

Secondly, last night there were about 20 people who spoke at the Public Hearing, and according to Jon, there are about 140 or so who signed up to speak. Simple math would suggest that it would be virtually impossible for the balance of the speakers to be completed by the Public Hearing next Thursday. I asked Jon what he thought would happen if all of the speakers were not able to give their statements next Thursday, would they continue the Public Hearing to March 4th, or what? Jon did not have an answer, he simply didn't know what they (the Planning Commission) would do, but he was concerned about the prospect of the Public Hearing being extended to March 4th given that that would further limit the time the Planning Commission would have to complete their review of all of the documents submitted for the record. So, I think that we have to at least anticipate that the Planning Commission might attempt to limit the Public Hearing next week (i.e. set a time limit for the balance of comments to be made by the public). On that assumption, I think we need to strategize on this in the interim, and at our next MCFRD meeting next Wednesday. Off hand, I know that there are various people who have particular and unique comments/issues that they want to address for next week, and we may want to consider some way for giving those folks priority, so that we can ensure that their statements will be on the record.

Third, I asked Jon if he thought whether or not the Planning Commission would be making a decision on the Special Use Permit at the regular meeting on March 4th (assuming that the public hearing is not further extended to that meeting). Jon expressed with some certainty that the Commission would **not** be ready to make such a decision, for a variety of reasons, the foremost being that they have not yet received a response on the air quality/water quality

(Attachment #33)

My name is Kevin Postma. I live at 11185 N. Morton Rd., Manistee.

Members of the planning commission, city council members, and citizens of Manistee who have gathered here today to express your thoughts and concerns over the proposed Northern Lights Coal-Burning Plant. I want to thank you for serving this community and for this opportunity to share the concerns that I have about Manistee's **future** and the **future** I see for my family here.

I am a science teacher. I chose this profession because of my hope for the future. I envision a **better tomorrow** for my child and for the children I teach.

I do **NOT**, however, see a better vision for tomorrow in this project. With this coal-burning plant, I **see** jobs. However, I can't tell how many. We were told that there were sixty, but numbers seem to keep changing. I **wonder** if there will be sixty **new** jobs when the plant starts operating?

With this coal-burning plant, I **see** Mercury contaminating our soil, our yards, our lakes, our fish, our children, and our children yet to be born. At the last public hearing we were "***reassured***" that not all of this mercury will stay in Manistee. In fact, it was accurately explained that some of this mercury leaves Manistee as a vapor and travels the globe, polluting other communities and other bodies of water. Does the fact that we'll pollute not just ourselves and our community, but other people and other communities make it justifiable?

With this coal-burning plant, I **see** people who have chosen to live in Manistee, who spend their money supporting local businesses, leaving Manistee because of a spoiled environment.

With this coal-burning plant, I **see** a glut of electricity effectively eliminating the exploration of alternative power sources, like the abundant wind we have here in Manistee County.

And with this coal-burning plant, I **see** regret. Most scientists agree that greenhouse warming of the atmosphere is already taking hold. Already we see and read about melting glaciers, earlier springs, scorching summers, intense weather systems, and a steady rise in global temperatures. FACT: **Power plants** are responsible for **1/3** of carbon dioxide emissions, and

operate without any caps. During the last public hearing carbon dioxide was never mentioned by Mr. Tondu as a pollutant.

I am left asking myself will the $400,000 Mr. Tondu has offered the city be able to cover and address the environmental and health costs we will inflict on ourselves, others and our planet? I ask myself, if we do not turn down this power plant, what kind of future will we be leaving for our children and our grandchildren? My daughter is just six months old. I wonder everyday about the type of person she will grow up to be and what type of world we will leave her. I pray that we leave her a planet just as beautiful and functional as the one we have inherited.

Members of the planning commission, we **must** take a stand. **I ask you**, Please, do the **right thing**. Represent the interests of the community and make a decision that your descendants will look back on and say, "YOU did the Right Thing." Make a decision that protects the health, safety, and welfare of you, your families and our entire community.

Act with **vision.**

Texas ranks 2nd in the nation for its wind energy production. According to the U.S. Department of Energy, we have this kind of Texan potential with Class 3 to Class 5 wind ratings right here in Western Michigan. We can do better then this coal-burning plant. Ask Mr. Tondu to try again. Ask him to go back to Texas and bring some of those wind farms back with him.

Thank you.

(Attachment #33)

(Attachment #34)

PUBLIC HEARING COMMENTS
BRETT HAMILTON

Some people would like to try and convince this planning commission that this process is being "rushed". I have been following this project for a long time, and it certainly has not been rushed.

I first heard about this project about two years ago.

Since then, I've attended lots of meetings, first over in Filer Township, when Tondu was looking at doing the project on the Drop Forge, and now here with the Planning Commission.

The Planning Commission was first informed that this project was being considered in the city back in the summer of 2003.

Starting in September, an application was filed and regular meetings were held. All through October, representatives from Tondu met with the Commissioners in work sessions. I don't recall seeing any of these people there during that time. In fact, I'd say at most of those meetings there were less than a half a dozen people in the audience.

The City has hired an independent planning consultant to review this entire process, along with multiple engineers and attorneys. I feel confident they are doing a complete, thorough review of this application.

It's only been in the last 2 or 3 months that all of these people have started showing up at meetings, giving hour upon hour of public comment, trying to stall or stop this project from even being voted on. These are mostly just opinions, which is fine. But when it comes to the scientific issues, please listen to the people with the credentials.

Most importantly, tonight I'd like to encourage the commission to bring this issue to a vote. Don't allow this to be stalled endlessly. The Northern Lights project is dividing this community. It is time to move this project forward and to vote on it – either approving or denying it – and allow this community to heal.

I feel this is an excellent project with great benefits to the community and state. I urge you to vote yes.

Memo

Date: 2/24/2004

To: City of Manistee, Planning Commission

Cc:

From: Brett Hamilton

RE: **Items Related to the Northern Lights Project**

I downloaded the following information on the NPDES wastewater discharge permit process from the Michigan Department of Environmental Quality's website. I thought it may be helpful in broadening your understanding of the requirements the DEQ places on new sources of treated wastewater for a facility such as the Northern Lights Project.

With the Northern Lights being a new source of wastewater discharge, it must be treated before going into Manistee Lake and must meet the most stringent regulations, unlike permits that have been in place for a long period of time. This insures that the

I've also included some educational information on Selective Catalytic Reduction (SCR) technology for the reduction of NOx. An SCR will be included in the emission control equipment of the Northern Lights Plant. This information is from the Foster Wheeler website.

I urge the planning commission to support this project. The jobs it will bring to the community along with the additional revenues it will pay for services make it a good choice for Manistee.

(Attachment #34)

Agency: Michigan Department of Environmental Quality

Who needs an NPDES permit?

Anyone discharging, or proposing to discharge, waste or wastewater into the surface waters of the State is required by law to obtain a National Pollutant Discharge Elimination System (NPDES) permit. The NPDES program is intended to control direct discharge into the surface waters of the State by imposing effluent limits and other conditions necessary to meet State and federal requirements.

The NPDES program regulates pollutants discharged directly into waterways from wastewater sources. Indirect dischargers (those who discharge to a municipal treatment facility via a sanitary sewer) are not required to have an NPDES permit. Discharge to a storm sewer does not go to a municipal treatment facility, and is considered a direct discharge. Discharge to a municipal treatment facility may require a permit from the municipality under the Industrial Pretreatment Program.

http://www.michigan.gov/deq/0,1607,7-135-3313_3682_3713-10200--,00.html

Agency: Environmental Quality

National Pollutant Discharge Elimination System

Perhaps the most notable goal of the Act was the elimination of discharge of pollutants into navigable waters by 1985. This goal was not realized, but remains a principle for establishing permit requirements. The Act had an interim goal to achieve "water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water" by July 1, 1983. This is more commonly known as the "fishable, swimmable" goal.

The enactment of the 1972 amendments marked a distinct change in the philosophy of water pollution in the United States. The amendments maintained the water quality-based controls, but also included techonology-based control strategies. The treatment technology-based discharge standards are promulgated by the U.S. Environmental Protection Agency (EPA) and are based on the category of the facility. Dischargers are placed in categories based on industrial processes or on the type of wastewaters generated. As treatment technology improves, these federal standards are expected to become more restrictive in order to progress toward the goal of zero discharge. As permits expire they must be reissued with limits reflecting the most recent treatment technology standards.

The Act also contains four important principles:

1. The discharge of pollutants to navigable waters is not a right.
2. A discharge permit is required to use public resources for waste disposal and limits the amount of pollutants that may be discharged.
3. Wastewater must be treated with the best treatment technology economically acheivable - regardless of the condition of the receiving water.
4. Effluent limits must be based on treatment technology performance, but more stringent limits may be imposed if the technology-based limits do not prevent violations of water quality standards in the receiving water.

The first round of NPDES permits issued between 1972 and 1976 provided for control of a number of traditionally regulated pollutants, but focused on 5-day biochemical oxygen demand (BOD_5), total suspended solids (TSS), pH, oil and grease, and some metals, by requiring the use of the Best Practicable Control Technology currently available (BPT). The Act established a July 1, 1977, deadline for all facilities to be in compliance with BPT. Additonally, the Act established the compliance deadline for installing Best Available Technology Economically Achievable (BAT) as July 1, 1983. Most of the major permits issued to industrial facilities in the first round of NPDES permitting contained effluent limitations based on Best Professional Judgment (BPJ) because regulations prescribing nationally uniform, technology-based effluent limitations were generally unavailable.

The 1977 amendments to the legislation, known as the Clean Water Act (CWA) of 1977, shifted emphasis from controlling conventional pollutants to controlling toxic discharges. This era of toxic pollution control is referred to as the second round of permitting. The concept of BAT controls was clarified and expanded to include toxic pollutants. Hence, the compliance deadline for BAT was extended to July 1, 1984. The conventional pollutants (BOD_5, TSS, pH, fecal coliform and oil and grease) controlled by BPT in the first round of permitting were now subject to a new level of control, termed Best Conventional Pollutant Control Technology (BCT). The compliance deadline for meeting BCT was also July 1, 1984.

In addition to treatment technology-based standards, the Clean Water Act also required that minimum receiving water quality standards be achieved. Water quality standards are promulgated by the states. The Michigan standards are designed to not only protect for aquatic life ("fishable") and recreation ("swimmable"), but also for all other uses of the receiving waters, including agriculture, public and industrial water supply, and navigation.

On February 4, 1987, Congress amended the CWA with the Water Quality Act (WQA) of 1987. The amendments outlined a strategy to accomplish the goal of meeting water quality standards set by the States. The WQA required all States to identify waters that were not expected to meet water quality standards after technology-based controls on point sources have been imposed. The State must then prepare an individual control strategy to reduce toxics from point and nonpoint sources in order to meet the water quality standards. Among other measures, these plans were expected to address control of pollutants beyond technology-based levels.

The WQA once again extended the time to meet BAT and BCT effluent limitations. The new compaliance deadline was no later than March 31, 1989. The WQA also established new schedules for industrial and municipal storm water discharges to be regulated by NPDES permits. Industrial storm water discharges must meet the equivalent of BCT/BAT effluent quality. Discharges from municipal separate storm sewer systems (MS4) require controls to reduce the discharge of pollutants to the maximum extent practicable (MEP). Additionally, the WQA requires EPA to identify toxics in sewage sludge and establish numerical limits to control these pollutants.

The WQA also established a statutory anti-backsliding requirement that will not allow an existing permit to be modified or reissued with less stringent effluent limitations, standards, or conditions than those already imposed. There are a few situations under which exceptions can be made, including when the permittee was unable to achieve the previous permit limits and when production is increased.

http://www.michigan.gov/deq/0,1607,7-135-3313_3682_3713-10197--,00.html

(Attachment #34)

Temperature

Thermal pollution occurs when humans change the temperature of a body of water. The most common point source of thermal pollution is cooling water, which is used to cool machinery. Thermal pollution may also be caused by stormwater runoff from warm surfaces such as streets and parking lots. Soil erosion is another cause, since it can cause cloudy conditions in a water body. Cloudy water absorbs the sun's rays, resulting in a rise in water temperature. Thermal pollution may even be caused by the removal of trees and vegetation which normally shade the water body.

Thermal pollution can result in significant changes to the aquatic environment. Most aquatic organisms are adapted to survive within a specific temperature range. As temperatures increase, cold water species, such as trout and stonefly nymphs, may be replaced by warmwater species, like carp and dragonfly nymphs. Thermal pollution may also increase the extent to which fish are vulnerable to toxic compounds, parasites, and disease. If temperatures reach extremes of heat or cold, few organisms will survive.

In addition to thermal pollutions' direct effects on aquatic life, there are numerous indirect effects. Thermal pollution results in lowered levels of dissolved oxygen, since cooler water can hold more oxygen than warmer water. Low dissolved oxygen levels will cause oxygen-sensitive species to die.

Photosynthesis and plant growth increase with higher water temperatures, resulting in more plants. When these plants die, they are decomposed by bacteria that consume oxygen. This can result in a further drop in dissolved oxygen levels.

The metabolic rate of fish and aquatic organisms also increases with increasing water temperatures, and additional oxygen is required for respiration. Life cycles of aquatic insects may speed up in response to higher water temperatures. Animals that feed on these insects may be harmed, especially birds that depend on aquatic insects emerging at specific times during their migratory flights.

Water Quality Standards for Temperature

Rules 69 through 75 of the Michigan Water Quality Standards (Part 4 of Act 451) specify temperature standards which must be met in the Great Lakes and connecting waters, inland lakes, and rivers, streams and impoundments. The rules state that the Great Lakes and connecting waters and inland lakes shall not receive a heat load which increases the temperature of the receiving water more than 3 degrees Fahrenheit above the existing natural water temperature (after mixing with the receiving water). Rivers, streams and impoundments shall not receive a heat load which increases the temperature of the receiving water more than 2 degrees Fahrenheit for coldwater fisheries, and 5 degrees Fahrenheit for warmwater fisheries.

These waters shall not receive a heat load which increases the temperature of the receiving water above monthly maximum temperatures (after mixing). Monthly maximum temperatures for each water body or grouping of water bodies are listed in the rules.

The rules state that inland lakes shall not receive a heat load which would increase the temperature of the hypolimnion (the dense, cooler layer of water at the bottom of a lake) or decrease its volume. Further provisions protect migrating salmon populations, stating that warmwater rivers and inland lakes serving as principal migratory routes shall not receive a heat load which may adversely affect salmonid migration.

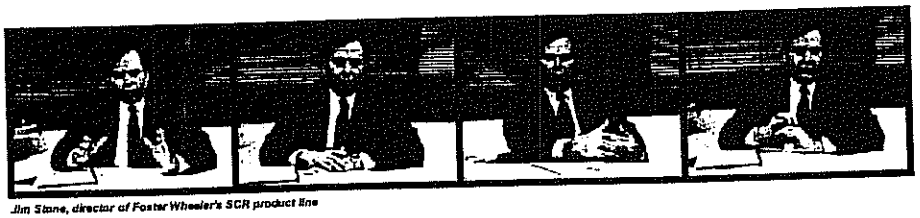
Effluent Limitations for Temperature in NPDES Permits

Temperature limits are necessary if a facility's effluent has the potential to raise the temperature of the receiving water above acceptable levels. Limits are often needed for facilities discharging noncontact cooling water. Effluent monitoring may be required to gain more information about a facility's effluent.

FROM THE DEQ's WEDSITE ON NPDES PERMITS:

http://www.deq.state.mi.us/documents/deq-swq-npdes-Temperature.pdf

(Attachment #34)



Jim Stone, director of Foster Wheeler's SCR product line

What's All This Fuss About SCRs?

As pressure builds on power facilities to reduce their NO_x production, Foster Wheeler is positioned to capture a significant share of the growing market for SCRs. In this interview, Jim Stone, director of Foster Wheeler's SCR product line, describes SCR technology, the markets for this technology, and the reasons why Foster Wheeler is aggressively pursuing this opportunity.

FWR: What is an SCR?

Stone: The letters "SCR" stand for Selective Catalytic Reduction. An SCR is a pollution control device that reduces nitrogen oxide pollution, or what is commonly called NO_x. These NO_x compounds are by-products of the combustion process found in boiler and gas turbine flue gas.

FWR: How does the process work?

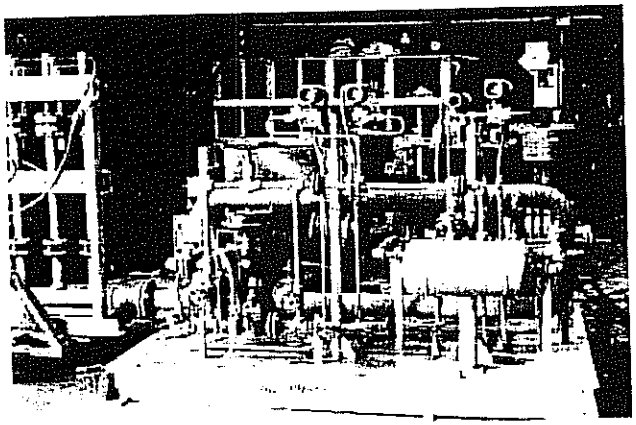
Stone: Very simply, it is a chemical reduction of oxygen atoms from NO_x compounds. Ammonia is commonly used as the reagent and the primary reduction reaction [expressed as $4NO+4NH_3+O_2 \rightarrow 4N_2+6H_2O$] produces elemental nitrogen [N_2] and water vapor [H_2O]. The process is "selective" in that it removes oxygen from the nitrogen compounds, but not from the carbon compounds, sulfur compounds, or other oxygenated compounds found in flue gas. The term "catalytic" refers to the catalyst that is used to facilitate the chemical reduction reaction. This catalyst is similar to the catalyst found in your car.

FWR: Why does the process need a catalyst?

Stone: The ammonia NO_x reduction reaction can take place without the aid of catalysts at temperatures around 1500°F. However, in typical applications, the combustion gas is considerably below 1500°F and so a catalyst is required to drive the reactions forward.

FWR: Why the sudden interest in SCRs?

Stone: The SCR market is driven by environmental regulations. The current market for SCRs is primarily in the United States, and it is being driven by the environmental regulations established by the Environmental Protection Agency in response to the 1990 Amendments to the Clean Air Act.



FWR: What about opportunities for the technology in Asian and Euro markets?

Stone: The European and Japanese markets have largely completed their SCR installations, although there are some opportunities in Taiwan. Most of the developing areas of the world do not yet have the strict environmental regulations that require the use of SCRs.

FWR: What is the impact of EPA ozone directives on utilities?

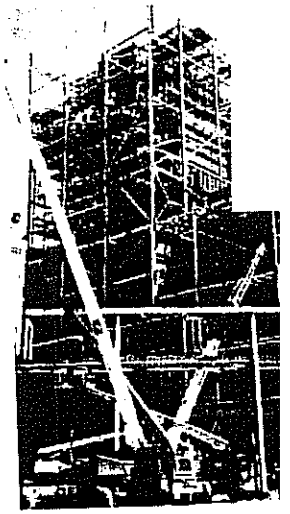
Stone: The EPA has identified the eastern seaboard states as having serious ozone pollution—particularly in the summer months. However, these states have shown that a significant portion of this ozone pollution is the result of NO_x emissions from large power plants in the Midwest. Ultimately, over 20 states may be affected by these regulations. Also, California and Texas have implemented strict NO_x regulations. Federal regulations mandate the acceptable level of ozone in the air to be 120 parts per billion. The EPA directed each affected state to develop a State Implementation Plan, called SIP, to achieve this ozone level by the summer of 2003. SIPs will require the electric utilities to reduce their NO_x production on the order of 75% to 80% from current levels during the summer months. The new levels are expected to average 0.15 lbs/mmBtu measured at the stack.

FWR: What other technologies are available to lower NO_x levels?

Stone: Low NO_x burners, capable of achieving as low as 0.25 lbs/mmBtu, over-fire air modifications, SCRs and SNCRs [non-catalytic units] are expected to be the most common technologies used to achieve these levels. Foster Wheeler can supply all of these technologies. Repowering with gas turbines or low-emission, solid-fuel boilers like circulating fluidized-bed boilers will also be considered. The utilities are free to select the best technology or combination of technologies to achieve their SIP-mandated levels on a system-wide average basis.

FWR: What are the expectations for meeting the 2003 target on ozone levels?

Stone: Ongoing litigation has delayed implementation of the EPA's regulations. On March 3rd this year the EPA won an appeal of a previous ruling against these regulations. In ruling in favor of the EPA, the judges said that EPA's regulation "reasonably establishes reduction levels" while leaving the question of how to accomplish those reductions to the states. At this time, it's unknown if there will be further appeals, but there are some signs that negotiated settlements will be the ultimate outcome. In one case, the EPA has already reached a settlement with a utility. The settlement accepted a delayed implementation date, but retained the overall NO_x reduction requirement. Realistically, the industry's capacity to supply NO_x reduction technology is not sufficient to support the 2003 target date. In Foster Wheeler's view, more negotiated settlements with delayed implementation dates seem likely.



http://www.fwc.com/publications/heat/heat_pdf/spring00/projectf.pdf

(Attachment #34)

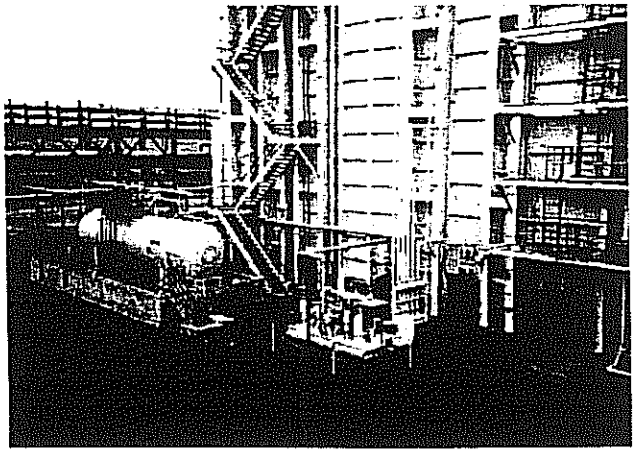
FWR: How do NO_x credits fit into the picture?
Stone: Most State Implementation Plans include trading of NO_x credits as an alternative to installing NO_x reduction equipment. The concept is to let the free market decide the most economical way to achieve cleaner air. Under a NO_x credits trading program, utilities may elect to over-control their NO_x emissions at one plant and use the credits internally or sell the credits on the open market. The EPA's regulations are satisfied as long as the state's overall NO_x reduction targets are achieved.

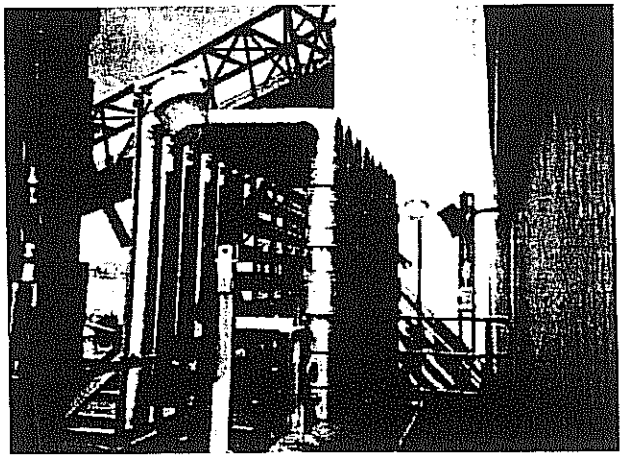
FWR: How big is the SCR Market?
Stone: Due to these environmental regulations, all new pulverized-coal boilers and gas turbines in the U.S. will require SCRs, and it will be necessary to retrofit SCRs to many existing boilers, various process plants and refineries and gas turbines. Thus, the potential market for SCRs is very large. Some optimistic estimates put the U.S. market at $10 billion over the next five years. However, as I mentioned, litigation and negotiated settlements are expected to delay the market, and alternative solutions, such as low NO_x burners, repowering, etc., are expected to reduce the size of this market. A conservative estimate is that the market will eventually be about $5 billion over 10 years.

FWR: What are your current opportunities?
Stone: We are currently executing alliances with two utilities to design, supply and/or erect their SCRs, and we are in discussions with several other utilities. We know the customers, and we understand their changing needs in the newly competitive electrical market. We are also supplying SCRs to several new combined-cycle plants.

FWR: What is Foster Wheeler's typical scope of supply?
Stone: In a typical SCR retrofit application, we act as the SCR system integrator. Foster Wheeler has the complete capabilities to supply SCRs on a turnkey engineer, procure and construct (EPC) basis if desired by the customer. Depending on the size of the power plant and who supplies the catalyst and construction, the contract value can range from $15-40 million.

FWR: How does an SCR work?
Stone: In a typical boiler retrofit application, the SCR is located in new flues added between the economizer outlet and the air heater inlet. Ammonia is injected into the flue gas a sufficient distance prior to the catalyst to insure mixing. Then the flue gas/ammonia mixture passes over the catalyst where the reduction reaction occurs. The by-products of the reaction (N_2 and H_2O) and any unreacted ammonia (typically regulated to less than 5 parts per million) flow out the stack. Current regulations only require NO_x control during the summer months, and so most SCRs are being designed to operate from May through September and to be off-line for the other seven months of the year.





FWR: What are the components of the system?
Stone: Typical components of an SCR system include: engineering and design; the ammonia system; structural steel (to support new flues and catalyst); new flues; modifications to existing flues; measuring instruments and control system modifications; fan, motor and electrical modifications; the catalyst (which is sometimes purchased directly by the customer); and construction.

FWR: What type of ammonia system is required?
Stone: Ammonia can be supplied either in anhydrous form (without dilution in water) or aqueous form. With both types, the ammonia system includes tanks, pumps, dilution or vaporization systems, and distribution grid. Foster Wheeler is unique in the industry because we can design the ammonia system in-house. In fact, Foster Wheeler has designed and supplied many ammonia manufacturing plants. Our environmental services unit helps our customers with preparation of the risk management plans and process safety manuals needed to permit an ammonia storage and handling facility.

FWR: Who are the competitors in the SCR market?
Stone: All of our traditional competitors, plus a handful of newcomers are competing for a share of this market. The customers are taking a number of different contracting approaches including the traditional fixed-price bid to specification approach, as well as some innovative "alliance" contracting approaches.

FWR: What are Foster Wheeler's advantages in this market?
Stone: Among the competitors, Foster Wheeler has the most SCR experience and the most coal-fired SCR experience. We have been supplying SCRs for almost 20 years, and our longest-running, coal-fired application has been operating for six years. Foster Wheeler also has extensive alliance experience and demonstrated success in executing projects in an open-book alliance contract.

FWR: Why choose Foster Wheeler over other suppliers?
Stone: Foster Wheeler is unique in that we offer complete engineering, procurement and construction (EPC) without subcontracting or joint venturing. Our ammonia handling expertise is unmatched in the industry, and we can execute 100% of the engineering required for the ammonia system in-house. Plus, for customers who need more than just SCR technology, we can offer them a full range of NO_x reduction technologies to meet their specific needs. The bottom line is that we have the knowledge, skills and synergy among Foster Wheeler units to execute these projects worldwide. These capabilities give us a strategic advantage and a unique position in the marketplace. ◻

February 26, 2004

Manistee City Planning Commission:

As you know, when making a decision on a Special Use Permit, the Planning Commission must consider several standards. One standard is that the proposed use must be "reasonable and designed to protect the health, safety and welfare of the community". Because the scale and scope of the proposed coal-fueled plant is so large, the community that it will affect is also very large. It will affect the City of Manistee as well as the county and surrounding region.

I find it very interesting that the Tondu Corporation of Houston, Texas did not include a public health assessment of the project in its Special Use Permit application. I am curious how Tondu Corporation thought you would be able to determine the effects of this project on the health safety and welfare of this community without supplying a health assessment.
How can you make an accurate decision regarding the health, safety and welfare of your community without any information from the applicant about the health effects from the coal-fueled plant?

For Example: Has Tondu Corporation supplied you with any information about the health effects of having a 600,000 square foot forty foot tall, unenclosed coal pile in a residential area? I have read most, if not all of the documents regarding the Special Use Permit application and have not seen anything about the health and safety of the community; much less anything specific about the health effects from having an unenclosed coal pile in a residential area. The documents submitted by Tondu Corporation of Houston Texas, do discuss how much fugitive dust is expected to be created and how it is expected to be controlled but they do not discuss the health effects from the fugitive dust and how it will affect the residential neighborhood that surrounds it. Because of this lack of informat6ion I believe the application does not comply with the Special Use Permit standard of protecting the health safety and welfare of this community and should be denied.

A couple weeks ago someone was standing in front of this commission talking about how the sound of our children will change if this project goes through. He was referring to the toxic effects of mercury on children.

I would like to say tonight that the sound of our children has already changed. Our children cough and wheeze more than they used to. In the last 20 years childhood asthma rates have increased 160% in this country. According to the American Lung Association, in 2003, Manistee County had approximately 480 children with asthma. About 1/4 of those children live in the city of Manistee.

So, we have roughly 500 children in our county with asthma right now and we have no Environmental Impact Statement or health assessment from Tondu Corporation about the impact this coal plant will have on our children's lungs. How are you expected to make a decision on the health, safety and welfare of these children without this information?

When my daughter was diagnosed with asthma last winter, I asked the pediatrician why so many children we knew had asthma? She told me, in large part, it had to do with declining air quality. Naturally, being a concerned Mom, I started to learn about our air quality and what I learned shocked me. I learned that while we live in a mostly rural county, we breathe urban quality air. I called the American Lung Association – a very trusted organization – and acquired the "state of the air report" for 2002 and this is what I discovered:

Ozone gas is extremely irritating to lung tissue and can cause long – term damage especially for children. High ozone levels are particularly dangerous for people with asthma. When ozone levels are high, more people with asthma suffer attacks that require a doctor's visit or use of extra medication. Children are especially vulnerable to the harmful effects of ozone because they breathe 50% more air per pound of body weight than adults and also in the summer months when ozone levels are higher, they play actively outdoors breathing ozone laden air deeply into their lungs. Coal-fueled plants whether antiquated or state-of-the-art are the primary source of nitrogen oxides & volatile organic compounds – the two components of ozone. Tondu's coal plant would emit 2,666 tons per year of volatile organic compounds. How does generating more components for ozone protect the health of the community? IT DOESN'T. Based on this information, the application does not comply with the Special Use Permit Standard of protecting the health, safety and welfare of the community and should be denied.

Sincerely,

Jan Shireman
10040 Alkire Road
Bear Lake, MI 49614

(Attachment #35)

Alex Tomaszewski

(NEED) National Energy Education Development Project based in Washington D.C.

Dear Planning Commison.

I am not for the proposed coal fueled power plant. We can use a lot of other things to produce energy instead of coal, like Windpower. Coal is just the cheaper way to go. So why not do the better thing even if it costs more?

The core democratic value I'm going to use is individual rights. This is what making me happy. This coal fueled power plant is not for the better of Manistee. This coal fueled powerplant will ruin Manistee Township.

This coal fueled power plant will emit Mercury. Mercury will produce Cancer which will Kill. Mercury will also get in our drinking water. Please think of my future I want to live. Also Governor Granholm has proposed to eliminate mercury emissions in Michigan by 2020, so why shut down the plant in sixteen years when you don't have to build it in the first place.

For these reasons I am requesting that you deny the application for the coal fueled power plant.

Thank you

Sincerely,
Alex Tomaszewski

(Attachment #36)

By George Brown

National Energy Education Development

Dear Planning Commission

I'm for the new power plant because, in years to come our town will grow more and more so we will need more power. So, if our town grows with only one power plant we will start to have black outs so it would be for this fact if we let the power plant come to Manistee. The power plant is a good idea for the fact that we will need more power.

My core democratic value for this situation would be, for the Common Good this supports my position because, it will benefit the people of the community. Also it will help our energy supply. It will also produce more then 50 jobs for the community.

Here are some facts that support my position. As long as the power plant follows the EPAS emissions it won't cause any harm or hazards for the public. Also Tenka has been burning coal for electricity for 14 years and it has not hurt anyone over those years. So I don't see a problem trying to let a new one come in.

For these reasons I am requesting that you approve the application.

My name is Ethan Thompson. My address is
I am working on the National Energy Education Development Project at Kennedy Elementary.

I am opposed to the proposed coal fueled power plant because it will pollute the city's air. I have a brother who has asthma and I am worried about how this will affect his asthma. I also think this plant will pollute Manistee Lake, which flows into Lake Michigan, even more than it already is. As a fisherman, I am concerned about the water quality and the health of the fish I catch and eat. If none of the power is going to stay in Manistee, why does the plant have to be built here?

I plan to grow up and live here in Manistee. The thought of what this plant will do to the environment concerns me. I am afraid that I won't be able to pursue the things that make me happy, like fishing and hunting.

Our lake already contains too much mercury and this plant will only add more. We already know mercury in small amounts can cause health problems. I see no benefit to Manistee out of building this plant. A few jobs are not worth the risk involved.

For these reasons, I am requesting that the planning commission deny the application.

I am Marty Holtgren, currently employed as a fish biologist for the Little River Band of Ottawa Indians. My past employment was with the Indiana and Michigan Department of Natural Resources Fisheries Divisions. I have a Bachelor's degree in biology and a Master's degree in fisheries and aquatic ecology. I have a specialty in lake sturgeon biology. I have been involved in issues regarding contaminants in fish and participated in a National Forum on Contaminants in Fish hosted by the EPA and American Fisheries Society.

I am opposed to the proposed coal fired power plant as advanced by the Tondu Corporation.

There will be negative effects imposed from the Northern Lights project on fish and on those who consume fish. It is well understood that coal-fired power plants are the main source of anthropogenic mercury (EPA 1998 – "Mercury emissions and electric utilities"), it is also well understood that the proposed Northern Lights project would deposit many pounds of mercury into our regional lakes and streams. The estimated amount of mercury emitted from the proposed plant keeps changing, however, this does not change the fact – a considerable amount of mercury will be emitted.

The approval of the SUP is contingent on certain provisions, one being that the operation is, "reasonable and designed to protect the health, safety, and welfare of the community". The answer to this provision is unequivocally no, both from a fishery and fish consumption perspective, the proposed operation will not "protect the health, safety, and welfare of the community." Here are a few examples as support.

The Michigan Department of Public Health has issued a special consumption advisory for all inland lakes in Michigan. This special advisory is because of mercury. This special advisory includes Manistee Lake, Tippy Dam Pond, Crystal Lake, Bear Lake, and the list continues to every lake within Michigan. To claim that the mercury emitted from Northern Lights would not have a negative effect is ignorant, because within the state we are already at levels that trigger consumption advisories. Because of the current levels of mercury in fish within inland lakes in Michigan advisories are in place to limit consumption of certain species. For the general population the advisory is one meal per week. For women of childbearing age and children under 15 they should not eat more than one meal per month of these fish. The fish included in this advisory are walleye, northern pike, largemouth bass, and smallmouth bass. The list continues with perch, crappie and rock bass over 9 inches. These species all are fished and consumed in this community. Just look on Manistee Lake at the

numerous ice shanties where northern pike are being speared. I am sure none of those fisherman want the northern pike they catch to be further degraded and pose larger risks due to mercury poisoning.

Mercury cannot be removed from fish by special trimming and cooking techniques because it is in the fish flesh.

The Tribe and the State of Michigan are currently conducting contaminant sampling. The Tribe's sampling includes Manistee Lake and Tippy Dam Pond. With the sampling we will continue to evaluate the health of the fish. I fear the day, if this facility is approved, that our fish are more contaminated and more poisonous to those that consume them.

The poisoning effects from fish to humans are well documented. In the National Health and Nutrition Examination Surveys in 1999 and 2000 the study found that fish consumption correlated closely with blood mercury. The greater the fish consumption the higher the mercury concentrations. This community eats fish, this is evidenced by our boat launches and piers packed with fisherman and fisherwomen. Therefore, this community is at risk of mercury poisoning.

As a father of newborns and with a family that consumes fish, I was alarmed at a recent EPA study about fetal mercury contamination. In a Jan. 26 presentation at EPA's National Forum on Contaminants in Fish, in San Diego, EPA biochemist Kathryn Mahaffey stated that the umbilical cord blood, which feeds the fetus, is higher in levels of mercury than the mother's blood. So tests of mercury contamination in mothers has actually underestimated fetal contamination. Mercury is also transferred through breast milk. It is estimated that 1 in 6 women of childbearing age have blood mercury concentrations higher than the level considered safe by the EPA. EPA scientists recently estimated that 630,000 newborns annually have unsafe levels of mercury in their blood. Women and children are commonly exposed to mercury when they eat contaminated fish .

You, as a planning commission, are responsible for assuring the health, safety, and welfare of the community. I would urge you to weigh heavily these negative impacts the Northern Lights facility would bring. The facts are clear, that mercury will be emitted, the fish will be further poisoned and so will we.

Thank you for you time.

February 19, 2004

To: City of Manistee Planning Commission

RE: FACTS ON EMPLOYMENT & WAGES AT THE NORTHERN LIGHTS PLANT

There's been some confusion over how much the payroll from this plant will be. Some people are saying the payroll is only $2 million when it's really closer to $4 million.

According to Appendix C of Tondu's Phase 1 Report :

$ 2.2 million in wages
plus overtime
plus benefits
Equals a total payroll of $3.4 million in 2004 dollars

Estimated total payroll with benefits in 2008 dollars: $3.8 million

This plant won't start operations until at least 2008, so it's more accurate to use that figure, with the overtime and benefits, don't you think?

There's also a note on the bottom indicating that the employment figure of 51 people does not include any ash or lime trucking positions. I'm sure when those jobs are added in, the employment is going to be about 60 people.

I have also heard people saying that local union people won't get these construction jobs. This is NOT true! I know that if this project is approved I will work on the construction of it, at good wages and I will in turn spend money at many local establishments here in Manistee.

I urge you to support this project.

Mark Dibenedetto
Wellston

Northern Lights Project Economic Analysis
Labor Cost
October 29, 2003

2004 Dollars

	Wages			Base Pay		OT 1.5 Multiplier	Benefits 36%	Total Labor
Adminstration								
General Manager	1	$120,000		$ 120,000	0%	$ -	$ 43,200	$ 163,200
Admin. Assistant	2	$ 30,000		$ 60,000	0%	$ -	$ 21,600	$ 81,600
Business Manager	1	$ 75,000		$ 75,000	0%	$ -	$ 27,000	$ 102,000
Bookkeeper	1	$ 35,000		$ 35,000	0%	$ -	$ 12,600	$ 47,600
Plant Engineer	1	$ 85,000		$ 85,000	0%	$ -	$ 30,600	$ 115,600
Compliance Engineer	1	$ 65,000		$ 65,000	0%	$ -	$ 23,400	$ 88,400
Chemist	1	$ 50,000		$ 50,000	0%	$ -	$ 18,000	$ 68,000
lab Tech.	2	$ 35,000		$ 70,000	0%	$ -	$ 25,200	$ 95,200
Subtotal	10			$ 560,000		$ -	$ 201,600	$ 761,600
Maintenance								
Maint. Manager	1	$ 85,000		$ 85,000	0%	$ -	$ 30,600	$ 115,600
Materials Mgr./Planner	1	$ 45,000		$ 45,000	0%	$ -	$ 16,200	$ 61,200
Maint. Clerk	1	$ 28,000		$ 28,000	0%	$ -	$ 10,080	$ 38,080
Mechanics	5	$ 19.00	/hr	$ 190,000	15%	$ 42,750	$ 83,790	$ 316,540
Electricians	3	$ 19.00	/hr	$ 114,000	15%	$ 25,650	$ 50,274	$ 189,924
I&C Techs.	3	$ 21.00	/hr	$ 126,000	15%	$ 28,350	$ 55,566	$ 209,916
Helper	2	$ 13.50	/hr	$ 54,000	10%	$ 8,100	$ 22,356	$ 84,456
Subtotal	16			$ 642,000		$104,850	$ 268,866	$ 1,015,716
Operations								
Operations Manager	1	$ 85,000		$ 85,000	0%	$ -	$ 30,600	$ 115,600
Lead Operator	4	$ 25.00	/hr	$ 200,000	15%	$ 45,000	$ 88,200	$ 333,200
Plant Operator	4	$ 23.00	/hr	$ 184,000	15%	$ 41,400	$ 81,144	$ 306,544
Relief Operators	4	$ 23.00	/hr	$ 184,000	15%	$ 41,400	$ 81,144	$ 306,544
Utility Operators	3	$ 18.00	/hr	$ 108,000	10%	$ 16,200	$ 44,712	$ 168,912
Water & Wastewtr Oper.	3	$ 19.00	/hr	$ 114,000	10%	$ 17,100	$ 47,196	$ 178,296
Day laborer (temps)	2	$ 12.50	/hr	$ 50,000	0%	$ -	$ 18,000	$ 68,000
Fuel Supply Operators	4	$ 18.00	/hr	$ 144,000	0%	$ -	$ 51,840	$ 195,840
Subtotal	25			$ 1,069,000		$161,100	$ 442,836	$ 1,672,936
SUMMARY								
Total	51			$ 2,271,000		$265,950	$ 913,302	$ 3,450,252

2008 Dollars

	Inflation Rate			
SUMMARY	2.5%	$ 2,506,759	$293,559	$ 1,008,115	$ 3,808,433

Notes:
Does not include ash trucking or lime trucking people who are assumed to be contract people.

HEALTH EFFECTS OF OZONE

The American Lung Association *State of the Air* reports focus on ozone, one of the most hazardous of the common air pollutants. Ozone poses health dangers for millions of people across the country, in both big and small metropolitan areas.

Dangers of Ozone

Ozone is an intensely irritating gas. At levels routinely found in the air in many American cities during summer months, ozone can damage the lungs and airways, causing them to become inflamed, reddened and swollen. This response can cause coughing, burning sensations and shortness of breath.

Research on the effects of prolonged exposure to relatively low levels of ozone has found reductions in lung function, inflammation of the lung lining and breathing discomfort. In studies of animals, ozone exposure has been found to increase susceptibility to bacterial pneumonia infection. One study of 16 Canadian cities over a 10-year period found that air pollution, including ozone, at relatively low concentrations, is associated with excess admissions to the hospital for respiratory diseases.[1]

Ozone levels generally rise during the May through September period when higher temperatures and the increased amount of sunlight combine with the stagnant atmospheric conditions that are associated with ozone air pollution episodes.

Recently, scientists have begun to focus on the effects of long-term, repeated exposure to high levels of ozone. A study of college freshmen who were lifelong residents of California found a strong relationship between lifetime ozone exposure and reduced lung function.[2] Additional evidence comes from a study of 72 cadets at the U.S. Military Academy at West Point, who attended a summer training program in which they spent an average of 11 hours a day outdoors. The study found that the 21 cadets who attended summer training in Fort Dix, New Jersey, an area with elevated ozone levels, had a larger drop in lung function over the summer, compared with the cadets who trained at sites in Georgia, Missouri and Oklahoma with lower ozone levels.[3]

High ozone levels are particularly dangerous for people with asthma. When ozone levels are high, more people with asthma suffer attacks that require a doctor's visit or use of extra medication.

Children are Vulnerable

A number of recent studies have added to the evidence that children are especially vulnerable to the harmful effects of ozone. Children spend significantly more time outdoors, especially in the summertime when ozone levels are the highest. Children also spend more time

exercising, which causes them to breathe in more air, and therefore bring more pollution deep into the lungs.

A recent study of 1,150 children followed for three years suggests that long-term ambient ozone exposure might negatively affect the growth of human lung function. The researchers observed small but consistent decrements in lung function in the children that were associated with ambient ozone exposure.[4]

Researchers have found that when air pollution worsens, more children stay home sick from school due to respiratory illness. University of Southern California researchers found that school absences due to sore throat, coughs, asthma attacks and similar problems increase in the three to five days after a significant rise in ozone.[5] Another study of schoolchildren in Nevada also found that increases in ozone levels were associated with an increase in the school absentee rate.[6]

Children with asthma are particularly susceptible to ozone. Researchers at the University of Southern California conducted a 10-year prospective study of Southern California public school children, and found a statistically significant association between ozone exposure and decreased lung function in girls with asthma.[7] Another recent study found asthmatic children who had a low birthweight or a premature birth are especially susceptible to the effects of summer ozone.[8]

Children with asthma can benefit greatly from a reduction in ozone concentrations, as a study of the 1996 Summer Olympics in Atlanta demonstrates. The city made a concerted effort to reduce traffic congestion to enable spectators to get to the games. Public transit was enhanced, the downtown was closed to private cars, and businesses were encouraged to promote telecommuting and alternate work hours. The result: large and significant decreases in ozone concentrations. During this period, researchers found significant reductions in the number of urgent care visits, emergency care visits, and hospitalizations for asthma among children ages 1-16.[9]

A new study of children has found a possible link between playing team sports in a high-ozone area and an increase in the risk of developing asthma. Researchers at the University of Southern California in Los Angeles followed more than 3,500 children from 12 communities in southern California. None of the children had been diagnosed with asthma when they enrolled in the study, although some had a history of wheezing. After five years, 265 children had been diagnosed with asthma. Overall, children living in communities with high ozone levels who played team sports were more likely to develop asthma. The risk of asthma increased with each additional sport played by a child in a high-ozone community. [10]

The Elderly at Risk

For most people, breathing ability diminishes over time. So even the healthy elderly are at increased risk from exposure to ozone and other air pollutants, which further reduces their

(Attachment #39)

lung function. Ozone pollution also increases susceptibility to influenza, pneumonia and other infections, which are especially dangerous for the elderly. A study of the relationship between daily death rates in the elderly, outdoor air temperature and ozone levels in Belgium confirms the deadly potential of ozone for senior citizens. The study found an association between daily mortality in the elderly and ambient ozone concentration during the hot summer of 1994.[11] In addition, ozone can significantly worsen the condition of people with chronic bronchitis and emphysema, and since most of these diseases occur in the elderly population, these elderly are at special risk for exposure to ozone.

Ozone and the Air Quality Index

The Air Quality Index (AQI), established by the U.S. Environmental Protection Agency, is used by state and local agencies to report levels of air pollution. The AQI divides ambient concentrations of air pollution into categories, assigning each one a descriptor and color: Green (good); Yellow (moderate); Orange (unhealthy for sensitive groups); Red (unhealthy) Purple (very unhealthy). The American Lung Association defines sensitive groups for ozone to include children, the elderly, and people with lung disease including asthma, outdoor workers, and healthy adults who exercise outdoors.

State of the Air: 2002 finds only slight reductions in the number of Orange, Red and Purple days compared with last year's report. This year, with 18 more counties being monitored compared with last year's report, there was a total of 12,626 "Orange" days in counties being monitored for ozone—179 fewer days than the previous year. The number of "Red" days dropped from 1,505 to 1,388 during the same period. Purple days decreased from 209 in the 2001 report to 182 in this year's report. That's still more than 14,000 high-ozone days—2,370 more than two years before, when the same number of counties were monitored.

(Attachment #39)

International Brotherhood of

BOILERMAKERS • IRON SHIP BUILDERS BLACKSMITHS • FORGERS & HELPERS

JOHN MAREK
Business Manager
Secretary-Treasurer

LOCAL LODGE No. 169
5936 Chase Road
Dearborn, MI 48126
PH: 313-584-8520
FAX: 313-584-8777

February 26, 2004

Manistee Planning Commission;

I have been a Boilermaker for 32 years, and in that time I have worked in coal fired power plants through out Michigan. Most of the coal-fired power plants in our state were built in 50s and 60s. Coal burning technology available back in those days, regarding air pollution, was about the same as the technology available in the early 1900s. In the late 60s the owners of these plants began installing much needed air pollution equipment. This was a giant step forward by the federal government and the power utilities industry to protect the environment, not just here in the United States but the entire world.

Many of the coal fired power plants we currently have operating here in Michigan today, that supply our state with the bulk of our electricity, are old worn out antiquated facilities that have simply been upgraded. Please consider the fact that coal-burning technology has improved dramatically in the past 10 years, then consider the fact that many of the coal plants still in operation today are well over 40 years old. These old power plants are regulated under a different set of pollution standards then the plants that will be built today and in the future.

Coal will be the fuel of choice to supply Michigan's energy needs, there is no other fuel available that is as cost affective as coal for today's economy, and until new modern plants are built the old plants will continue to burn coal and pollute just as they are right now.

The Tondus' have exactly the right solution for today's environment and for today's economy, build modern, clean burning, and highly efficient power plants so we can tear down the old worn out antiquated power plants of the past. Much like the Tondus' have proposed to do with that old salt plant that is currently leaching pollutants into Manistee Lake as we argue over this permit.

All of us are apposed to pollution in our air and water, but we are also apposed to high-energy prices. Please approve this permit so we can move forward to improve our environment and at the same time protect our economic future, so we all can afford to pay our electric bills and our heating bills and help create some good solid living wage jobs for the people of Manistee.

Sincerely,

Charles C. Oyler
Business Agent, Boilermakers Local 169

(Attachment #40)

(Attachment #41)

AURORA ASSOCIATION RECOMMENDS DENIAL OF NORTHERN LIGHTS SPECIAL USE PERMIT

MANISTEE- After three months of fact-finding research and dialogue with local, regional, and national organizations, the Aurora Association announced this week that they are encouraging Manistee City Planning Commission to deny a special use permit for the proposed Northern Lights coal-fired plant.

Northern Lights is a proposed 425 megawatt coal-fired electric generation plant that will provide electricity for municipalities outside of the Manistee region. It is proposed to be owned by numerous cities such as Holland, Charlevoix, Grand Haven, Petosky, and others making the plant tax exempt.

The Aurora Association recommends a denial of this permit based on a variety of substantial issues including but not limited to the following:

- The applicant of the special use permit, Manistee Salt Works Development/Tondu Corporation, has not committed to paying full taxes for the proposed 700 million dollar facility. A full taxable value would exceed 16 million dollars annually. These tax dollars would go towards critical City and County services such as fire and safety, roads, schools and others. Tondu Corp. has proposed offering a small fraction of the full taxable value to Manistee City and County. This lack of financial benefit to Manistee is reason enough to deny this permit.

- The Manistee Salt Works/Tondu Corporation has submitted one set of plans for the Northern Lights project to the Manistee City Planning Commission and a significantly different set of plans to the Holland Bureau of Public Works, a primary investor. Specific numbers about jobs created, fly ash generated, and real dollars for the Manistee economy are some of the conflicting aspects of these different plans. The special use permit can be denied if the Planning Commission is not given accurate, consistent, and complete information from the applicant regarding this proposal.

- The assurance of the health, safety and welfare of the citizens of Manistee has not been established by the applicant. The proposed site for the Northern Lights plant is an existing source of contamination and there has been no plans submitted for the clean up of this site, only containment of the numerous pollutants. The criteria of overall health, safety and welfare specifically apply to the decision the planning commission will make. Emissions from this plant will contain significant amounts of particulate matter, mercury, sulfur dioxide, nitrogen oxide, volatile organic compounds, and lead. These contaminants are scientifically linked to cardiopulmonary disease, lung cancer, a lower immunity to disease, breathing and respiratory problems, and nervous system damage. Overall, these known effects are a compromise to the health, safety, and welfare of the citizens of Manistee and offer another reason the City Planning Commission can deny this special use permit.

The Aurora Association has been formed in response to the proposed "Northern Lights" electric generation plant. They advocate for a fully informed citizenry regarding this proposed project.

COPY

Cooperation Agreement

This Cooperation Agreement (the "Agreement") sets forth the terms and conditions whereby Tondu Corporation ("Tondu"), and Michigan Public Power Agency, and Michigan South Central Power Agency (the "Municipals") (collectively the "Participants" and individually a "Participant") agree to work together to evaluate the feasibility of jointly developing a coal fueled power plant (the "Plant" and the development of which is hereinafter referred to as the "Project").

Whereas, Tondu is an independent power plant development company with experience in developing, building, and operating coal fueled power plants, and

Whereas, the Municipals are users of the electricity and desire to explore the feasibility of participating in the development a coal fueled power plant to supply a portion of their future electricity requirements, and

Whereas, Tondu and the Municipals desire to work together to determine if an opportunity to jointly develop a coal fueled power plant can be identified.

Now, Therefore, the parties hereto agree to the following terms and conditions:

Section 1. Definitions
Capitalized terms used herein shall have the meanings defined as follows:

"Agreement" shall mean this Cooperation Agreement.

"Commitment to Proceed" shall mean the written agreement entered into among the Participants upon the completion of the Phase I effort committing the Participants to proceed with the final development of the Plant.

"Feasibility Study" shall mean the analysis of the feasibility of the Plant as more particularly described in Section 7.

"Management Committee" shall mean the committee formed by the Plant Owners to govern the operations and management of the Plant.

"Municipals" shall mean Michigan Public Power Agency, and Michigan South Central Power Agency.

"Participant" shall mean one of the parties to this Agreement.

"Phase I" shall mean the period of time within which certain work as described in Section 5 herein is completed.

"Phase II" shall mean the period of time within which certain work as described in Section 5 herein is completed.

"Phase III" shall mean the period of time within which certain work as described in Section 5 herein is completed.

"Phase IV" shall mean the period of time within which certain work as described in Section 5 herein is completed.

"Plant" shall mean the coal fueled power plant identified by the efforts of this Agreement that the Participants desire to develop.

"Plant Owners" shall mean those entities that have an ownership interest in the Plant.

"Plant Site" shall mean the property on which the Plant is located.

"Project" shall mean the development of the Plant.

"Project Concept" shall mean the current general idea on how the Project will be developed as described in Section 4 hereto.

"Project Development Costs" shall mean those costs incurred by Tondu to develop the Project and perform the tasks set forth in this Agreement as more particularly defined in Section 11 hereto.

"Target Pricing" shall mean the preliminary cost estimates for the Plant supplied by construction engineers and contractors.

"Term" shall be the duration of the Agreement as defined in Section 2.

"Tondu" shall mean Tondu Corporation.

"Tondu PPA" shall mean the long-term power purchase agreement that Tondu or its designee shall enter into with the Plant Owners to purchase energy from the Plant.

"Total Project Cost" shall mean all of the costs to develop, finance, design, build, and start-up the Plant, including working capital and all spare parts inventory.

Section 2. Term and Termination

The Term of the Agreement shall be until Phase I, as describe in Section 4 herein, is completed, but in any event no more than six months from the date this Agreement is executed unless extended by mutual consent. A Municipal may withdraw at any time from the Project and terminate its participation in the Agreement with 30 days prior written notice; provided, however, such withdrawing Municipal shall remain liable for its

share of the Project Development Costs incurred in regards to the Project by Tondu prior to the Municipal's termination of its participation in the Project.

Section 3. Allocation of Interest

Each Participant shall earn an interest in the Plant based on their expression of interest in the Plant capacity as follows:

	Expression of Interest	Plant Participation Interest
Michigan Public Power Agency	150 MW	50.00%
Michigan South Central Power Agency	50 MW	16.67%
Tondu Corporation	100 MW	33.33%
Total	300 MW	100.00%

Section 4. Project Concept

The Project Concept involves the development, financing, construction, start-up, and operation of the Plant and is currently envisioned as follows:

1. The Plant will be fully owned by the Municipals. Each Municipal will be responsible for providing financing for the capacity it commits to purchase from the Plant.

2. Tondu will enter into a 30-year energy and capacity purchase agreement (the "Tondu PPA") with the Plant Owners to purchase 100 MW of equivalent energy from the Plant. This purchase will be on an incurred cost basis.

3. Tondu will either guarantee or provide the financing for the portion of the Plant that provides the energy sold to Tondu. This funding will have no recourse to the Municipals in any way. Tondu will be solely responsible for providing the collateral and financial support required for its share of the funding.

4. Tondu will manage the construction and start-up of the Plant and will provide the Municipals with a total project cost guarantee.

5. Tondu will operate and maintain the Plant under the terms of an operations and maintenance agreement. This agreement will provide for the Plant to be operated on an incurred cost basis plus a performance incentive fee agreed to by the participants.

6. Prior to beginning commercial operations, Tondu and the Municipals will form a "Management Committee" with each Participant having a vote equal to their

(Attachment #41)

respective allocated capacity in the Plant. Tondu will provide the onsite management services as directed by the majority vote of the Management Committee. No single Participant shall have greater than 49% of the Management Committee voting rights.

7. Property owned by Tondu that is included in the Plant Site shall be sold to the Plant Owner at cost.

8. All Project Development Costs and all development costs expended by the Municipals during Phase II shall be refunded to the Municipals out of Unit II's construction financing when construction financing closes.

9. Tondu will receive the following compensation for the development of the Plant:

   (i) reimbursement of Tondu's contributed portion of the Project Development Costs, all Municipal approved development costs expended by Tondu during Phase II, and reimbursement of costs to acquire the Plant Site properties including the internal costs associated with their acquisition.

   (ii) a development fee equal to 3% of the projected Total Project Cost defined at the close of construction financing, with 1% paid at the close of construction financing and 2% added to the construction cost contingency account and released to Tondu upon the completion of construction if such funds are not used for contingency items during the construction period, and

   (iii) a construction management fee equal to Tondu's pro rata share of any balance remaining in the contingency account upon the completion of the Plant construction.

Section 5. Development Phases
The development of the Plant will be divided into the following phases:

Phase I – Detailed Feasibility Analysis
The primary objectives of Phase I are:

1. Develop an engineering scope for the Plant.

2. Solicit Target Pricing proposals from several engineering procurement construction contractors. Such proposals shall include project schedule and general contract terms.

3. Develop an organizational structure including term sheets for the project management agreement, operations and maintenance agreement, and Tondu PPA.

4. Complete the Feasibility Study describing the projected costs and performance of the Plant, and an analysis of the Project's principal risks.

5. Define the costs and risks proposed to be assumed by each Participant.

6. Establish the terms and conditions required to proceed with the Plant's development in Phase II.

Upon the completion of Phase I, each Participant will be offered the opportunity to proceed to Phase II based on its participation in Phase I. If a sufficient number of Participants enter into the Commitment to Proceed, then Phase II will proceed.

Phase II - Project Development
The Commitment to Proceed will set forth the conditions whereby such Participant will provide their pro rata share of the Phase II development costs and their share of the Plant's construction capital requirements. Expected conditions precedent for a Participant to be obligated to fund its share of the Plant's construction capital requirements include the following:

1. Acquire total control of the Plant site.

2. Complete the interface agreements with any available steam hosts.

3. Complete the Interconnection Agreement connecting the Plant with the state electrical grid.

4. Complete and secure all necessary environmental and regulatory permits.

5. Complete and execute a firm price engineering procurement construction agreement with a reputable contractor under terms and conditions substantially as agreed to in the Commitment to Proceed.

6. Complete the required implementing agreements, e.g. fuel purchase, fuel transportation, ash disposal, lime acquisition, etc. with terms and conditions substantially as agreed to in the Commitment to Proceed.

7. Prepare a final Plant pro forma that is within the expected limits set forth in the Commitment to Proceed.

8. Close the construction financing.

(Attachment #41)

Phase III – Construction
Upon the close of construction financing, construction of the Plant will begin. Tondu will provide construction management services according to the terms agreed to in the Commitment to Proceed.

Phase IV – Commercial Operations
Upon the satisfactory completion of the commercial operation tests for the Plant, the facility will begin commercial operations under the terms set forth in the Commitment to Proceed.

Section 6. Agreement Objectives
The objectives of this Agreement are to:

1. Create a framework whereby the Participants can provide input into the engineering scope, organizational structure, and development of the Plant.
2. Complete the Feasibility Study.
3. Evaluate the organizational and structural needs of the Participants.
4. Develop draft term sheets for the contracts required to complete the development of the Plant.
5. Provide the data necessary for the Participants to determine their interest in continuing with Phase II and the final development of the Plant.

Section 7. Feasibility Study
The objectives of the Feasibility Study will be to determine the following:

1. Establish an engineering and design scope for the Plant.
2. Prepare a detailed Total Project Cost with not to exceed EPC pricing.
3. Prepare a detailed operating and maintenance cost analysis.
4. Prepare a detailed Plant pro forma describing the expected Plant output and the cost per unit of energy output.
5. Complete a detailed "Risk Analysis" addressing the following issues:
   a. Permitting
   b. Construction Cost
   c. Plant Performance
   d. Fuel Availability
   e. Support Services, e.g. Lime, Ash, etc.

(Attachment #41)

   f. Future Regulatory Change
   g. Site and Interconnection

Section 8. Tondu Responsibilities
Tondu shall be responsible for completing the development tasks defined in the Agreement including the Feasibility Study. Tondu shall also be solely responsible for incurring costs for the work to be performed under the terms of the Agreement.

Section 9. Municipals Responsibilities
The Municipals will be responsible for providing input on their requirements for participating in the Plant and funding their pro rata share of the Project Development Costs. Tondu will consult with the Municipals on a regular basis with status meetings at least monthly. Each Municipal will be encouraged to provide input as to their needs and requirements to participant in the completion of Unit II. Specific areas in which Municipal support will be sought include, the electrical interconnection discussions, project engineering scope, political support, environmental permitting, and project structure.

Section 10. Timetable
The completion of Phase I is projected to take six months. Phase II is projected to take twelve to eighteen months to complete, primarily dependent upon obtaining the required permits. The Plant's construction is expected to take 30 to 36 months to complete.

Section 11. Project Development Costs:
The Phase I Project Development Costs shall be divided into two general categories:

1. Costs internal to Tondu including personnel salaries, general and administrative expenses, and operating overhead expenses shall be divided into two categories; (i) a fixed overhead cost of $10,000 per month and (ii) a variable employee cost of $150 per hour for senior staff time committed to the Project; provided, however, Tondu internal costs shall be capped at $32,500 per month.
2. Third-party costs including travel, consultants, engineers, lawyers, etc. are estimated as follows:

Engineers	$200,000
Permitting	$25,000
Legal	$25,000
Travel	$30,000
Contingency	$20,000
Total	$300,000

The Project Development Costs to complete Phase I shall not exceed $500,000 without obtaining the prior written commitment of the Participants.

Section 12. Payment of Project Development Costs
Tondu and the Municipals shall be responsible for the payment of Project Development Costs as follows:

	Percentage of Project Development Costs	Budget Phase I
Tondu	33.33%	$166,650
Michigan Public Power Agency	50.00%	$250,000
Michigan South Central Power Agency	16.67%	$83,500
Total	100.00%	$500,000

Tondu shall prepare and deliver a monthly invoice within five days after the end of each month detailing the costs incurred to date and the amount owed by each Participant. Payment of all amounts shall be due within ten days after the receipt of the invoice. In addition, Tondu shall submit a monthly budget projecting the remaining Project Development Costs to be incurred during Phase I.

Section 13. Excluded Costs
Project Development Costs shall not include any physical real property acquisitions. Tondu is actively involved in purchasing real estate for various projects and any costs associated with such acquisitions will not be included in the Project Development Costs and the Municipals will have no claim to such properties. Each Municipal shall be responsible for its internal costs and such costs shall not be included as Project Development Costs.

Section 14. Open Records
All records with regards to the Project shall be available for review or audit by a Municipal at any time.

Section 15. Development Cost Recovery
Each Participant that continues to fund the Project Development Costs through the completion of Phase I shall be reimbursed from the construction financing for its share of the Project Development Costs. If a Municipal elects not to proceed with Phase I and Tondu is successful in closing the construction financing of the Plant within four years of the date of the Agreement, Tondu shall refund the declining Municipal's contributed share of the Project Development Costs.

Section 16. Commitment
Nothing contained in this Agreement shall in any way commit a Participant, other than as agreed to in this Agreement, to continue with any involvement in the Project or with Tondu or the other Participants.

Section 17. Confidentiality
The results of Phase I and all information pertaining to the Agreement shall be kept confidential to the extent that such confidentiality is possible under the laws and the rules governing the respective Municipal and Tondu.

Section 18. Severability
If any term or provision of this Agreement, or the application thereof to any person or circumstance is rendered or declared illegal for any reason and shall be invalid or unenforceable, the remainder of this Agreement and the application of such term or provision to other persons or circumstances shall not be affected thereby, but shall be enforced to the greatest extent permitted by applicable law.

Section 19. Governing Law
This Agreement shall be governed by and interpreted in accordance with the laws of the Stage of Michigan.

Section 20. Joint Ownership of the Work Products
Each Participant shall have joint ownership of the work products funded through the Agreement and the rights to use such work products for their own purposes; provided, however, that no Participant shall be liable for any other Participants use or reliance upon the results of such work products.

Agreed to as of this 15th day of January 2003.

Michigan South Central Power Agency

By: _____
Its: General Manager

Michigan Municipal Power Agency

By: _____
Its: General Manager

Tondu Corporation

By: _____
Its: President

(Attachment #41)

Reference:

There is a significant property value loss in an area within 18 miles of a coal-fired power plant.

From Clark, David E., and Leslie A. Nieves. 1994. An interregional hedonic analysis of noxious facility impacts on local wages and property values. *Journal of Environmental Economics and Management* 27: 235-53.

One out of six children are at a risk of mercury related neurological damage to development, and learning. Mercury pollution is more of a problem in toxic hotspots in the mostly low-income communities immediately surrounding coal fueled power plants.

From the EPA news release and study by Dr. Katherine Mahaffey, PhD. Feb. 2004.

Provided by Brian Allen, O.D. 384 First St. Manistee, MI 49660
Feb. 19, 2004

For members of the Manistee Planning Commission

FEB. 27, 2004

NAME HENRY N. LESTER
122 LIGHTHOUSE WAY N.
MANISTE MI 49660
723-7214

SUBJECT. NORTHERN LIGHTS.

SUBJECT: "AGAINST" INST. OF PLANT

① NO NEED FOR ADDITIONAL POWER GENERATING PLANT, MARKET GLUT. ATTACHED IS AN ARTICLE DATED 2-25 FROM THE "WALL ST. JOURNAL" COVERING SAME.

② THERE IS AN "EXTREME OVER CAPACITY IN THE AVAILABILITY OF ELECTRICITY.

③ AS IN ANY MARKET, SUPPLIERS HAVE WAYS OF TRANSPORT OR SENDING THEIR PRODUCT TO MARKETS THAT NEED OR DESIRE IT

OTHER DISADVANTAGE:

① WATER POLUTION BY "RUN OFF" & "COOLING WATER"
② AIR POLUTION BY "HEAVY METALS" & CO^2
③ TAX EXEMPT- NO SUPPORT FOR ROADS - ETC
④ BRIDGE TRAFFIC DISRUPTION OF FREIGHTERS
⑤ ADDITIONAL STRESS ON OUR "WATER & SEWER SYSTEM.

(Attachment #43)

Henry N. Lester

se Drug Makers to Combine

ct to Buy
Billion
ependent

IAMURA
GER

Pharmaceuti-
ujisawa Phar-
ion yen ($7.76
e drug makers
pharmaceuti-
r larger rivals.
about 880 bil-
ny would be-
argest drug
emical Indus-
, it still would
h in an indus-
's has created

ıld the deal
asing foreign
broad. Over-
n making in-

roads into the Japanese drug market, the world's second-largest after the U.S. The move also would help the companies fend off potential advances from larger global players, which long have seen an acquisition of a Japanese drug maker as a way to provide new products and research for global distribution.

"We wouldn't want to become a Japanese subsidiary of a foreign company," Fujisawa President Hatsuo Aoki said.

The combined company would have the largest market share of sales in Japan, yet it still would trail Pfizer Inc., of New York, in the number of medical representatives promoting company products to Japanese doctors.

Analysts said the acquisition, which has been expected since late last year, when the two companies said they would combine their over-the-counter operations, makes sense, because they have little overlapping business. Yamanouchi is strong in treatments for urinary, digestive and respiratory disorders, while Fujisawa excels in drugs for immune-system, nervous-system and infection problems.

The merger could spur a raft of similar combinations in Japan, analysts said. "Almost anything is fair game now" for a potential takeover, said Philip Hall, a pharmaceuticals analyst at Credit Suisse First Boston in Tokyo.

If the deal is completed, it would be the first time two Japanese pharmaceuticals companies have successfully combined. Two other announced mergers were scrapped after executives failed to agree on a price or a power-sharing plan. Last year, a merger fell apart between Kyorin Pharmaceutical Co. and Teijin Ltd., and in late 2001, Taisho Pharmaceutical Co. and Tanabe Seiyaku Co. tried but failed to reach a deal.

Each of Fujisawa's 330.2 million shares would be swapped for 0.71 Yamanouchi share. Yamanouchi will issue about 234 million new shares as part of the deal. The companies said they plan to sign a formal merger contract in May and aim to combine the companies by April 2005.

Yesterday, shares in Yamanouchi fell 1.6%, or 60 yen, to 3,590 yen each, while Fujisawa rose 2.3%, or 55 yen, to 2,495 yen.

While Fujisawa has been successful in the U.S. market, Yamanouchi is far more focused on Europe.

Calpine Cancels $2.3 Billion Sale Over Bonds' Rates

By REBECCA SMITH

Power generator Calpine Corp. dropped plans to sell $2.3 billion of bonds when skittish investors demanded a higher rate of interest than the company was willing to pay.

The abrupt cancellation underscores the difficulty facing power-generating companies, which in recent years created the biggest boom in the construction of gas-fired plants in U.S. history only to have energy markets collapse as billions of dollars of construction loans come due.

The move puts pressure on the San Jose, Calif., company to come up with an alternative to manage its debt load of $17.7 billion. Calpine, one of the largest nonutility "merchant" suppliers of electricity in the nation, has until Nov. 4 to refinance $2.5 billion in construction loans obtained from a consortium of 50 banks four years ago. The money covered the construction of 14 power plants in eight states, of which 11 have been completed. The three remaining projects will be finished by sometime in 2005.

Calpine shares fell 7.3%, or 42 cents, to $5.31 at 4 p.m. in New York Stock Exchange composite trading.

Investors are nervous about lending money to the power sector because many electricity markets have extreme overcapacity, demand is slack, and profit margins are slim to none for many operators. In this case, the proposed debt issue by the company's Calpine Generating Co. LLC unit would have been secured by about one-third of Calpine's assets.

Calpine sought to alleviate fears about poor market conditions by guaranteeing at least $108 million a year from nine power-supply contracts tied directly to the plants and $329 million that the company's Houston energy-marketing arm, Calpine Energy Services, promised to pay bondholders regardless of how much of the plants' electricity output was sold. That guaranteed debt service of at least $437 million a year.

But investors worried about the reliability of those cash flows. "It came down to a debate about the credit risk of the third parties that signed the contracts, and CES," said Bob Kelly, Calpine's chief financial officer. Calpine, whose debt rating is below investment grade, had hoped to issue bonds with interest rates averaging less than 7%, but investors wanted 7.9% interest on average. That was too steep, Mr. Kelly said.

In general, investors fear having to take control of power plants used as collateral for borrowings since several plants already have been surrendered to lenders by other builders, including PG&E Corp.'s National Energy Group and Exelon Corp. Calpine hasn't surrendered any plants to lenders.

Mr. Kelly said the company is exploring other financing arrangements, including going back to the high-yield market with a more-attractive combination of contracts to provide cash-flow certainty. In recent months, Calpine successfully financed three new power projects, and Mr. Kelly said the past two were oversubscribed.

riants Pose System Risk, Greenspan Warns

Page
so that they
they got into
ften assume
ne problems;
y. The result
orrow more
similar bal-

skyrocketed
. 31, Fannie
od at $961.7
m $201.1 bil-
ddie's debt,
illion, more
a in borrow-

wed Fannie
ortgage fi-
ler Federal
r guarantee
age loans in
outstanding
according to
et for loans
determine
other mort-
whether to

heir ability
ws them to
but critics,
ompetitors,
bsidy that
ders. Many
sury to use
the compa-
Greenspan
ect.
dle usually

have outmaneuvered their political critics, one reason they have prospered. But today they are on the defensive. An accounting flap at Freddie Mac last year exposed weaknesses in the companies' current regulation. Meanwhile, the Bush White House has taken a surprisingly tough stance on the two companies, after the Treasury Department appeared to strike a conciliatory deal with them over legislation.

A Federal Reserve draft working paper recently suggested that the benefit to homeowners who get their mortgages from Fannie and Freddie is even less than previously thought, lowering interest rates as little as seven one-hundredths of a percentage point. The paper's author, economist Wayne Passmore, sat behind Mr. Greenspan at yesterday's hearing. Mr. Greenspan said the study also indicates the implied taxpayer subsidy "may account for more than half of the stock market capitalization" of Fannie and Freddie.

Mr. Greenspan offered lawmakers two possible solutions. First, he added his support to the Bush administration's proposal to create a new regulator that would have wide discretion to set new capital standards. Requiring the companies to hold more capital likely would limit their future borrowing ability and thus their growth. In addition, he suggested Congress consider an explicit limit on the amount of debt the companies issue to finance what critics regard as their riskiest activity—holding mortgages in their own portfolios rather than selling them to other investors in the form of mortgage-backed securities. That could limit or even prevent future growth of the companies' highly-profitable portfolios.

Separately, Mr. Greenspan also proposed clearer warnings to debt-holders that they could take a financial "haircut" in the event one of the companies got in trouble. The current rules effectively mandate a government bailout of the companies, Mr. Greenspan said.

The Fed chairman was at pains to suggest that the companies' subsidy has grown beyond even what Congress intended.

But some members of the Banking Committee reacted skeptically to Mr. Greenspan's criticisms. Several, for example, disputed the Passmore paper that estimated the two companies have minimal impact on boosting homeownership. The discussion suggested the Banking Committee could struggle this year to produce a bill the White House regards as sufficiently stringent, just as a House committee did last year.

"He's not the only person around town with stature," Sen. Paul Sarbanes of Maryland, the committee's ranking Democrat, said after the hearing.

Fannie, Freddie and others will testify today on the issues. Yesterday, Fannie senior vice president Jayne Shontell took a somewhat conciliatory tone, saying company officials "disagree with most of [Mr. Greenspan's] conclusions, but appreciate that he has now made his strongly held views public."

But Fannie could face more complications soon, including a recommendation by its current regulator that Franklin Raines choose between his chairman and CEO titles. That is a change that the regulator already has sought at Freddie Mac.

An official of one of the companies said Mr. Greenspan's debt-limit idea was new but not surprising because the Fed chairman has let it be known he would prefer the more far-reaching step of privatizing the companies. But the official said the debt-limit idea wasn't likely to get traction on Capitol Hill this year, and the focus would remain on the regulatory changes already under discussion, particularly the hot-button issue of what capital standards to impose on the companies.

Freddie Mac said that privatizing the two entities "would seriously damage the finest housing finance system in the world and, ultimately, the U.S. economy." The company said Congress should focus on legislation to strengthen regulation of them rather than wandering into "theoretical discussion."

Fannie has been arming itself for the intellectual debate with Mr. Greenspan about the threat it may pose to the health of the financial sector. Former Bush White House chief economist Glenn Hubbard did a study for Fannie last year which said that Fannie's business was less volatile than commercial banks. Fannie also recently contracted with former Fed vice chairman Alan Blinder, a Democrat, to examine whether the Fed's recent working paper erred in saying that very little of Fannie's implied subsidy benefited homeowners.

CORRECTIONS & AMPLIFICATIONS

SWITZERLAND is putting in place regulations to allow the transfer of between $6.4 million and $8 million from

(Attachment #43)

February 25, 2004

To Members of the Manistee City Planning Commission:

I sincerely hope you will vote against accepting Joe Tondu's proposal for a coal-burning power plant to be built in our city. Do not be influenced by any of our city officials who may be hoping you will O.K. it, as you are not obligated to them.

Joe Tondu has been trying to brain-wash the citizens of Manistee and surrounding area ever since this topic got out in the open, with big full-page ads in the Manistee News-Advocate, and by his lengthy speech at the Manistee Middle School Gymnasium on Thursday, the 19th of February, in which he repeated himself constantly, talking for over an hour so he could use up the time which could have been used to let others voice their feelings. As it was, very few of the many signed up to speak for five minutes had a chance to speak.

I quote from an Editorial in a recent Traverse City Record-Eagle: "Tondu picked the Manistee site because officials in neighboring Filer Township demanded significant environmental and financial accountability. He also fought the township and county over tax assessments, costing them hundreds of thousands of dollars in attorney fees in a tax tribunal case Tondu ultimately lost.

"Tondu also would make out wonderfully on land purchase and construction deals in Manistee because a state brownfield designation again means government picks up much of his tab." So now that he is forced to pay taxes to Filer Township, he has figured a way to get out of paying them to the City of Manistee. Another quote from the above mentioned editorial: "Early indications are that Manistee officials seem willing to accept Tondu's crumbs, figuring any revenue is better than none."

Joe Tondu wants us to see him as a down-to-earth, home-town boy, when actually he is head of a big corporation in Houston, Texas, out to make millions for himself and his investors--AT OUR EXPENSE!

The City of Manistee has very little to gain, but so much to lose. Once Joe Tondu gets his "foot in the door" there will be nothing we can do. The big decision is <u>YOURS.</u> You only can do the right thing for the people of Manistee, I beg you to listen to the great majority of people who are saying "SAY NO TO TONDU".

Thank you,

Dorothy Thorson

A Manistee County & City resident for over 80 years

My address: 268-5th St
Manistee

(Attachment #44)

Northern Lights: would create more sprawl and loss of land values.

- ✓ No electricity for Manistee
- ✓ No taxes for Manistee
- ✓ Mercury contamination
- ✓ Dirty air, dirty water
- ✓ Loss of tourism
- ✓ Few jobs

City of Manistee
Planning Commission
P.O. Box 358
Manistee, MI 49660

To the Manistee Planning Commission:

I am opposed to the Northern Lights coal-fired power plant. I urge the Planning Commission to turn down the application for a Special Use Permit for the facility.

Phyllis Marquard
2107 Red Apple
Manistee, Mi 49660

3498 Lindeman Road
Manistee MI 49660
February 26, 2004

Manistee Planning Commission
PO Box 358
Manistee MI 49660

To the Manistee Planning Commission:

My husband and I have read everything pro and con that we have found concerning the proposed Northern Lights project. We've also attended meetings and listened to people on both sides. It is evident that the health and welfare of the people are of the utmost crucial concern, as it should be to you in making your decision.

We moved here to beautiful Manistee from the upper peninsula nearly seven years ago. We soon were experiencing air pollution so potent we couldn't stand to go outdoors at times. Our brass light fixtures outside our new home were corroded in three years. Our gas repairman indicated that all the copper tubing on the propane tanks in our area are corroded. We very often can't open our windows because there is such a strong smell. (We do not have air conditioning.)

We feel the odors we experience are coming from various sources. Therefore, there should be an air quality monitoring device in Manistee as there is in adjacent counties.The air should be monitored around the clock for a minimum of a year. It is not ample to have the DEQ do "spot checks" because the plants know the time frame and adjust accordingly.

This pollution is caused by several industries in the area. We cannot add to the already existing tire-burning, coal-burning, and uncovered dump residue without seriously damaging the health and welfare of our citizens to a greater extent than they already are damaged!

Yours truly,

Sue Kuckhahn

Sue Kuckhahn

sk

To whom it may concern; February 26, 2004
R:E: Northern Lights Plant / Tondu

I am writing this letter to express our opinion regarding the Northern Lights Power Plant. We oppose the building of this plant for many reasons. We live at 712 and 714 High Street and have two school aged boys. We moved to Manistee six years ago because it was one of very few affordable clean places in Michigan to live. After growing up in the Downriver Detroit area, you greatly appreciate a somewhat clean environment when you see it.

Allowing this plant to be built will only bring Manistee pollution, liability, traffic, and general wear and tear on our already taxed infrastructure.

We can all complain about the obvious. The pollution is the one thing that stands out the most. The illnesses that can be caused by smokestack fallout can reach into the millions in health care. Some of the things we don't see right away will sneak up on us and leave all of us liable. The wear and tear on the roads from trucks moving ash. The wear and Tear on the bridges having to go up and down twice as much as they do now. Also, utilizing them in the winter, who knows how they will react to that? The traffic jams the bridge causes now is sometimes a nuisance, just think how it will be when there's all the proposed boat traffic going up and down the river. There is also the problem with emergency vehicles being held up by the bridges.

The list of problems severely outweigh the "benefits" as far as this proposed plant is concerned.

If we were going to move into the 21st century, this is not the way to do it. This is taking us back to the beginning of the 20th century. Just because we're named the Victorian Port City, doesn't mean our industry has to be "turn of the century".

Dale Switzer
712 High Street
Manistee, MI

Helen Switzer
714 High Street
Manistee, MI

DALE & HELEN & GORDON & SCOTT SWITZER

We live at 714 & 712 High Street in MAXWELL-TOWN, About 7 or 8 Blocks FROM GEN Chemical sub. and when "Morton" SALT Sold to Rohm & Haas it got a lot Dirty and NOISIER. Now its going to get WORSE. COAL POWER Seems So OLD style cant they use Better tech

1. I HAVE TWO BOYS 11 and 13. THEY DONT NEED it ⇒

We Dont want the COAL FIRED POWER PLANT.

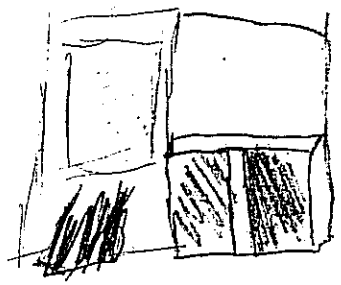
1. Not a THing FOR MANISTEE But TROUBLE.
2. Pollution
3. WEAR & TEAR ON ROADS AND BRIDGES
4. 130 Ships a YEAR × 4 = there and Back THRU 520 Two Bridges

520 times a YEAR up AND down. if Not MORE. that every 2.8% Days.

(Attachment #48)

WATER USE FOR STEAM AND COOLING AND THE LIME WATER SLURIE TO HELP THE COAL BURN. AND THE WATER SPRAYED FOR DUST CONTROLL, WHO'S GOING TO CLEAN ALL THAT WATER. WHY SHOULD I PAY FOR THE WASTE WATER TREATMENT PLANT ACROSS THE STREET. TOWN SHOULD NOT TAX MY TAXES! WATER & SEWER BILL IS TOO HIGH NOW!!

WHAT ABOUT MY PROPERTY VALUE & AIR QUILITY? AM I GOING TO GET A PROPERTY TAX CUT OR BE EXSEMPT



(Attachment #48)

(Attachment #48)

IF the PowerPlant
must Be here why
Didnt MANISTee
BuiLD and own it!!
too StupiD?!?
Holland gets the Benifits
and we get the AIR &
Water Pollution.
GOOD DeAL HuH!
I Hope NOT! Dale Switzer 712/714 High st

TROUT UNLIMITED

Pine River Area Chapter

City of Manistee Planning Commission
70 Maple St.
Manistee, MI 49660

February 26, 2004

Dear Council Members,

The Pine River Area Chapter of Trout Unlimited is adamantly opposed to the construction of the Northern Lights Power Plant in our area.

This plant will have detrimental effects on not only the local fisheries but affecting all fisheries of Michigan, Ontario and the entire US. Coal burning power plants release tons of harmful chemicals; a 500 megawatt plant produces 3,700,000 tons of carbon dioxide, 10,200 tons of nitrogen oxide, 10,000 tons of sulfur dioxide, 700 tons of carbon monoxide. Coal burning plants also produce mercury and arsenic that are very harmful to people. The DNR releases a fish advisory every year to warn against the consumption of fish containing mercury. Mercury is so poisonous that 1/70th of a teaspoon can make fish in a 25 acre lake unsafe to eat. The mercury that could be produced from TONDU at this facility could be over 200 lbs a year and virtually make all of Michigan's best fishing lakes useless.

The emission of chemicals is not the only problem. Coal burning plants produce warm water discharges into lakes and rivers. Tondu is proposing to build this plant right next to the single most important steelhead egg taking facility in the US. The DNR weir on the Little Manistee supports all the state of Michigan with steelhead eggs. Not only does this facility supply Michigan but it also supplies Indiana and Ohio with eggs from this facility. The steelhead industry relies on these eggs; otherwise the fishery would not exist. Steelhead start their life in streams for one year then they move (Smolt) out into the great lakes for their adult life returning to spawn in the fall. The facility by Tondu would interrupt this cycle by emitting warm water into Manistee Lake. Steelhead need coldwater to survive and the emission from the plant would be catastrophic to the steelhead fishery, not only locally but state and nation wide would feel the effects.

Michigan does not need another large coal burning plant on our waters. The time has come for our elected officials to look to the future, their decisions are long term. I would hate to be the individual responsible for the destruction of our states natural resources, and that could be you.

Sincerely,

Patrick Kochanny
President
Pine River Area Chapter of Trout Unlimited
23297 Mackinaw Tr.
Tustin, MI 49688

Public Hearing Statement
W. Frank Beaver

My name is Frank Beaver. I am currently employed as the Environmental Coordinator for the Little River Band of Ottawa Indians. Prior to that, I was employed as the County Planner for Manistee County. I have been employed in Manistee County since 1999. I have a Bachelor of Science degree in Economics, with a Natural Resource specialization. I have also completed a significant portion of a Master of Science degree in Environmental Policy.

I am opposed to the proposed coal-fired power plant as advanced by the Tondu Corporation of Houston, Texas.

One of the factors that is often considered when reviewing a proposal such as this is the increase to the tax base that will result from the new development. I am here before you tonight to speak to this issue.

While it may be true that the parcel will have an increased taxable valuation with the proposed power plant as opposed to remaining undeveloped, it is equally true that the surrounding parcels will experience a decrease in taxable value if the power plant is approved.

It is difficult to quantify the relation between quality of life issues and economic value. However, economists do try. Through contingent valuation studies and willingness to pay surveys, the negative economic effects of pollution can be approximated.

The literature in the field of environmental economics contains studies that are relevant to the proposal facing the City Planning Commission. The Clark and Nieves study of 1994 states that coal fired power plants reduced the average property values within a 1,000 square mile area. This equates to a circle with a radius of 17.8 miles. This encompasses the entire City, as well as significant portions of the adjacent Townships.

In addition to the direct negative impact to property values from the siting of the plant, there is also a negative impact to property values resulting from the reduced visibility that will be experienced by residents. An increase in total suspended particulates will decrease visibility. This decrease in visibility will have a direct and quantifiable effect on the property values of the City and the surrounding Townships.

Will these negative effects to taxable values be outweighed by the increased tax base resulting from the power plant? Will the net effect to the City's tax base be an increase or a decrease? How will the residents be compensated for their loss to property value? These are empirical questions, which means that a study will have to be commissioned to quantify the loss to property values that will be experienced by the residents of the City of Manistee. Because the

residents will experience a loss in property values. And the City will experience a corresponding loss to tax revenue.

In conclusion, I am asking the Planning Commission of the City of Manistee to defer its decision on the Special Use Permit until a study has been completed to answer the question of whether the proposed power plant will have a net positive or negative impact on the tax base of the City.

Thank you for your time, and for your consideration of these important issues.

W. Frank Beaver

(Attachment #50)

March 4, 2004

TO: Planning Commission
City of Manistee

FROM: Richard Krieger
Deborah Krieger
410 Ramsdell Street
Manistee, MI 49660

RE: Proposed Coal Powered Electrical Generating Facility a.k.a. Northern Lights

We have visited City of Manistee since 1994 and quit secure, well paying jobs to move here in 2001. We felt this city was highly livable.

There is a large body of data supporting coal fired electrical generation but a larger amount of data rejecting it for health and environmental reasons.

After reviewing all available information...pro and con...we have decided that...

The only possible benefits to the City are:
1) Short-term revenue from construction employment.
2) A small amount of jobs that will not turnover yearly to provide continuing opportunities or justify the lasting impact of this facility.

The very possible immediate and long-term detriments to the City are:
1) Potential loss of middle and higher income families who generate tax revenue without environmental controversy.
2) Potential loss of future clean industry seeking to relocate.
3) Loss of image as a family destination for recreational and clean outdoor activties.
4) Decreased livability and lower quality of life.

Therefore, we are totally opposed to granting a special use permit to the Tondu Corporation on the grounds that the proposed facility:
- Undeniably detracts from the health of the people and the environment.
- Contributes virtually nothing to the long-term future welfare of the city.
- Inhibits safety by hindering ambulance, fire and police services.
- Should not be located in or near any residential area.

Richard Krieger 3/4/04 Deborah Krieger 3/4/04
Richard Krieger date Deborah Krieger date

(Attachment #51)

WHAT ARE THE RELEVANT CONSIDERATIONS?

HEALTH...IS THERE ANY DANGERS OR 'UNDESIRABLES' TO RESIDENTS?

'The industry is closely regulated. The facility will meet all regulations...'
- The plant owner and operator will do what's legally allowed to make a profit but current laws do not fully protect the people or the environment.
- Apparently the United States has 250 years of coal reserves. . Why can't it be used with **zero** emissions **right now**? This is an important question.
- Fact: Toxic pollutants will be emitted under existing laws.
- Fact: "Cap and Trade" legislation could allow a non-polluting plant to let another to exceed limits.

'Mercury and other elements....'
- May be natural but we don't need to help create anymore artificial concentrations.
- It makes no difference if it falls 1 mile or 200 miles away.
- As the emissions float away in the air, do we care about where it lands?
- "Why fish for fish you cannot eat" - Jennifer Granholm.
- The DEQ air quality permit application lists a total of 11 hazardous element emissions.

'Sulfur Dioxide and other vaporous emissions....'
- The DEQ air quality permit application apparently lists 40 hazardous compound emissions.
- These emissions include known or suspected carcinogens.
- Where will this go? East Michigan? New York sate? Canada? Do we care about them?

'Only special quality coal will be burned here...'
- Are there any legally binding regulations as to what is burned?
- If there are restrictions on what is burned can we guarantee they will not be challenged in future?
- TES Filer apparently burns tires. Fact: burning tires emits toxic heavy metals including mercury, lead, arsenic, chromium and cadmium and releases the suspected carcinogens benzene and butadiene.

WELFARE...WILL NORTHERN LIGHTS CONTRIBUTE TO OUR BETTERMENT?

'50 to 60 jobs will benefit the area...'
- No law exists which states hires must be Manistee city residents.
- Long term, lasting impacts exceed the value of these jobs.
- Jobs are only one of many more important issues.

'Keep the young people here...'
- Has anyone asked them if they want to work in this place?
- Are there petitions and inquiries from them in support of this?
- There are new graduates every year...Will this plant and its jobs really keep them here?

' Construction of this facility will bring dollars into the community…'

- That money is gone when the construction is done.
- How does 2-3 years construction job money compare with the lasting impact of this facility?
- There is no on-going long-term benefit.
- No law exists that says Manistee city, County or area people have to be hired.

'400 foot stack…'

- Creates a tremendous visible impact on the cityscape.
- Will that impact existing residential property values?
- Who would want to see it? Who would want to live within its view?
- How far away will it be visible? Can I see this from Oleson's? City Hall? M55? Orchard Market on US31?
- Will the sight of this stack make me want to come and stay in Manistee as a destination?

'Noise will be kept to 65Db at the property line…'

- Do all know what that means?
- And what is the nature of the noises? Low rumble? High-pitched squeal?
- We have camped five miles up-river from an AEP plant on the Tuscarawas River in Ohio and the conveyor noise travels that far at all times of day and night.

'Residential impacts…'

- How many private residences are across the street or in the neighborhood?
- What is the impact on their existing property values and ability to sell?
- Homes there are already on the market…have their sales already been compromised?
- I have residential/income property in the city and I am concerned about it's future value.
- The southeast area of the City is already considered 'not as desirable' by realtors but many people continue to improve their properties…how will this affect them?

SAFETY…HOW WILL THIS FACILITY AFFECT SERVICES?

'130 boat delivered coal shipments per year…'

- Our hospital is north of the river channel.
- Who will sit in the ambulance while boats pass and the bridges are open?
- 130/52 = 2.5/week additional bridge openings…BIG increase.
- Will a ship hit a bridge? Extra shipping is a safety hazard, not a tourist draw.
- Whose family member may pass on because they have to drive to Ludington and it's too far?
- How can the City provide fire protection for the north side? What will this cost?
- How can the City provide police services to the north side? What will that cost and how will it be paid for?
- Michigan State Police are not a City problem…but how will they compensate?

(Attachment #51)

'We [Tondu] will do nothing to harm people or environment of Manistee County…'

- How can this be proven beyond all doubt?
- Who can prove the long-term 50-year impact of Northern Lights on the City and the area before it is approved and built?
- Who or what will assure our safety? What is here to do that? What will monitor claims?
- A lot of data and questions are seriously implying that the full impacts will be negative.

OTHER CONSIDERATIONS…

Lake Manistee…

- The US EPA currently lists the lake as polluted.
- What happens when polluted lake sediments are disturbed by construction AND the continuous turbulence of water intake/discharge?
- What will massive warm water discharges do?

'Fish killed by water intakes…'

- Where do the dead ones go? Will there be an odor?
- What about the sturgeon? Large fish can be trapped at the intake screens.

Fishing impacts on Lake Manistee…

- Apparently the Little Manistee River supplies stock for many out of state areas…will this be effected?
- What are the reactions of the lucrative sports fishing industry?

Our existing potential:

- The industrial park on Washington Street is largely vacant; the one on M55 is empty…
- Why are these so empty? They can provide clean manufacturing jobs.
- Are there bonds related to these parks that need to be paid off soon?
- Will revenue from Northern Lights be used to pay those bonds? If so, is that an ethical reason to approve Northern Lights?

"Air pollution remains a significant concern with coal-fired generating facilities, even though contemporary plants that burn low sulfur coal are far less a threat than older plants.

Nevertheless, such facilities should not be sited near planned or existing residential areas, and special care should be taken to avoiding areas that already have a significant air pollution problem."

Erin Kilpatrick, Planner
Williams & Works, Inc.
Grand Rapids, MI
Planning & Zoning News
November 2002

NOTE: This person is employed by the same firm as Jay Kilpatrick, under contract with the Planning Commission, as a consultant to their process for the proposed Northern Lights project.

(Attachment #51)

WHAT ELSE DOES MANISTEE GET?

IN THEIR APPLICATION TO THE DEQ FOR AIR QUALITY PERMIT, THE TONDU CORPORATION STATES THAT THEIR PROPOSED POWER PLANT WILL EMIT THE FOLLOWING HAZARDOUS AIR POLLUTANTS (INCLUDING THOSE KNOWN OR EXPECTED TO BE CARCINOGENS):

Qty 11

- Antimony,
- Arsenic,
- Beryllium,
- Cadmium,
- Chromium,
- Cobalt,
- Lead,
- Manganese,
- Mercury,
- Nickel
- Selenium.

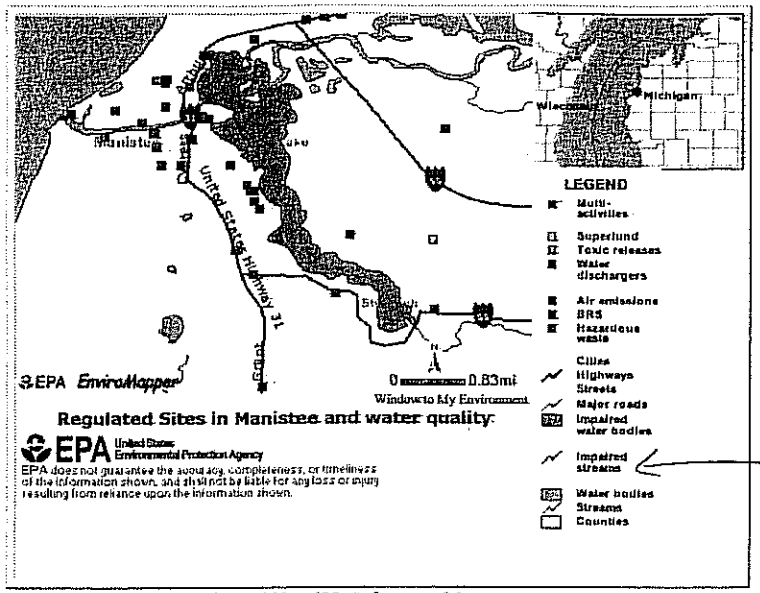
The specific Vaporous forms of Hazardous Air Pollutants include:

Qty 40

- biphenyl,
- naphthalene,
- acetaldehyde,
- acetophenone,
- acrolein,
- benzene,
- benzyl chloride,
- bis(2-ethylhexyl)phthalate,
- bromoform,
- carbon disulfide,
- 1-chloracetophenone,
- chlorobenzene,
- chloroform,
- cumene,
- cyanide,
- 2,4 dinitrotoluene,
- dimethyl sulfate,
- ethylbenzene,
- ethylchloride,
- ethylene dichloride,
- ethylene dibromide,
- formaldehyde,
- hexane,
- isophorone,
- methyl bromide,
- methyl chloride,
- methyl ethyl ketone,
- methyl hydraxine,
- methyl methacrylate,
- methyl tert trichloroethane,
- butyl ether,
- methylene chloride,
- phenol,
- propionaldehyde,
- tetrachlorethylene,
- toluene,
- 1, 1, 1-trichlorethane,
- styrene,
- xylenes
- vinyl acetate."

From Air Quality Permit Application to DEQ dated September 10, 2003

TO: PLANNING COMMISSION
CITY OF MANISTEE
SUBMITTED BY: RICHARD KAISER 3/4/09
AUTHOR: UNKNOWN



400 x 300 ● 600 x 450 800 x 600 ☑ Locator Map

Submit Cancel

(Attachment #51)

MAP SHOWS MANISTEE LAKE AS IMPAIRED BY THE U.S. EPA

IMPAIRED BY
MERCURY
PATHOGENS
PCB'S

TO: PLANNING COMMISSION / CITY OF MANISTEE
SUBMITTED BY: RICHARD KRIEGER
3/4/04

U.S. Environmental Protection Agency

Total Maximum Daily Loads

Listed Water Information

CYCLE : 2000

Click here to see metadata for this report.

Cycle: 2000 State: MI List ID: MI081901A
Waterbody Name: MANISTEE LAKE
Listed Water Map Link: MAP 303(d)

Comments:
CSO, UNTREATED SEWAGE DISCHARGE, PATHOGENS (RULE 100).

State Impairments:

State Impairment	Parent Impairment	Priority	Rank	Targeted Flag	Anticipated TMDL Submittal
MERCURY	METALS				DEC-31-2011
PATHOGENS					DEC-31-2006
PCBS	PCBS				DEC-31-2010

Potential Sources of Impairement:

There were no potential sources reported to EPA by the state.

Total Maximum Daily Load (TMDL) Information:

There were no TMDLs reported to EPA by the state.

Watershed Information:

Watershed Name	Watershed States
MANISTEE	MICHIGAN

Mercury

Tighter rules can and should go further

When one of its own advisory committees says more can be done to protect children from the risks of mercury pollution, the Environmental Protection Agency ought to listen.

"The concern ... is that this proposed action does not go as far as is feasible to reduce mercury emission from power plants, and thereby does not sufficiently protect our nation's children," the chairman of the Children's Health Protection Advisory Committee wrote last month to EPA Administrator Michael Leavitt.

The proposed mercury rule has two flaws. First, mercury is targeted for a 70-per-cent reduction when many experts — and the advisory committee — believe greater mercury cleanup is technologically possible. Second, the rule sets up a national trading program that could have erratic results. "Regulation should ... ensure that existing hot spots are reduced and no new ones are created," the committee's letter says.

The biggest remaining output of mercury comes from coal-burning power plants. Mercury released in the smoke falls back to Earth and most often gets washed into adjacent waterways, where it begins working its way into the food chain in a toxic form called methylmercury. By eating fish at the top of the food chain, people accumulate it, too.

The chief danger is the way mercury, which can damage the brain and nervous system, is passed from mother to newborn during pregnancy. Recent studies reported by an EPA scientist last month, suggest that the risk factor is greater than previously estimated. The new studies suggest one in every six women of child-bearing age has enough mercury in her system to affect her offspring. (Previous estimates put one in 12 women in this age group at risk — which was worrisome enough.)

The children's advisory committee asked for further economic analysis after concluding the mercury rule could and should be stronger. But mercury has had plenty of analysis. The EPA should simply toughen the rule.

P.S. **CONTINUING TO PUSH** physical fitness for too-fat Michigan, Gov. Jennifer Granholm wants to add an early-morning run to the annual walk across the Mackinac Bridge on Labor Day. Will weight limits be in force for the bridge that day?

PRINTED 2/22/04

Detroit Free Press

An Independent Newspaper

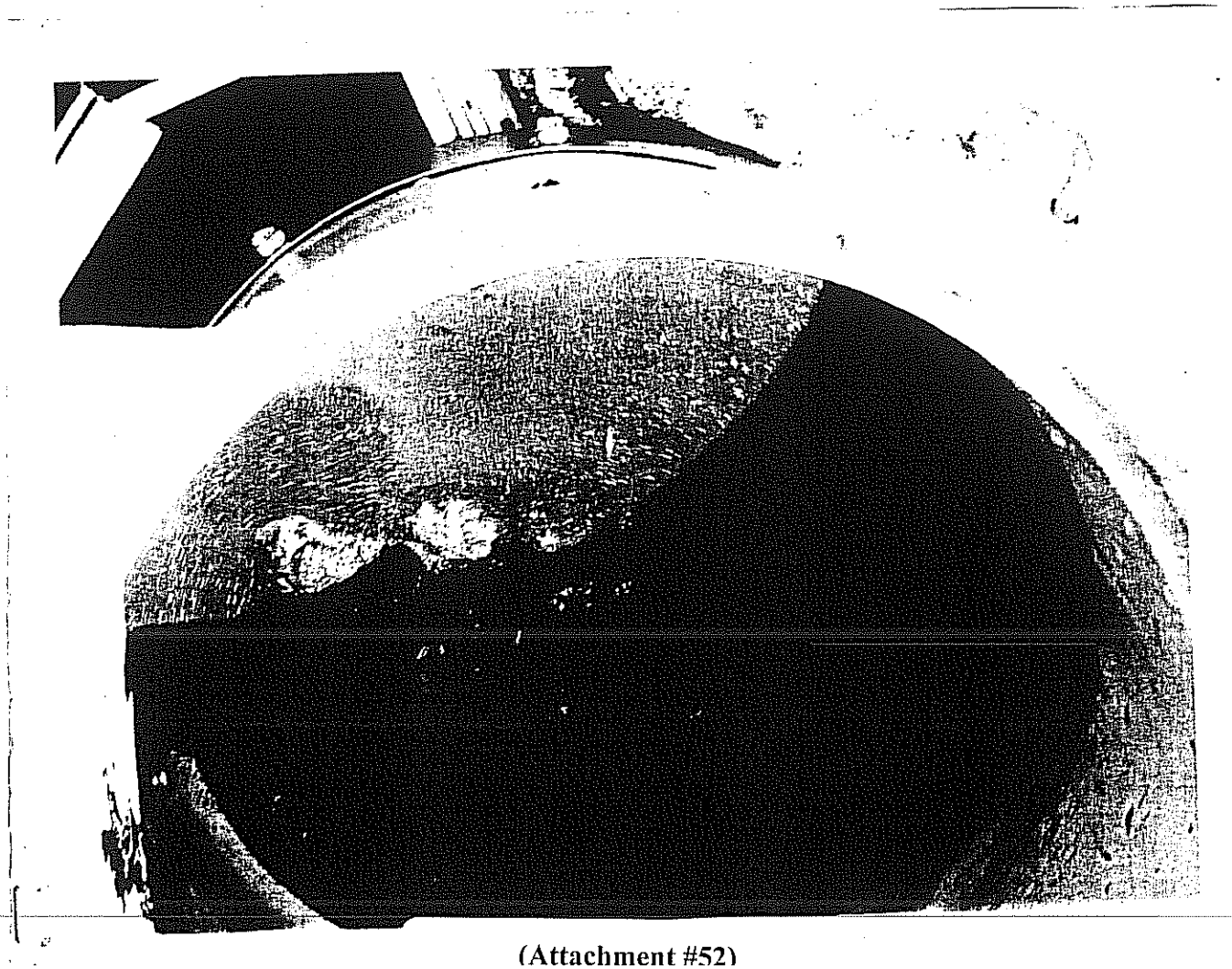
600 W. Fort St., Detroit, Michigan 48226

editpg@freepress.com

P. Hamer 2/26/04

KNIGHT RIDDER

(Attachment #51)



(Attachment #52)

Public Hearing Statement
Stephanie Ogren

Good Evening, my name is Stephanie Ogren. I live in the City at 465 8th St. I have been a biologist with the Little River Band of Ottawa Indians for the past 3 years. For the 3 years prior to that I was a biologist for a private consulting firm. I have an undergraduate degree in Biology and a Master's degree in Aquatic Biology from Central Michigan University.

As a biologist, I am opposed to the proposed coal-fired power plant as advanced by the Tondu Corporation of Houston, Texas.

According to the special use permit standards the proposed use must be "reasonable and designed to protect the health, safety, and welfare of the community.

As a biologist, I have taken samples from Manistee Lake. I have seen and quantified the lack of benthic life in Manistee Lake. This has also been documented by others including a report by the Great Lakes National Program Office (EPA –905-R-01-004). I have a photo of sediments taken near the proposed site (attached). They are also degraded. This area of the lake has little forage base for higher level consumers. This proposal will not "clean up" Manistee lake. It will at best leave the sediment and the lack of life as is and add to the pollution and Mercury contamination that is a current documented problem. Manistee Lake is on the state of Michigan 303D list of impaired waters. Regional data compiled by consumers energy shows that while levels of PCB's and organochlorine insecticides have decreased in recent years, mercury concentration in fish tissue have increased (Consumers Energy 2002 report).

The literature has shown Mercury poses a health risk. There are many mercury reduction and phase out programs currently in effect and we still have elevated levels showing up in sampling. If we know mercury is a problem how can we allow another source?

Just because its permitted does not mean it is safe. Repeatedly, we have been told that it is the DEQ and EPA that are responsible for our health and safety. These are the same entities that have permitted the sources that have lead to Manistee Lake being on the impaired water list. Just because it's permitted under the allowable level does not mean there will be no negative impact. There are currently more that 1.4 million dollars in watershed restoration projects occurring in this area. Why would we allow a proposal that could jeopardize these efforts?

As a biologist I urge you to deny the application, as the Special Use Permit standard for the protection of health is not fulfilled.

As a citizen and resident of Manistee who recently purchased a home I urge you to deny this application. If this plant goes in, I will be looking to move. I fear that with lowered property values, and the image that a facility of this magnitude brings, selling will be a challenge. I believe that this proposal could change the biggest investment of my life into the biggest mistake.

(Attachment #52)

To: Manistee City Planning Commission 2-19-04

Good Evening

My name is Nathan Svoboda, I am currently a wildlife biologist for the Little River Band of Ottawa Indians and was previously employed for the U.S. Fish and Wildlife Service here in Michigan. I have a bachelor's degree in Biology from the University of Nebraska and am currently working on a Masters degree in Conservation Biology at Central Michigan University. I am also an avid outdoorsman; a hunter, a fisher, a local taxpayer and a voter. I am also opposed to the proposed construction of the coal fired power plant put forth by the Tondu Corporation of Houston, Texas.

I would like to present to you some information from the Michigan Department of Environmental Quality (MDEQ) on contamination in our local watershed. Over the past few years the Michigan DEQ has conducted research to evaluate contaminant concentrations among watersheds and among the Great Lakes basins. One component of this research was to evaluate contaminant levels in top predators, in this case the bald eagle.

The Michigan DEQ chose bald eagles as a bio-indicator for monitoring contaminants for a number of reasons. Feeding primarily on fish and waterbirds, eagles have a significant reliance on the aquatic food chain. They also accumulate environmental contaminants that can be quantified in blood, feather and egg samples. These contaminants found in nestling bald eagles represent the uptake of contaminants within a particular area.

Results from this study indicate that out of all the individual breeding areas surveyed in Michigan, nestling bald eagles in Manistee County had the highest concentrations of mercury in the state. The report then goes on to say that, *"elevated mercury concentrations in bald eagles represent contamination of the local prey base, which,"* as stated in the report, *"in turn is a reflection of the contamination within the local watershed."*

As you are fully aware contamination of the local watershed not only affects our fish and wildlife species but also directly affects the health and well being of the people in our community.

As you know the Tondu Corporation of Houston Texas doesn't argue the fact that they will be releasing mercury into our atmosphere. They ARE going to be polluting our land and water further, and the amount, whether it be 400 pounds, 40 pounds or 4 pounds is not the point. The point is there is already too much pollution on the lands and waters within our community.

Joe Tondu stated in the Benzie Record Patriot on February 4, 2004,

"I was born and raised here in Manistee County. I wouldn't build anything if I thought it was going to have a negative impact on Manistee or the environment."

Well Mr. Tondu here is scientific proof that you and your Texas coal plant will indeed have a negative impact on our community.

As a resident, voter and taxpayer of Manistee County, I ask that the City Planning Commission consider the health and well-being of our community and deny the Tondu Corporations application for a special use permit. Thank you.

Sincerely,

Nathan Svoboda

(Attachment #53)

(Attachment #53)

MI/DEQ/SWQ-02/023

MICHIGAN WILDLIFE CONTAMINANT TREND MONITORING

YEAR 1999 ANNUAL REPORT NESTLING BALD EAGLES

Prepared by:
Cheryl L. Summer and Dennis Bush
Great Lakes and Environmental Assessment Section
Surface Water Quality Division
Michigan Department of Environmental Quality
January 16, 2002

Dr. William Bowerman
Department of Environmental Toxicology
Clemson University

TABLE OF CONTENTS

Section		Page
List of Figures		ii
List of Tables		iv
List of Appendices		vi
1.0	Executive Summary	1
2.0	Introduction	3
3.0	Study Design and Methods	5
3.1	Site Selection	5
3.2	Field Methods	5
3.3	Laboratory Methods	6
3.4	Statistical Design	7
4.0	Results and Discussion	9
4.1	Reproductive Success	9
4.2	Mercury in Nestling Bald Eagle Feathers	9
4.3	Organic Contaminants in Nestling Bald Eagle Blood Samples	11
4.31	DDT and Metabolites	12
4.32	PCBs	13
4.33	Other Organics	15
5.0	Future Studies	17
6.0	Acknowledgments	18
7.0	References	19

(Attachment #53)

LIST OF FIGURES

		Page
Figure 1	Active bald eagle breeding areas in Michigan in 1999	21
Figure 2	Michigan's watershed delineations and monitoring 'basin years'. A.) 1999 basin year watersheds (shaded), B.) 2000 basin year watersheds (shaded), C.) 2001 basin year watersheds (shaded), D.) 2002 basin year watersheds (shaded), and E.) 2003 basin year watersheds (shaded)	22
Figure 3	The 1999 basin-year watersheds	23
Figure 4	Frequency distribution of Hg concentrations in nestling bald eagle feathers in 1999	24
Figure 5	Elements of a boxplot	24
Figure 6	Hg concentrations in nestling bald eagle feathers within the Great Lakes and inland upper and lower peninsula breeding areas (1999). The shaded boxplots show Hg concentrations at the broadest organization of breeding area location – Great Lakes and inland. The clear boxplots show Hg concentrations in inland lower peninsula (IN-LP), inland upper peninsula (IN-UP), Lake Erie (LE), Lake Huron (LH), Lake Michigan (LM), and Lake Superior (LS) breeding areas	25
Figure 7	Mercury concentrations in nestling bald eagle feathers in Michigan, 1999	26
Figure 8	Mercury concentrations (geometric mean) in nestling bald eagle feathers collected in 1985-1989 (Bowerman et al., 1994) and in 1999 from inland lower peninsula (IN-LP), inland upper peninsula (IN-UP), Lake Superior (LS), Lakes Michigan and Huron (LMH)	27
Figure 9	Mercury concentrations in nestling bald eagle feathers in the late 1980s (Bowerman et al. 1994) and in 1999. See Table 3 for more detailed information on the specific breeding areas shown above	28
Figure 10	Concentrations of Total DDTs (sum of DDT, DDE, and DDD compounds) in nestling bald eagle blood samples in 1999. The data are plotted from low-to-high mean Total DDTs concentration	29
Figure 11	Concentrations of Total DDE and Total DDD (ng/g wet weight) in nestling bald eagle plasma samples in 1999. See Table 3 for more detailed information on the specific breeding areas shown above	30
Figure 12	Geometric mean of 4,4'-DDE concentrations in plasma of 104 nestling bald eagles sampled in 1999 from 7 subpopulations in Michigan (inland lower peninsula (IN-LP), inland upper peninsula (IN-UP), Lake Superior (LS), Lake Huron (LH), Lake Erie (LE), and Lake Michigan (LM)), and Voyageurs National Park (VNP), Minnesota in comparison to 251 samples collected in 1987-1992 (Bowerman 1993)	31

LIST OF FIGURES

		Page
Figure 13	Percent contribution of each congener to Total PCBs in nestling bald eagles in Michigan in 1999	32
Figure 14	Total PCB concentrations in nestling bald eagles from inland, anadromous, and Great Lakes breeding areas. See Table 3 for more detailed information on the specific breeding areas shown above	33
Figure 15	Total PCBs concentrations in nestling bald eagle plasma samples within the Great Lakes, anadromous rivers, and inland lower and upper peninsula breeding areas in 1999. The shaded boxplots show Total PCB concentrations at the broadest organization of breeding area location – Great Lakes, anadromous rivers, or inland. The clear boxplots show Total PCB concentrations in inland lower peninsula (IN-LP), inland upper peninsula (IN-UP), Lake Huron (LH), Lake Superior (LS), Lake Michigan (LM), and Lake Erie (LE) breeding areas. The locations are shown in order of increasing mean Total PCB concentration	34
Figure 16	Geometric mean of Total PCB concentrations in plasma of 104 nestling bald eagles sampled in 1999 from 7 subpopulations in Michigan (inland lower peninsula (IN-LP), inland upper peninsula (IN-UP), Lake Superior (LS), Lake Huron (LH), Lake Erie (LE), and Lake Michigan (LM)), and Voyageurs National Park (VNP), Minnesota in comparison to 251 samples collected in 1987-1992 (Bowerman 1993)	35
Figure 17	PCB concentrations in blood drawn from nestling bald eagles in Michigan, 1999	36
Figure 18	a-Chlordane concentrations in nestling bald eagle blood samples in 1999. The data are plotted from low-to-high mean a-chlordane concentration	37
Figure 19	Dieldrin concentrations in nestling bald eagle blood samples in 1999. The data are plotted from low-to-high mean dieldrin concentration	37

(Attachment #53)

LIST OF TABLES

		Page
Table 1	The number of fledged young, occupied nests, and productivity of bald eagles in Michigan in 1999. Data are presented as: 1. Statewide, 2. Great Lakes vs. inland, 3. Great Lakes vs. Anadromous vs. inland, and 4. Each of the Great Lakes vs. inland upper and lower peninsulas. Productivity values with the same letters are not significantly different	38
Table 2	Morphometric data for nestling bald eagles sampled in 1999	39
Table 3	Concentrations of Hg in nestling bald eagle feather samples collected in 1999	42
Table 4	Median and mean Hg concentrations in nestling bald eagle feathers collected in 1999	44
Table 5	Mean Hg concentrations in eaglet feathers from watersheds sampled in 1999 ranked from high-to-low	45
Table 6	Geometric mean, range, and n for Hg concentrations (ug/g dry weight) in nestling bald eagle feathers collected in Michigan from 1985-89 (Bowerman et al., 1994) and 1999	46
Table 7	Organochlorine contaminant analytes measured in nestling bald eagle blood samples in 1999, with parameter-specific Method Detection Levels (MDLs) and Quantification Levels (QLs)	47
Table 8	Concentrations of DDT, DDE, and DDD compounds in nestling bald eagle blood samples collected in 1999. Breeding areas were located in either inland lower peninsula (IN-LP), inland upper peninsula (IN-UP), Lake Huron (LH), Lake Michigan (LM), Lake Erie (LE), or Lake Superior (LS) watersheds. Territories were associated with either inland (IN), Great Lakes (GL), or anadromous (AN) waterbodies. Concentrations are reported in ng/g wet weight (ppb). Values below the Method Detection Levels are reported as non-detectable (ND). MDLs are reported in Table 7.	48
Table 9	Mean and median DDT, DDE, and DDD concentrations (ng/g wet weight) in nestling bald eagle blood samples collected in 1999. Values below the Method Detection Levels (MDLs) are reported as non-detectable (ND). MDLs are reported in Table 7	51
Table 10	Geometric mean, range, and frequency of detectable concentrations of 4,4'-DDE in plasma of 104 nestling bald eagles in Michigan and Voyageurs National Park (VNP), Minnesota in 1999, compared to 251 samples collected in 1987-1992 (Bowerman, 1993)	52
Table 11	Concentrations of PCB congeners and Total PCB concentrations in nestling bald eagle plasma samples collected in 1999. Values below the Method Detection Levels (MDLs) are reported as non-detectable (ND). MDLs are reported in Table 7	53

LIST OF TABLES

		Page
Table 12	Mean and median concentrations of 20 PCB congeners and their sum Total PCB concentrations in nestling bald eagle plasma samples in 1999. Values below the Method of Detection Levels (MDLs) are reported as non-detectable (ND). MDLs are provided in Table 7	56
Table 13	Geometric mean, range, and frequency of detectable concentrations of Total PCBs in plasma of 104 nestling bald eagles in Michigan and Voyageurs National Park, Minnesota in 1999 compared to 251 samples collected in 1987-1992 (Bowerman, 1993)	58
Table 14	Mean Total PCB concentrations (ng/g wet weight) in watersheds sampled in 1999 ranked high-to-low	59
Table 15	Concentrations of several organochlorine pesticides in nestling bald eagle blood samples collected in 1999. Breeding areas were located in either inland lower peninsula (IN-LP), inland upper peninsula (IN-UP), Lake Huron (LH), Lake Michigan (LM), Lake Erie (LE), or Lake Superior (LS) watersheds. Territories were associated with either inland (IN), Great Lakes (GL), or Anadromous (AN) waterbodies. Concentrations are reported in ng/g weight (ppb). Values below the Method Detection Levels are reported as non-detectable (ND). MDLs are reported in Table 7	60

(Attachment #53)

LIST OF APPENDICES

		Page
I	CIET Project Analytical Report for Mercury	63
	1.0 Introduction	63
	2.0 Analytical Results	63
	3.0 QA/QC Qualifiers	63
	4.0 QA/QC Objectives and Variances	63
II	CIET Project 9903 Analytical Report for Pesticides and PCBs	65
	1.0 Introduction	65
	2.0 Analytical Results	65
	3.0 QA/QC Qualifiers	65
	4.0 QA/QC Objectives and Variances	65
III	CIET Project 9903 Analytical Report for Lipid Analysis	67
	1.0 Introduction	67
	2.0 Analytical Results	67
	3.0 QA/QC Objectives and Variances	67

SECTION 1.0

Executive Summary

- The bald eagle monitoring project is one component of the surface water quality monitoring program which was developed by the state of Michigan to address the following goals as summarized in the January 1997 report entitled, "A Strategic Environmental Quality Monitoring Program for Michigan's Surface Waters" (Strategy):

  1.) Assess the current status and condition of individual waters of the state and determine whether standards are being met.

  2.) Determine temporal and spatial trends in the quality of Michigan's surface waters.

  3.) Provide data to support the Michigan Department of Environmental Quality (MDEQ) water quality programs and evaluate their effectiveness.

  4.) Detect new and emerging water quality problems.

- The reproductive productivity (i.e., the total number of fledged young per occupied nest) for bald eagles in the state of Michigan in 1999 was 0.99. Eagles nesting within the state during 1999 therefore nearly attained the goal of 1.0 young per occupied nest established in the Northern States Bald Eagle Recovery Plan. However, inland breeding areas had significantly greater productivity (1.07) than Great Lakes nests (0.83).

- In 1999, 90 samples of breast feathers were collected from nestling bald eagles for mercury (Hg) analysis. Quantifiable concentrations of Hg were measured in all feather samples that were analyzed. There was no statistically significant difference in Hg concentrations of nestling feathers between inland and Great Lakes-associated nestlings. Mean Hg concentrations were ranked in the following order by location from highest to lowest: inland lower peninsula > Lake Superior > inland upper peninsula > Lake Michigan > Lake Huron > Lake Erie. Hg concentrations from nestling bald eagle feathers collected during the period of 1985-1989 in Michigan were generally greater than Hg concentrations found in 1999. However, the decline was only statistically significant for the combined Lakes Michigan and Huron data.

- In 1999, 93 nestling bald eagle blood samples were analyzed for organochlorine contaminants such as dichlorodiphenyltrichloroethane (DDT) and its metabolites, 20 polychlorinated biphenyl (PCB) congeners, chlordane, and dieldrin.

- Statistically significant differences in total DDT concentrations were found between inland, Great Lakes, and anadromous breeding areas and also between inland lower peninsula and inland upper peninsula, Lake Huron, Lake Michigan, Lake Erie, and Lake Superior breeding areas. Mean total DDT concentrations were ranked in the following order by location from highest to lowest: Great Lakes > anadromous > inland breeding areas, and Lake Michigan > Lake Superior > Lake Huron > Lake Erie > inland upper peninsula > inland lower peninsula. 4,4'-Dichlorodiphenyldichloroethylene (4,4'-DDE) was detected in 86% of the samples and was the most common DDT metabolite found in eaglet blood. 4,4'-DDE concentrations measured in 1999 were generally lower than those measured in 1987-1992.

- Twenty PCB congeners were quantified and summed to determine total PCBs in nestling bald eagle plasma samples. Four congeners (118, 138, 153, and 180) contributed significantly to the total PCB concentrations. At least one of the targeted PCB congeners was detected in 63 (67.7%) of the nestlings sampled. The 30 nestlings in which no PCB congeners were detected were found in inland breeding areas. A statistically significant difference in total PCB concentrations was found between inland, Great Lakes and anadromous breeding areas, and among the inland lower peninsula, inland upper peninsula, Lake Huron, Lake Michigan, Lake Erie, and Lake Superior regions. Total PCB concentrations measured in 1999 were generally less than those measured in 1987-1992.

- Quantifiable concentrations of *alpha*-chlordane were measured in 15 blood samples (16%). Statistically significant differences existed between Great Lakes, inland, and anadromous breeding areas and also between inland lower peninsula, inland upper peninsula, Lake Huron, Lake Michigan, Lake Erie, and Lake Superior breeding areas. Mean concentrations of *alpha*-chlordane were greatest in the Great Lakes breeding areas. Mean *alpha*-chlordane concentrations were ranked in the following order by location: Lake Erie > Lake Michigan > Lake Huron > Lake Superior.

- Quantifiable concentrations of dieldrin were measured in 14 blood samples (15%). Significant differences occurred between inland lower peninsula, inland upper peninsula, Lake Huron, Lake Michigan, Lake Erie, and Lake Superior breeding areas. Concentrations were greatest in nestlings located in Great Lakes breeding areas and least in inland breeding areas. Mean dieldrin concentrations were ranked in the following order by location from highest to lowest: Lake Superior > Lake Michigan > Lake Erie > Lake Huron.

- Hexachlorobenzene, *alpha*-hexachlorocyclohexane, *gamma*-hexachlorocyclohexane, heptachlor, heptachlor epoxide, *gamma*-chlordane, and toxaphene were not quantifiable in most nestling bald eagle blood samples.

(Attachment #53)

SECTION 2.0

INTRODUCTION

In April 1999, the MDEQ, Surface Water Quality Division (SWQD), began monitoring environmentally persistent and toxic contaminants in bald eagles. This study is part of the Wildlife Contaminant Monitoring Project, which is described in the Strategy (MDEQ 1997).

The November 1998 passage of the Clean Michigan Initiative-Clean Water Fund (CMI-CWF) bond proposal resulted in a substantial increase in annual funding for statewide surface water quality monitoring beginning in 2000. The CMI-CWF offers more reliable funding for the monitoring of surface water quality over a period of approximately 15 years. This is important since one of the goals of the Strategy is to measure temporal and spatial trends in contaminant levels in Michigan's surface waters.

The bald eagle (*Haliaeetus leucocephalus*) was selected as a biosentinel species for monitoring contaminants in Michigan for the following reasons:

1. As a top-level predator, the bald eagle has a significant reliance on the aquatic food web and feeds primarily on fish and waterbirds. Specific dietary preferences of bald eagles include species of northern pike, suckers, bullheads, carp, catfish, bowfin, ducks, gulls, and deer (winter carrion and road-killed deer).

2. Past monitoring has shown that eagles accumulate organic and inorganic environmental contaminants and those contaminants may be quantified in blood, feather, and egg samples.

3. There is a viable population of bald eagles that provides sufficient sampling opportunities for a long-term monitoring program.

4. The large body size of nestling eagles allows monitoring to be conducted by blood sampling techniques and sufficient sample volumes are available to attain low quantification levels (QLs).

5. Mature bald eagles display great fidelity to their chosen nesting territory and often return to the same nest tree year after year. Although some eagles may move away from their nesting territories in the winter months, bald eagles generally reside within the state's waters throughout the year. Therefore, contaminants found in nestling bald eagles will represent the uptake of available contaminants within a particular territory.

The primary objectives of this monitoring effort were to gather the first year of data in eaglets, evaluate temporal trends between these data and historical data available in the scientific literature and evaluate spatial trends of contaminant concentrations among watersheds and among the Great Lakes basins. Because the methods for sample collection required nest visits and handling nestling eagles, other biological measures were obtained. Therefore, the secondary objectives of the project included determining reproductive success and collecting nestling morphological data. Both spatial and temporal trends of reproductive success were also assessed in this study.

This document serves as the first annual report for the bald eagle element of the Strategy. The report contains the analytical results for organic contaminants and Hg that were measured in nestling bald eagle blood and feather samples, and statistical temporal and spatial trend analyses of the data. Also included in this report are the data for reproductive success and nestling morphological measurements.

In accordance with one of the key principles of the CMI-CWF, the bald eagle monitoring protocol was planned and conducted in partnership with outside organizations. In 1999, this partnership included Lake Superior State University and Clemson University, whereas in 2000 and 2001, this partnership included Michigan State University and Clemson University. Results of the 1999 sampling are provided in this report.

SECTION 3.0

STUDY DESIGN AND METHODS

3.1 SITE SELECTION

The bald eagle monitoring project is designed to provide monitoring coverage of both the coastal Great Lakes and inland waters. Nesting eagles are found along the shorelines and on islands of each of the four Great Lakes surrounding Michigan. Further, the distribution of breeding eagles across much of Michigan provides monitoring coverage for many of the major river systems. Currently, active bald eagle breeding areas are well distributed across the upper peninsula and northern lower peninsula of Michigan (Figure 1).

The establishment of breeding areas in southern Michigan is relatively recent, and the number of active breeding areas continues to increase as eagles either establish new breeding areas or re-occupy historical territories. For example, the breeding areas in Arenac, Barry, Ottawa, and Wayne counties were established in 1998 or 1999. One breeding area in Monroe County was established in 1988 and the other three breeding areas were first occupied in 1998 or 1999. The first breeding areas in Allegan and Saginaw Counties were established in 1993.

To facilitate the SWQD's National Pollutant Discharge Elimination System permitting process, Michigan's watersheds, as delineated by eight-digit hydrologic unit codes (HUCs), are divided into 5 basin years for monitoring (Figure 2). Therefore, approximately 20% of Michigan's surface waters are assessed each year. The bald eagle sample collection schedule is consistent with the basin year delineation and complements the other monitoring activities conducted during each basin year. In addition to the basin year sampling, nests associated with the Great Lakes, the connecting channels and 12 inland territories are sampled annually. Great Lakes and connecting channel nests are sampled annually because nesting success is highly uncertain for these sites. Twelve inland territories with consistently high productivity were selected to track annual trends in contaminant concentrations, assess variability in contaminant concentrations from one year to the next, and determine the frequency that nests need to be sampled to evaluate trends.

The following basin year watersheds were the focus of sampling in 1999 (Figure 3): Two-Hearted, Tahquamenon, Waiska, Manistique, Brevoort, Carp/Pine, and St. Mary's River watersheds of the upper peninsula, and the Manistee, Au Gres/Rifle, Saginaw, Lower Grand, and Kalamazoo River watersheds of the lower peninsula. In addition to the basin year watersheds for 1999, nests associated with the Great Lakes and connecting channels were sampled. Great Lakes-associated nests are defined as those nests within 8.0 kilometers (km) of the shorelines of the Great Lakes and along tributaries where anadromous fish are accessible. Lastly, the twelve inland territories selected for annual sampling were located within the Ontonagon, Michigamme, Au Sable, and Thunder Bay River watersheds.

3.2 FIELD METHODS

The methods used to collect blood and feather samples from nestling bald eagles are designed to avoid injury and undue stress to the birds. Sample collection and morphometric methods are adapted from Bortolotti (1984a, 1984b, 1984c), Henny and Meeker (1981), Henny et al. (1981) and Morizot et al. (1985). The methods are summarized below, but details of the procedures are published in a standard operating procedure (SOP) (Bowerman 1995).

(Attachment #53)

(Attachment #53)

Blood and feather samples are collected from five to nine-week old nestling bald eagles from May 15 through July 4. The approximate age of nestling eagles is visually estimated from two aerial survey flights that are piloted by a Michigan Department of Natural Resource (MDNR) pilot or contracted private pilot. An observer on each flight makes notes of the nest tree and location, determines an aerial latitude and longitude for the nest, and notes the reproductive status of each nest (e.g., eggs, chicks, or adult brooding behavior). From the observer's notes, field crews are directed to the nests at the appropriate time for sampling. Field staff ground truth the latitude/longitude coordinates using Global Positioning System units.

Once at the nest, a trained crewmember climbs the nest tree and secures a nestling. The nestling is placed in a restraining bag, lowered to the ground, weighed by spring scale, and prepared for sampling. Morphological measurements of the culmen, hallux claw, and bill depth are derived by using calipers. The eighth primary feather and the footpad are measured by using a ruler. Procedures developed by Bortolotti (1984b) are used to determine the age and sex of the nestlings. Sex is determined by the relationship of hallux claw length, footpad length and bill depth. Once sex is determined, the length of the eighth primary feather is used to make a sex-specific estimation of age.

Sterile techniques are used to collect blood from the brachial vein of nestling bald eagles. Syringes fitted with 22 or 25 gauge x 1" needles are used for the venipuncture. Up to 12 cc of blood are drawn from the brachial vein and are then transferred to heparinized vacuum tubes and placed on ice in coolers for transfer out of the field. Samples of whole blood are centrifuged within 48 hours of collection and the plasma is decanted and transferred to another vacuum tube and frozen at approximately –20° C for storage. Three to four feather samples also are collected from the nestling eagles. Feathers are plucked from the breast and stored in small sealed envelopes. The vacutainers and feather envelopes are sealed with tamper-proof chain-of-custody tape. After sampling is completed, the nestlings are banded with a size 9. United States Fish and Wildlife Service (USFWS) rivet band and an appropriate color band. The nestling is then placed back in the restraining bag, raised, and released to the nest.

From the field, samples are transferred to pre-arranged collection points at various MDNR, United States Forest Service, or USFWS field stations. At the end of the sampling effort, all samples are collected and transferred to the USFWS East Lansing Field Office, entered into sample storage through a chain-of-custody tracking system, and stored frozen at approximately –20° C. Upon request to the USFWS Chain-of-Custody officer, samples are transferred to the Clemson Institute of Environmental Toxicology (CIET) for analysis. Upon receipt at the CIET, SOPs direct that samples be logged in, checked for sample integrity and again stored frozen at approximately –20° C until prepared for instrumental analysis (CIET 1996, 1999).

3.3 Laboratory Methods

All feather samples were received at the CIET laboratory under chain-of-custody by January 10, 2000. All extractions and analyses were conducted according to procedures detailed in CIET SOPs. Feather samples were digested in five extraction batches. Chicken feathers were used as laboratory control samples for all analytical batches. In addition to the eagle samples, each analytical batch also contained a reagent blank, a chicken feather matrix blank, a chicken feather matrix spike, and a chicken feather matrix spike duplicate (CIET 1999).

Total Hg concentrations were quantified by Varian AA20 atomic absorption spectrophotometer in the vapor generation mode which produced a Quantification Level (QL) of 1.0 ug/g (parts per million (ppm)). As a surrogate matrix, method validation studies were conducted on chicken

feathers to ensure that data quality objectives for the Quality Assurance Project Plan (CIET 1996, 1999) were met. Average recoveries of 70% – 130% for matrix spikes were required under the Quality Assurance Project Plan (CIET 1996, 1999). Correlation coefficients (r^2) for calibration curves consisting of five concentrations of standards were at least > 0.99 for the target analyte in all batches. The average detector response for the instrumental calibration checks was within 20% of the initial calibration for each batch (Appendix I).

All plasma samples were received at the CIET laboratory under chain-of-custody on December 15, 1999. All extractions and analyses were conducted according to procedures detailed in CIET SOPs. Plasma samples were extracted in six batches. Chicken plasma was used for laboratory control samples in all analytical batches. In addition to the eagle plasma samples, each analytical batch contained a reagent blank, a chicken plasma matrix blank, a chicken plasma matrix spike, and a chicken plasma matrix spike duplicate.

Organochlorine pesticide and PCB concentrations were quantified by capillary gas chromatography with electron capture device using the United States Environmental Protection Agency approved methods. All reported results were confirmed by dual column analysis. The QL for the organic compounds was 2 ng/g (parts per billion) with the exception of toxaphene which had a QL of 125 ng/g. Method validation studies were conducted on chicken plasma as a surrogate matrix to ensure that the data quality objectives of the Quality Assurance Project Plan (CIET 1996, 1999) were met. Average recoveries of 70% - 130% for matrix spikes were required under the Quality Assurance Project Plan (CIET 1996, 1999). Correlation coefficients (r^2) for calibration curves consisting of five concentrations of standards were at least > 0.99 for all target analytes in all batches. The average detector response for the instrumental calibration checks was within 20% of the initial calibration for each batch. The average Relative Percent Difference (% RPD) for the spiked analytes in the chicken plasma matrix spike and chicken plasma matrix spike duplicate were less than 30% for all batches (Appendix II).

Percent lipid was quantified from a portion of the nestling bald eagle plasma samples. The lipid analysis was conducted according to procedures detailed in CIET SOPs. Plasma samples were extracted in 2 batches. The QL for the method was 0.5% lipid. Method validation studies were conducted on chicken plasma as a surrogate matrix to ensure that the data quality objectives of the Quality Assurance Project Plan (CIET 1996, 1999) were met. Average recoveries of 70 – 130% for matrix spikes were required under the Quality Assurance Project Plan (CIET 1996, 1999). Correlation coefficients (r^2) for calibration curves consisting of four concentrations of standards were at least > 0.98 for all target analytes in all batches. The average detector response for the instrumental calibration checks was within 20% of the initial calibration for each batch. The % RPD for the spiked analytes in the chicken plasma matrix spike and chicken plasma matrix spike duplicate were less than 30% for all batches (Appendix III).

3.4 Statistical Design

For the purposes of reporting and statistical analysis of the 1999 data, and in keeping with reporting conventions in the scientific literature, the data were broadly grouped by breeding area location. At the broadest level, Great Lakes and inland breeding areas were compared. The Great Lakes-associated nests were evaluated further by lake basin (Superior, Michigan, Huron, and Erie). The breeding areas located on anadromous rivers were examined separately from other Great Lakes breeding areas for organic contaminants to better assess the concentrations which may be affecting bald eagle productivity along the Great Lakes. Inland lower peninsula nests were compared to inland upper peninsula nests. Lastly, breeding areas

were also grouped by watershed (HUC), but sample sizes were insufficient for rigorous statistical analysis at the watershed level.

Statistical analyses of regional data were performed using the nonparametric test of the equality of medians, the Kruskal-Wallis test, as neither the assumptions of normality nor of linear regressions were met. All Kruskal-Wallis tests were performed using MiniTab Release 13. Regression analyses were performed using the fitted line plot function of MiniTab Release 13. Statistical analyses of temporal differences in Hg concentrations were performed using the nonparametric Wilcoxin Rank Sum test (SAS/STAT 6.03). A probability level = 95% ($\alpha = 0.05$) was used to determine statistical significance.

(Attachment #53)

SECTION 4.0

RESULTS AND DISCUSSION

4.1 REPRODUCTIVE SUCCESS

The reproductive productivity (i.e., the total number of fledged young per occupied nest) was calculated for bald eagles for all breeding areas in Michigan using the method of Postupalsky (1974). The following four comparisons were made of productivity for the 1999 breeding season (Table 1): 1) Statewide total for all nests; 2) Great Lakes and inland nests; 3) Great Lakes, Anadromous and inland nests; and, 4) Lakes Erie, Huron, Michigan, Superior, and inland upper and lower peninsulas. Breeding areas were classified as inland nests if they were >8.0 km from a Great Lakes shoreline and not along a river open to Great Lakes fish runs (i.e., anadromous). Great Lakes breeding areas were within 8.0 km of a Great Lakes shoreline and included those along anadromous rivers with the exception of analysis 3.

The productivity for the state of Michigan was 0.99 young per occupied nest. Eagles nesting within the state during 1999 therefore nearly attained the goal of 1.0 young per occupied nest set in the Northern States Bald Eagle Recovery Plan (Grier et al. 1983).

Different subpopulation comparisons showed significant differences among areas of the state (Table 1). Inland breeding areas had significantly greater productivity (1.07) than Great Lakes nests (0.83) (p=0.0233). Inland breeding areas also appeared to have a greater productivity (1.07) than both Great Lakes (0.83) and anadromous (0.83) breeding areas (p=0.0756). Breeding area productivities also varied significantly depending on watershed locations with Lake Erie having the greatest productivity (1.75), followed by the inland lower peninsula (1.24), then the inland upper peninsula (0.93), Lakes Michigan (0.91), Superior (0.77), and Huron (0.72) (p=0.0058).

One must be cautious about using productivity from only one year to determine the health of the Michigan bald eagle population. A number of factors, including sample size and which nests are occupied can greatly affect this determination. Individual breeding area productivities can be affected by adult turnover rates and other factors including longevity and patterns of occupancy. These factors will be studied in future years.

4.2 MERCURY IN NESTLING BALD EAGLE FEATHERS

In 1999, 90 samples of breast feathers were collected from nestling bald eagles for analysis. The morphometric data for these nestlings is provided in Table 2. Regionally, the analyzed samples were from 25 inland upper peninsula, 32 inland lower peninsula, 10 Lake Superior, 13 Lake Michigan, 1 Lake Erie, and 9 Lake Huron breeding areas (Table 3).

Quantifiable concentrations of Hg (1.91 - 19.84 ug/g dry weight) were measured in all feather samples analyzed. Concentrations were less than 10 ug/g in 79% of the nestlings, and concentrations ranging from 3-7 ug/g were the most frequently measured (57%) (Figure 4). Nineteen nestlings had concentrations of Hg > 10 ug/g, and only 7 (8%) nestlings had Hg concentrations ≥ 15 ug/g.

Greater concentrations of Hg were found in nestlings from inland breeding areas (n = 57) than in Great Lakes-associated nestlings (n = 33). The median Hg concentration was 6.6 and 5.3

(Attachment #53)

ug/g in nestlings from inland and Great Lakes territories, respectively (Figures 5 and 6). There was no statistical difference (p = 0.097) in median Hg concentrations between inland and Great Lakes nestlings. Similarly, median Hg concentrations were comparable between nestlings of inland territories (lower peninsula vs. upper peninsula) and of Great Lakes territories (Lake Superior vs. Michigan vs. Huron vs. Erie) (p = 0.236) (Table 4). Mean Hg concentrations were ranked in the following order by location: inland lower peninsula > Lake Superior > Inland upper peninsula > Lake Michigan > Lake Huron > Lake Erie (Figure 6).

Nestling feather samples were collected from 30 watersheds as delineated by the United States Geological Survey's HUC. The average Hg concentrations for each watershed, ranged from 1.9 – 17.5 ug/g (dry weight) (Table 5). Mean Hg concentrations were < 10 ug/g in 80% of the watersheds. Six watersheds had concentrations of Hg ≥ 10 ug/g, and only one watershed had Hg concentrations ≥ 15 ug/g. The four watersheds with the lowest mean Hg concentrations were the Raisin, Saginaw, Kalamazoo, and Shiawassee River watersheds, and were located in the southern lower peninsula. Conversely, the five watersheds with the greatest mean Hg concentrations were the Ontonagon, Dead – Kelsey, Brevoort – Millecoquins, and Cedar – Ford River watersheds, and were located in the upper peninsula. Insufficient sample sizes were available for a rigorous statistical analysis of Hg concentrations by watershed, but an initial test for equality of median Hg concentrations indicates statistical differences exist among the watersheds (p =0.022).

At individual breeding areas the greatest concentration of Hg found in nestling bald eagle feathers was 19.84 ug/g Hg and was measured in a nestling from Manistee County, breeding area MN-07 (Table 2, Figure 7). Other territories in which nestlings had > 15 ug/g Hg in their feathers were MM-15 from Menominee County (one of one nestlings), MQ-09 (two of two nestlings) from Marquette County, ON-09 (two of two nestlings) from Ontonagon County, and RO-03 from Roscommon County (one of three nestlings). In each of these counties, with the exception of Menominee in which only one nestling was sampled, Hg concentrations in nestlings from other breeding areas in the same county were found to be as low as 3.0 ug/g, dry weight.

Hg concentrations in nestling bald eagles, therefore, appear to represent contamination of the local prey base, which in turn is a reflection of the contamination within the local watershed and specific waterbody. It is notable that the breeding areas in which the highest Hg concentrations were measured often were located near inland impoundments. During the active nesting and chick-rearing period, it is likely that the adults feed primarily from these nearby impoundments. Specifically, MN-07 is located near Tippy Dam Pond, MQ-09 is associated with the Deer Lake Impoundment, and RO-03 is located at the south end of Deadstream Flooding. Three other nests within Roscommon County (Figure 7) had Hg concentrations > 5 ug/g, and each is associated with an impoundment created by a low-head dam installed by the MDNR to provide fisheries and wildlife habitat. The breeding area ON-09 is within eight km of Lake Superior and is therefore identified as a Great Lakes breeding area, but the breeding area also is adjacent to Victoria Reservoir.

The Deer Lake breeding area in Marquette County (MQ-09) is the one territory sampled in 1999 that is associated with a known site of Hg contamination. Deer Lake, an International Joint Commission designated Area of Concern for Hg contamination, is a mesotrophic-eutrophic impoundment of the Carp River. It was contaminated historically with Hg by analytical laboratories conducting ore analysis. High concentrations of Hg remain and were recently measured in surficial sediments at concentrations ranging from <0.05 mg/kg (ppm) to 16 mg/kg (dry weight) (Ostaszewski and Creal, 1998). Hg concentrations in edible portions of fish

(i.e., fillets) have been the subject of recent monitoring. While Hg levels in Deer Lake fish have declined since 1987, they remain the highest in Michigan and some fish fillets continue to have Hg concentrations which exceed trigger levels used by the Michigan Department of Community Health to set fish consumption advisories (Day 2000). Similarly, the two nestlings at the Deer Lake breeding area had high Hg concentrations in their feathers (16.2 and 17.2 ug/g). Based on the proximity of the breeding area to Deer Lake, it is presumed that the adults are feeding on fish from Deer Lake and providing those fish to the nestling eaglets.

Breeding areas with the lowest Hg concentrations (< 5 ug/g) were associated with inland rivers, inland lakes, and the Great Lakes. Specifically, MO-03 is on the lower Detroit River in Lake Erie, BY-01 is located in outer Saginaw Bay, Lake Huron, GO-22 is associated with an inland lake in the upper peninsula, and OG-01 is located within the Rifle River Recreational Area.

The factors contributing to the methylation of Hg may explain the finding that greater Hg concentrations are found in nestling eagles near inland impoundments. Methylation of Hg is a process in which microorganisms convert elemental Hg to the more bioavailable form of Hg, methyl mercury. Greater methylation of Hg occurs in waterbodies where the combination of pH and alkalinity provide the proper conditions for methylation, and in waterbodies with decaying vegetative matter, highly organic sediments, and a high surface area:depth ratio. These factors are often found together in inland impoundments. Conversely, lower Hg concentrations are expected in areas with higher pH values and little organic matter or decaying vegetation. These characteristics typify inland rivers, natural inland lakes, and the Great Lakes. Future monitoring efforts should try to identify the primary waterbody where each of the eagle pairs catch fish and other aquatic organisms.

Concurrent data were available from monitoring conducted in 1999 in Voyageur's National Park (VNP), Minnesota. Nine samples were analyzed and the Hg concentrations ranged from 2.8 – 25.3 ug/g dry weight. There was, however, no statistical difference between Hg concentrations measured in the VNP and Michigan's inland or Great Lakes breeding areas (p = 0.319).

Nestling bald eagle feather samples were collected during the period of 1985 – 1989 from inland and Great Lakes breeding areas (Bowerman, 1993; Bowerman et al. 1994). To compare Hg concentrations to the 1999 data, samples associated with Lake Michigan and Lake Huron were combined (Table 6, Figure 8). In general, concentrations of Hg declined in each region, but the decline was only significantly different for the combined Lake Michigan and Lake Huron data. Greater variability occurs in the temporal analysis of individual breeding areas. Data were available for 15 specific breeding areas from 1987 – 1989 and from 1999. While trends can not be determined from two points, Hg concentrations in 1999 were lower in 6 breeding areas, were higher in 8 breeding areas, and were similar in 1 breeding area (Figure 9). The variability in these data is typical of biological samples and illustrates the need to consider minimum required sample sizes to overcome inherent variability. Future monitoring efforts should be refined and variability considered in determining sample sizes to detect temporal trends on a watershed basis.

4.3 Organic Contaminants in Nestling Bald Eagle Blood Samples

In 1999, 93 nestling bald eagle blood samples were analyzed for organochlorine contaminants. The target list of analytes included historical organochlorine pesticides such as chlordane, dieldrin, and DDT and its metabolic products, and 20 PCB congeners. The complete list of analytes and the parameter-specific Method Detection Levels (MDLs) and QLs are shown in Table 7. For summary purposes, concentrations less than the MDL were reported in the tables

Coal Dock License Agreement	8/8/88	R-12
Facilities Agreement	6/12/88	R-4
Operation and Maintenance Agreement	8/19/88	R-8

11. The Power Purchase Agreement was amended and became fully effective on April 30, 1987, following the February 19, 1987 ruling of the Michigan Public Service Commission (Petitioner's Exhibit P-56C), which approved a contract avoided cost capacity rate of (i) 4.36 cents per kilowatt hour for energy delivered during peak hours and (ii) 3.70 cents per kilowatt hour for energy delivered during off-peak hours, resulting in a blended energy and capacity rate of 3.99 cents per kilowatt hour.

12. For 1991 and 1992, the Township assessor accepted the personal property statements submitted by the owner and classified the property for which the costs were reported thereon as personal property, and utilized Chapter 15 and the personal property multipliers therein to determine its true cash value. The balance of the assessable property at the site was classed and assessed as real property with the improvements valued under the Marshall Swift cost approach.

13. For the 1993 and subsequent tax years, Leslie Anderson, and then Eric Newberg, of the State Tax Commission Utility Valuation Section, assessed the subject real and personal property. Their assessments are based on the appraisals, which are identified as Respondent's Exhibits R-52, R-53, R-54 and R-55. These appraisals correlated cost and income approach valuation estimates, and reclassified most of subject from personal to real property, rejecting and restating the personal property returns for those years.

(Attachment #22)

14. Petitioner's filed appraisals are, for 1993-1995, Exhibit P-1 (by Donald Paton); for 1996, Exhibit P-2 (Paton and John Achenbach), and for 1993-1996, Exhibits P-3 and P-4 (Francis Moss). Respondent's filed appraisals are, for 1993, Exhibits R-52 and R-52.1 (Leslie Anderson); for 1994, Exhibits R-53 and R-53.1 (Leslie Anderson); for 1995, Exhibits R-54 and R-54.1 (Eric Newberg) and for 1996 Exhibits R-56 (Volume 1) and R-56.1 (Terrell Oetzel, assisted by John Russell.)

15. The legal description of the subject site is set out in Exhibit A attached to the stipulation agreement. Parcel D was added for the last two tax years (1995 and 1996) only.

B. PETITIONER'S VALUATION WITNESSES

Petitioner offered testimony through 8 witnesses, and offered 86 Exhibits at the Original Hearing (OH) and 4 witnesses and 26 Exhibits at the Limited Reopened Hearing (RH).

Donald Paton holds a master's degree in engineering and a bachelor's degree in business. He was employed as a Vice President of Westinghouse in finance, and in various capacities in finance and engineering in and around the power industry for most of his career. At the time of his appraisals he was employed by Dean and Associates Inc. (DAI), a firm of Engineers and Consultants, out of Bridgeville, PA, as Finance Director. He performed and signed the appraisals filed by Petitioner and admitted in this proceeding as Petitioner's Exhibit P-1 for the tax years 1993, 1994, and 1995. Further, he performed and signed, together with Mr. Achenbach, the appraisal Exhibit (P-2) for the 1996 tax year. Mr. Paton holds no appraisal or assessment designation, and is not licensed or certified as an appraiser or assessor in any state.

He was not offered as a traditional appraisal expert with particular appraisal training or experience in the traditional sense; rather he was represented to have ". . . broad and extensive experience in the electrical generation industry in advising buyers, sellers and financiers in connection with the valuation of electrical generation facilities being constructed, bought or sold." (OH Tr Vol 1-A, p 36, ll 16-21). Mr. Paton was advanced to establish the true cash value of the subject facility ". . . from the point of view of the reasonably prudent purchaser and/or seller in this case." (OH Tr Vol 1-A, p 37, ll 6-7). He did not visit the facility prior to rendering his opinion of value for 1993, 1994 and 1995.

John A. Achenbach holds a registered engineer designation, and he assisted in developing Petitioner's appraisal Exhibit P-2, for the tax year 1996, which he signed in his capacity of Director of Engineering for DAI. He did visit the facility prior to rendering his 1996 opinion of value. He holds no appraisal or assessment designation, and is not licensed or certified as an appraiser or assessor in any state.

Jay Messer held the appraisal designation of MAI, and was a certified Michigan Appraiser at the time of his testimony in this matter. Mr. Messer was not called as an appraisal witness because he did not prepare and/or sign P-1, P-2, or any other appraisal report in advance of the hearing as required by Tribunal rules. Further, he had no opinion of value as to subject property for the tax years at issue; rather, he was called as a theory witness only, having consulted with Petitioner's witnesses, and examined Respondent appraiser Oetzel's report. (OH Tr Vol 11-B, pp 122-124).

(Attachment #22)

C. PETITIONER'S OTHER PRINCIPAL WITNESSES

David Mikelonis is CECO's General Counsel. He testified as to PURPA regulations and the process through which a plant must pass to obtain designation as a Qualifying Facility operating under PURPA.

Samuel McConnell is an independent power broker, who has experience in purchasing PPA buyouts and buydowns, and testified as to the 10 PPA sales transactions which occasioned the limited reopened hearing.

R. Joseph Tondu is an independent Power Developer and is one of the original developers of Filer City Station, the subject facility. He testified as an original owner familiar with the several contracts concerning the origination of subject, and as a person who has been approached with prospects of redeveloping subject into a different and larger generation plant. Mr. Tondu was a witness in the reopened hearing as to subject QF COGEN and its PPA, as to attempts to purchase his PPA and as to his proposed "Northern Lights Project": a 300 megawatt pulverized coal plant to be located on subject site. He owns interests in several other power projects in several states.

Lyle Thornton holds a registered engineer designation, and has worked for many years in the power industry. He testified at the reopened hearing concerning the engineering of various combined cycle gas turbines (CCGT) as they may or may not be configured comparably to amount to a substitute for subject's coal fired turbines.

D. PETITIONER'S PRINCIPAL CONTENTIONS

Petitioner's primary argument was that subject property had been assessed at more than 50% of its true cash value. Petitioner asserted that subject should be valued primarily through the income approach to value, at what well-informed arm's length purchasers would pay to willing sellers to acquire and operate the facility, without also purchasing Petitioner's 1986 PPA. Petitioner acknowledged that this Tribunal has the duty and the power to itself determine true cash value, and to determine the correct assessed and taxable values, but noted that if the Tribunal were to conclude that there are inadequate facts in the record for the Tribunal to reach an independent valuation conclusion, the Tribunal should then, under Petitioner's uniformity argument, in the alternative, order the Assessor to place on the rolls the value resulting from the machinery and equipment being uniformly classified as personal property and uniformly valued by the STC multipliers.

Mr. Paton testified in detail as to PURPA, the federal and state regulations, and as to how the electrical generation, transportation, and distribution system works in Michigan and the United States. He relied exclusively upon an income approach to value, and utilized a 30-33 year discounted cash flow analysis. Paton valued the subject at what it would sell for without its 1986 PPA long contract. He looked primarily to FERC data, as assembled by the Fitch Investor Service, Inc., entitled "Electric Utility Competitive Operating Statistics" (Fitch Statistics), to determine the rates at which a purchaser of the subject plant would anticipate being able, as a "merchant plant," to sell electrical energy and capacity. Mr. Paton projected expenses based on actual operating experience and on the Facility's budgets by looking to projected operating expenses. For the 1996 "update appraisal," Mr. Paton similarly relied upon the income approach

(Attachment #22)

to value, valuing the subject as a "merchant plant," but he also considered a replacement cost approach to value as a "check" on his income approach conclusion. In this cost approach "check," Mr. Paton began with replacement cost, using a combined cycle gas turbine (CCGT) of similar electrical and steam capacity, rather than beginning with the much greater cost of reproducing the obsolete traveling grate stoker-fired coal/wood-fired facility.

Petitioner called Jay Messer, MAI, as an appraisal theory witness to confirm the appropriateness of Mr. Paton's analysis and approaches. Mr. Messer confirmed that Mr. Paton, who had worked with Mr. Messer in connection with the 1996 appraisal update, used approaches entirely consistent with standard appraisal principles and procedures.

Petitioner called MPSC Commissioner John Shea, and Donald Johns, who was a member of the MPSC staff during the years at issue and dealt with PURPA QF matters. These witnesses testified about regulation and deregulation in the electric generation, transmission and distribution industry, MPSC proceedings, NUGs, and about the saleability of PPAs. These witnesses confirmed that during the tax years at issue, a purchaser of subject would not have been able to negotiate a capacity rate under a new PPA with Consumers.

Petitioner, at the reopened hearing, called Lyle Thornton, a professional engineer who had worked for several decades in designing and overseeing the construction of electrical generation facilities, including QFs and NUGs. Mr. Thornton had also worked with Mr. Tondu with respect to the possibility of developing a much larger 300 megawatt pulverized coal type NUG in 2001.

Petitioner also called Samuel McConnell, who testified as to ten separate PPA sales transactions. He had earlier supplied this information to Mr. Tondu, to interest Petitioner in selling Petitioner's 1986 PPA separate and independent from the Filer generating station. Mr. McConnell described several different types of transactions, also described in the extensive regulatory commission documents introduced as exhibits, which related to most of the ten PPA sales. Mr. McConnell described in detail the rationale and economics underlying third parties paying substantial sums in such circumstances where PPAs had been sold.

Petitioner called Mr. Tondu, one of the original developers and a continued fractional owner, who described the facility as obsolete, one of the last of its type constructed in the United States, and a facility that, were he or any purchaser interested in the subject during the tax years at issue, would have been replaced with a CCGT facility. Mr. Tondu explained that he built this type of facility only because he could not acquire gas to enable him to construct a CCGT facility, and that adequate gas was subsequently made available before the tax years at issue. Mr. Tondu described his "Northern Lights Project" as a proposed 300 megawatt pulverized coal facility that he investigated in 2001-2002, five or more years after the tax years at issue. He explained that had he developed the developed the Northern Lights Project (NLP) facility, the following conditions were required: adequate transmission lines, which he did not believe existed; the ability to purchase the seven separate Michigan PPAs (without their generating plants); and a facility location in a Renaissance Zone or eligibility for some other substantial reduction of property taxes, which the township refused to approve.

Petitioner advanced a second, alternative argument, its "constitutional uniformity theory." In the event the Tribunal could not reach an independent determination of cash value, Petitioner requested an order directing Respondent to uniformly classify its boilers, turbines, generators, and the like as personal property and uniformly apply the STC personal property multipliers. This uniformity argument had been earlier advanced in Petitioner's Motion for Summary Disposition, where Petitioner asserted that it had been denied the uniform treatment required by Art. 9. § 3 of the Michigan Constitution and the equal protection required by the Michigan and United States Constitutions. Petitioner established through affidavits, confirmed at the original hearing by testimony, that the machinery and equipment, and in some cases boilers and related equipment, of all other taxpayers in the Township were classified, and valued, as personal property, just as Petitioner's similar property had been classed and valued by the same assessor for the tax years 1991 and 1992 [not presently before us], and that the discriminatory reclassification of Petitioner's property, alone, as real property, with the subsequent refusal to apply the STC personal property multipliers, violated Petitioner's right to equal and uniform treatment. The Tax Tribunal denied Petitioner's Motion for Summary Disposition on November 9, 1995, holding that Petitioner must prove that all other privately owned generating facilities throughout the State had their machinery and equipment classed as personal property, expanding the area within which Petitioner must prove disparate treatment. Petitioner offered testimony from Mr. Moss and the Township Assessor in support of its claim to establish the value that would have resulted from classification as personal property and the application of appropriate STC multipliers.

(Attachment #22)

E. RESPONDENT'S VALUATION WITNESSES

Respondent offered testimony through five witnesses and offered 38 exhibits at the Original Hearing (OH) and one witness and eight exhibits at the Limited Reopened Hearing (RH).

Leslie V. Anderson holds a Michigan level IV assessor certification, and he was the Manager of the State Tax Commission's Utility Valuation Section, when the STC was engaged by Filer Township to appraise the subject Filer City facility. He performed and signed the 1993 and 1994 appraisals filed by Respondent, as R-52 and R-52.1 and R-53 and R-53.1, respectively, in this proceeding. Over many years he performed a large number of public and private utility appraisals in conjunction with his position at the STC. In concluding to a value for subject plant he used the Cost Approach and the Income Approach, correlating them to a single appraised value for each of the 1993 and 1994 tax years.

Eric Newberg holds a Michigan Level IV assessor certification. He was Mr. Anderson's successor as Manager of the State Tax Commission's Utility Valuation Section, and he took over the duties of the Filer appraisal contract upon Mr. Anderson's retirement. He performed and signed the appraisal filed by Respondent as R-54 and R-54.1 in this proceeding. Over several years he performed a number of public and private utility appraisals in conjunction with his position at the STC. In concluding to a value for subject plant he used the Cost Approach and the Income Approach, correlating them to a single appraised value for tax year 1995.

Terrell R. Oetzel holds the recognized MAI and CRE appraisal and appraisal consulting designations and he is a Michigan Certified Appraiser. He was also a past National President of the Appraisal Institute. He was engaged to appraise the subject facility for tax year 1996. While he did not have experience in appraising a COGEN Plant, he did have significant experience in appraising many other complex commercial and industrial plants and in accordance with USPAP Competency Provision, and he took the necessary steps to notice up and repair his lack of experience. In concluding to a value, he used the Cost Approach and the Income Approach, correlating them to a single appraised value for the 1996 tax year. He was assisted in this effort by Mr. Russell's calculation of Reproduction Cost New.

F. RESPONDENT'S OTHER PRINCIPAL WITNESSES

John Russell holds a recognized ASA appraisal designation and is a registered engineer. Although not registered in Michigan, he worked for many years appraising in the regulated power industry, and he provided a Reproduction Cost New calculation for Mr. Oetzel to use as a start in his 1996 tax year Cost Approach. Mr. Oetzel calculated his own depreciation. Mr. Russell did not conclude to a value in any tax year.

George Sansoucy holds a registered engineering designation, and has worked for many years in the power industry. He provided information regarding Utilities comparisons and interpretations and explanations of various public and private power industry reports and reporting formats, principally with regards to Buy Out/Buy Down transactions involving Power Purchase Agreements and Qualifying Facilities.

(Attachment #22)

G. RESPONDENT'S PRINCIPAL CONTENTIONS

Respondent set forth its true cash value contentions through experienced State Tax Commission (STC) appraisers Mr. Anderson (1993, 1994) and Mr. Newberg (1995), who had appraised many public and private utility type properties. For tax year 1996 they engaged Mr. Oetzel who, being experienced in appraisal theory and practice of complex industrial properties, other than COGEN utility property, took the steps required under USPAP to disclose and repair his lack of experience in his appraisal report. Respondent's appraisers took a more traditional appraisal approach, striving to assemble as much information as possible to make an attempt at all three approaches correlating to the conclusion best supported in fact and applicable technique.

Respondent further contends that Petitioner's alternative argument is in fact an attempt to bring the "reclassification" of subject property from Real Property to Personal Property before the Tribunal. Reclassification matters are originally and exclusively within the jurisdiction of the State Tax Commission, and thus are not proper claims here. Respondent's STC appraisers, Mr. Anderson and Mr. Newberg, supported the real property SEVs for 1993, 1994 and 1995, relying on utility property reproduction cost approaches based primarily on original facility costs, which are first classified in a Uniform System of Accounts and then trended through the use of the *Handy-Whitman Index of Public Utility Construction Costs* (Handy-Whitman Index). Respondent's private fee appraiser, Mr. Oetzel, likewise relied on a similar utility property reproduction cost approach to value. He used the assistance of Mr. Russell, an experienced engineer and utility appraiser, to perform a Reproduction Cost New, to which he added his own depreciation estimates, with modifications. This resulted in a real property true cash value

increase for 1996, wherein he added indirect "soft" costs, principally interest under construction, which had not been added by Mr. Anderson or Mr. Newberg. Respondent asks the Tribunal to apply the Oetzel 1996 indirect "soft" costs as a percentage addition, calculated to be 24%, to the STC 1993-1995 appraisals of Mr. Anderson and Mr. Newberg.

Respondent did not value the personal property. Respondent's valuation approaches presumed subject QF COGEN would continue to operate under its current Highest and Best Use with a long term contract for its product. Respondent's appraisers did not recognize CCGT technology as being an appropriate substitute for subject Facility's stoker-fed coal-type technology, as it was not of "equivalent utility."

Respondent's counsel and Mr. Oetzel asserted that Petitioner's QF COGEN long term PPA contract was inextricably part of the facility. Respondent argued that Petitioner's QF COGEN long term PPA contract was not separate non-taxable property, that the alleged sales of other PPAs were, in fact, not sales at all but terminations (buy outs or buy downs), and that PPAs are "value influencers" with respect to the assessable property at the facility.

At the Limited Reopened Hearing, Respondent's counsel asked Mr. Tondu, a part owner of Filer and independent power developer, about the particulars and feasibility of building the "Northern Lights Project," a 300 megawatt pulverized coal plant he proposed and sought Township approval for on subject site in 2001-2002. Mr. Sansoucy and Mr. Tondu were both asked how such a proposal reflected on the question of continuing popularity of coal-fired electrical generating facilities.

(Attachment #22)

Respondent claims that Petitioner misunderstands Respondent's theory and claim. In attempting to frame Respondent's theory and claim in a form agreeable to it, Petitioner states that Respondent wants to include the subject's Power Purchase Agreement as assessable property under the General Property Tax Act. Petitioner devotes a very substantial effort to argue that subject's Power Purchase Agreement is "intangible personal property" that "cannot be assessed or taxed." Respondent states it does not care whether the subject's Power Purchase Agreement is labeled tangible or intangible. The Power Purchase Agreement is not metaphysical, it is simply a contract necessary for subject to be built and exist. There is a PPA for each of the several hundred QF facilities in the country, including the seven in Michigan. The subject's PPA provides for a substantial penalty dependent upon its performance. The subject actually performs well and is expected to do so for the foreseeable future. The plant's owner has turned down repeated offers to terminate and restructure its PPA (RH Tr Vol 3-B, pp 39-41).

Respondent claims that Petitioner's insistence that the Power Purchase Agreement is totally separate from and has no effect upon the subject plant is wrong. Respondent asserts that Petitioner's appraisers' method of valuation is unreasonable and unlawful. Respondent further asserts that Petitioner's results are fatally flawed in that it underestimates subject's thermal capacity at 54 megawatts when it is actually closer to 60 megawatts; overstates subject's expenses at the actual level near 60 megawatts; and understates reasonable QF long term contract market price for subject's electricity.

A number of witnesses from both sides firmly established on the record that neither the subject nor any other non-utility electric generating plant could have been built, nor would have

been built, without an in-place contract for the sale of its product. Knowing this fact, it is fundamental in an income approach analysis that a reasonable contract rate be estimated.

H. INDIVIDUAL FINDINGS OF FACT

1. The subject, Filer City Station, which commenced operations in the summer of 1990, (RH Tr Vol 3-B, p 33, ll 9-16), is a 70 MW (RH Exhibit P-43 and RH Exhibit P-44) Stoker boiler electric and steam generating plant with the capability and permission to burn high sulfur coal, wood and wood waste during the tax years at issue (RH Tr Vol 3-B, p 32, ll 4-14).

2. The state equalized value, assessed value and taxable value of the subject property during the years at issue is as follows (Amended Summary of Pre-hearing Conference and Procedural Order, September 11, 1996, pp 1-2):

YEAR	PARCEL NO	SEV/AV	TV
1993	51-06-019-100-10	$24,500,00	N/A
1994	51-06-019-100-10	$25,000,000	N/A
1995	51-06-019-100-10	$24,750,000	$24,750,000
	51-06-301-701-01	$29,400	$29,400
1996	51-06-019-100-10	$23,750,000	$23,750,000
	51-06-301-701-01	$29,400	$29,400

3. Filer City Station is a qualifying facility (QF) under the Public Utilities Regulatory Policies Act of 1978, 18 CFR Part 292, *et seq*. (PURPA) and is one of seven such QF plants located in Michigan (OH Exhibit R-19; RH Exhibit P-10L). The average price per kilowatt hour (KWh) paid to a QF in Michigan in 1992 was 5.72 cents; in 1993 it was 6.66 cents;

(Attachment #22)

and, in 1994 it was 6.83 cents (OH Exhibit R-19, pp 3-5). QF facilities are part of the status class identified as LU (Life of Unit) (OH Exhibit R-19, pp 3-5; RH Tr Vol 9-B, p 112, ll 18-25, p 113, ll 1-7). The average price paid to LU class generating plants by major utilities in lower Michigan during each tax year at issue was:

1993	6.39
1994	6.54
1995	6.50
1996	6.12

(RH Exhibit R-36, Attachment 6, pp 3-4; RH Tr Vol 8-A, p 63, ll 23-25, p 64, ll 1-3).

4. Beginning in 1993, Filer City Station began earning at a rate above the LU status class average under its 35 year Power Purchase Agreement with Consumers Energy Company (OH ExhibitP-56C). In 1992, Filer City Station earned 5.55 cents per KWh, in 1993, Filer City Station earned 7.32 cents per KWh, and in 1994, Filer City Station earned 7.10 cents per KWh (OH Exhibit R-19, pp 4-5).

5. Approximately 20 percent of Filer City Station's earnings result from a capacity penalty/bonus provision contained in its Power Purchase Agreement with Consumers Energy (OH Exhibit P-56C, p 11). The capacity penalty or bonus is determined annually by a calculation of Filer City Station's "capacity factor" (OH Exhibit P-56C, p 11). The capacity factor for a calendar year is calculated by dividing the total kilowatt hours of electricity that Filer City Station delivered to the electric grid during the preceding calendar year by the product of the contract capacity and 8,760 hours (OH Exhibit P-56C, p 3). Mr. Joseph Tondu, one of the

(Attachment #22)

principals of Filer City Station, succinctly explained the Filer City Station's performance as follows:

> The rate that we are paid from our Power Purchase Agreement, the capacity rate, is paid only on the first fifty megawatts of electricity that we deliver per hour. From fifty megawatts to sixty megawatts, we are paid an energy payment only. However -- and we're not allowed to sell any power greater than sixty megawatts to the grid. So what happens is, we are however allowed to use the extra ten megawatts in our calculation of capacity factor.

(RH Tr Vol 11-B, p 36, ll 10-20.)

> So we keep track of the output on this plant in several different formats. Today we actually keep track on sixty, fifty-four and fifty, and all of those different numbers. That's why the word capacity factor and capacity bonus sometimes get confusing when you read the documents.

Q What is the capacity rating that is utilized in computing the capacity bonus represented in Exhibit P 32-B?

A P 32 – oh, this one over here. The capacity bonus is based on – it's interesting that the Power Purchase Agreement is in a little bit commingled terms. And let me try and explain this a little bit.

> You take fifty megawatts times point seven six eight, times the hours in the month or, let's say the hours in the year, and that gives you the base. And the amount that you exceed that base in energy deliveries, is how you calculate the capacity bonus.
>
> Since we can deliver up to sixty megawatts, we're allowed to -- the reason that we run sixty megawatts, we don't make any money selling energy, but that affects the amount of capacity bonus that we get paid. So we run the plant at sixty megawatts, and use that extra ten megawatts to apply towards the calculation.

(RH Tr Vol 11-B, p 43, ll 11-25, p 44, ll 1-13.)

6. In 1993, Filer City Station's revenue totaled $36,810,840, of which $8,714,112 was the capacity bonus payment. In 1994, Filer City Station's revenue totaled $35,553,223, of which the capacity bonus portion was $8,154,480. In 1995, the capacity bonus contributed

$8,040,360 toward a total revenue of $35,817,441 (OH Exhibit R-32B, pp 1-3; RH Tr Vol 11-B, p 21, ll 15-25, p 22, ll 1-12).

7. Filer City Station is a well built, reliable plant with redundant systems consisting of two boilers, two turbines, a redundant boiler fee punch and a number of other redundancies that allow it to stay on line during maintenance while one system is being maintained (RH Tr Vol 9-B, p 78, ll 6-21). The plant's capacity factor has consistently remained above 90 percent, which contributes significantly to Filer City Station's ability to earn substantial income (RH Tr Vol 9-B, p 78, l 22-25, p 79, l 1).

8. In 1993, Filer City Station's net operating income before deductions for depreciation and interest expense was $20,550,067. In 1994, Filer City Station earned a net operating income of $19,511,135 before deductions for interest expense and depreciation. In 1995, Filer City Station earned a net operating income of $19,625,257 before deductions for depreciation and interest expense (OH Exhibit P-32B). In 1996, Filer City Station earned a net operating income of $16,761,533 before deductions for interest and depreciation (RH Exhibit R-24, Bates p 00094).

9. Petitioner's appraisers concluded an income approach value for each tax year at issue adding an uncorrelated cost approach analysis, (OH Exhibit P-2, pp 35-37), "to provide a frame of reference" for tax year 1996 (OH Exhibit P-1, pp 2-3 [tax years 1993, 1994 and 1995]; OH Exhibit P-2, p 5 [tax year 1996]).

10. Petitioner's appraisers estimated a true cash value for the subject for each tax year as follows:

1993	$29,414,000
1994	$26,262,000
1995	$13,747,000
1996	$14,700,000

(OH Exhibit P-1, p 3; P-2, p 5).

11. Petitioner's concluded income approach values are fatally flawed and lack evidentiary support.

A. The discounted cash flow analysis prepared by Petitioner's appraisers assumes Filer City Station produces only 54 MW of electricity. Petitioner's exhibits and the testimony of both Mr. Tondu and Petitioner's expert, Lyle Thornton, establish that Filer City Station's capacity is 70 MW (RH Tr Vol 7-B, p 25, ll 9-21). 60 MW is routinely delivered to Consumers Energy (RH Tr Vol 11-B, p 36, ll 8-25, p 37, ll 1-6).

B. Petitioner's appraisers made the unreasonable assumption that Filer City Station could not sell its electricity under a long-term contract to a credit-worthy purchaser at its current contract rate or even at the average rate of the LU class of generators. The record is devoid of evidence of investigation by Petitioner's appraisers to determine if Filer City Station could obtain a favorable contract. Petitioner's expert, Donald Paton, admitted that he had not spent any time researching power purchase agreements in Michigan (OH Tr Vol 2-A, p 48, ll 15-20). It is undisputed that a non-utility generating plant would not be built in the tax years at issue without first securing such a contract (OH Tr Vol 4-B, p 41, ll 24-25, p 42, ll 1-2; OH Tr Vol 13-A, p 18, ll 15-19).

C. There were no "merchant plants" in Michigan nor was there a so-called "merchant

(Attachment #22)

plant" electric sales market during the tax years at issue (OH Tr Vol 12-B, p 98, ll 18-20).

D. Petitioner's appraisers' income approach analysis is predicated upon the hypothetical assumption that Filer City Station does not have a long term power purchase agreement and would, therefore, be forced to sell its electricity at a marginal price equal to the average cost of production of electricity in the ECAR Region (OH Exhibit P-1, pp 14-15; OH Exhibit P-2, pp 16-19).

E. Petitioner's appraisers did not visit or inspect the subject property prior to appraising it for tax years 1993, 1994 and 1995 (OH Tr Vol 2-B, p 35, l 9).

12. Petitioner's appraisers assumed that during tax year 1993, Filer City Station would generate at a rate of 54 MW's and sell its electricity at 4.13 cents per KWh; in tax year 1994, it would generate at a rate of 54 MW's and sell its electricity at 4.06 cents per KWh; and in tax year 1995, it would generate at a rate of 54 MW's and sell its electricity at 3.79 cents per KWh (OH Exhibit P-1, p 15). For tax year 1996, Petitioner's appraisers assumed that Filer City Station would generate at a rate of 54 MW's and sell its electricity at 3.74 cents per KWh (OH Exhibit P-2, p 17). Petitioner's appraisers further hypothesized that beginning in 1997, Filer City Station would reduce its merchant market sales and deliver to Packaging Corporation of America (PCA) 50% of PCA's needs at 4.30 cents per KWh (OH Exhibit P-2, P-19, P-33, and Appendix A; OH Tr Vol 2-B, p 42, ll 9-25, p 43, ll 1-14).

13. The 1996 cost approach estimate proposed by Petitioner's appraisers was included to provide a frame of reference, and was rejected by them because such an approach is not

meaningful in this instance (OH Exhibit P-2, p 5). In addition to being rejected by them, Petitioner's cost approach conclusion lacked adequate factual support.

A. Petitioner's replacement cost is estimated as the cost to construct a 62.66 MW gas turbine plant costing $698 per KW (OH Ex P-2, pp 36-37). The cost per kilowatt assumption is contradicted by Petitioner's exhibit (RH P-54, p 2) and Petitioner's expert witness, Lyle Thornton, who testified that the cost of the gas turbine plant would be $559 per KW plus $40 per kilowatt for housing the turbines, $28 per kilowatt equivalent for auxiliary boilers, $57 per kilowatt equivalent for a wood boiler (RH Tr Vol 12-A, p 26, ll 1-22); plus $171 (25 percent) for soft costs, which totals $855 per KW. This amount does not include the cost of on site electrical interconnection facilities (RH Tr Vol 12-B, p 46, ll 19-21).

Even assuming that the subject's production capacity was limited to 54 MW, Petitioner's expert, Lyle Thornton, stated that it would be necessary [for the thermal capacity of the gas turbine replacement plant to be at least 72.6 MW] in order to operate at summer temperatures above 59 degrees Fahrenheit (RH Tr Vol 12-B, p 24, ll 7-12).

B. Petitioner's appraisers' replacement model was presented without any design or construction specifications (OH Exhibit P-2).

C. It is unreasonable to disregard the reproduction cost of a new coal fired plant, particularly when the subject site has significant advantages as a coal plant location (RH Tr Vol 11-B, p 7, ll 1-18). These advantages are described in RH Exhibits P-10L and P-10M.

14. The true cash value conclusions of Petitioner's expert, Frank Moss, which were: for tax year 1993, $38,533,224; 1994, $35,763,508; 1995, $33,293,750; (OH Exhibit P-3) and

(Attachment #22)

1996, $31,294,158 (OH Exhibit P-4), do not result in a fair market value estimate because he did not complete an appraisal.

A. Mr. Moss described his work product as not being an appraisal, but rather something he called a "valuation report," which he described as "more informal and a shorter abbreviation" (OH Tr Vol 5-B, p 14, l 23-24).

B. Mr. Moss's "valuation report" does not meet USPAP (Uniform Standards of Professional Appraisal Practice) standards, which are necessary for a reliable appraisal. MCL 339.2609(b).

C. Mr. Moss did not utilize or correlate the three recognized approaches to valuation (OH P-3, P-4).

C. Mr. Moss did not exercise independent appraisal judgment in formulating his conclusions (OH Tr Vol 5-B, p 99, ll 5-14).

D. Mr. Moss's true cash value conclusions are the result of mechanical application of Chapter 15 of the *Assessor's Manual* as instructed by Petitioner's counsel (OH Tr Vol 5-B, p 98, ll 8-19; OH Tr Vol 6-A, p 14, ll 17-19).

E. Mr. Moss's true cash value conclusion violates the direction set forth in Chapter 12 of the *Assessor's Manual*, which requires use of a reproduction cost analysis determined by trending original costs with the Handy Whitman Trending Index.

15. Petitioner's theory and claim that the only permissible method that can be used to value a non-utility electric generating plant is to view it as a "merchant plant" without a contract

(Attachment #22)

for the sale of its output, is a claim that is factually unsupported and contrary to the record evidence.

A. Each non-utility generating plant for which there is evidence in the record concerning its operations is a plant operating under a contract for the sale of its output (RH Tr Vol 1-A, p 69, ll 2-10).

B. The subject Filer City Station would not have been built without a power purchase agreement first having been secured (OH Tr Vol 4-B, p 41, ll 24-25, p 42, ll 1-2; OH Tr Vol 13-A, p 18, ll 15-19).

C. Of the ten power purchase agreement transactions introduced into evidence by Petitioner, nine were contract terminations for which the plant owners received a termination payment and a new power purchase agreement at above spot market rates (RH Exhibit P-2 and P-10R; RH Tr Vol 2-B, p 76, ll 1-25). The tenth transaction, The Maine Energy Recovery Limited Partnership facility, was an arrangement whereby the contract capacity charge was terminated, coupled with a continuation of the contract energy charge. This plant was a waste burning facility which generated income principally from tipping fees (RH Exhibit P-2; RH Tr Vol 1-A, p 72, ll 1-25, p 73, ll 1-11).

D. Other than complete or partial terminations, "buy outs," or "buy downs," the record is devoid of any compelling evidence that a recognizable market or market price exists for the sale or purchase of "power purchase agreements."

> Three factors complicate valuation. First, the details of transactions are usually confidential; hence data that could be the basis for a comparable sales valuation are scarce. Second, few power projects are sufficiently comparable to make the data, even if it were available, an accurate benchmark of value. Finally,

development-stage projects rarely change ownership for cash alone. Nearly all transactions involve little cash, and the seller retains an ownership interest and/or the right to fees. . . ." (OH Exhibit P-172, p 21)

E. The amount paid to terminate a power purchase agreement is tied directly to the technical and economic viability of the electric generating plant to which it was attached (RH Tr Vol 3-A, p 6, ll 15-21, p 7, ll 1-6).

16. Respondent's expert, Leslie Anderson, former manager of the Utility Valuation Section of the State Tax Commission, appraised subject Filer City Station pursuant to a contract between the State Tax Commission and Filer Township (OH Tr Vol 13-B, p 7, l 25, p 8, ll 1-5). Mr. Anderson opined that in 1993 there were insufficient sales of similar plants to perform a sales comparison approach (OH Exhibit R-52, p 1), and that because the subject property was relatively new with a limited operations history, the cost approach was the best indicator of fair market value (OH Exhibit R-52, p 2). Mr. Anderson concluded to a cost approach true cash value of $48,640,221 for the portion of the Filer City Plant that is not tax exempt (OH Exhibit R-52.1, p 11; OH Tr Vol 13-A, p 84, ll 5-7). Mr. Anderson's cost approach analysis, however, did not include a component for soft costs in developing his reproduction cost (OH Tr Vol 14-A, p 92, ll 1-11).

17. Mr. Anderson appraised Filer City Station for the 1994 tax year under the STC Filer Township contract, and concluded to a December 31, 1993 true cash value of $50,000,000 for the taxable portions of the Filer City Plant (OH Exhibit R-53.2, p 2[a]; OH Tr Vol 13-A, p 93, ll 7-8, p 94, ll 17-19). Mr. Anderson noted insufficient sales to perform a sales comparison analysis and concluded to a cost approach value of $48,299,000 and an income approach value

(Attachment #22)

of $57,005,000. Again, Mr. Anderson did not include soft costs in arriving at reproduction cost. Mr. Anderson gave approximately 80% weight to the cost approach when concluding to a correlated true cash value of $50,000,000. In his income approach analysis, Mr. Anderson assumed that a reasonable market rate for the electricity produced by the subject property would be 5.7 cents per KWh (OH Exhibit R-53, p 6). This rate was derived from examination of the rate Consumers Power was paying other cogenerators at the time (OH Tr Vol 14-B, p 18, ll 9-13).

18. Respondent's expert, Eric Newberg, also a former head of the Utility Valuation Section of the State Tax Commission, performed the State Tax Commission Filer City contract for tax year 1995. Mr. Newberg found that as of December 31, 1994, there were insufficient sales for a sales comparison approach to value (OH Exhibit R-54, p 1). Mr. Newberg concluded to a cost approach value of $48,241,274 (OH Exhibit R-54.1, p 2[a]) without including the contribution of soft costs to reproduction cost. Mr. Newberg's income approach conclusion was $51,450,971. In Mr. Newberg's income approach analysis, he estimated a reasonable market rate of 6 cents per KWh (OH Exhibit R-54, p 6), which he derived from a study of the contract rates of the seven QF facilities then operating in the state of Michigan (OH Exhibit R-19, p 3-5; OH Tr Vol 15-B, p 46, ll 6-11). In arriving at his final value conclusion, Mr. Newberg gave approximately 73% weight to the cost approach to arrive at a fair market value for the non-tax exempt portion of the Filer City Station of $49,100,000 (OH Exhibit R-54.1, p 2[a]).

19. Mr. Terrell R. Oetzel, MAI, with the assistance of Mr. John Russell, a member of the American Society of Appraisers and a registered professional engineer, (OH Tr Vol 15-B, p

148, l 22-25, p 149, ll1-3), appraised the subject plant for the 1996 tax year. Mr. Oetzel found insufficient sales for a sales comparison approach (OH Tr Vol 18-A, p 14, ll 1-5). Mr. Oetzel's income approach conclusion was $112,420,000 and was based upon a KWh rate for Filer City Station derived from the subject's actual power purchase agreement which was in place on tax day. Mr. Oetzel concluded to a cost approach fair market value of $67,797,000 (OH Exhibit R-56.3, p 2[ii]) and a final concluded fair market value of $67,797,000. Mr. Oetzel reasoned that the income approach included the value influences resulting from personal property, tax exempt property, the power purchase agreement and enterprise value. He testified that the subject's reproduction cost depreciated was the best indicator of fair market value as of December 31, 1995 (OH Tr Vol 18-A, p 53, ll 6-10). Mr. Oetzel included soft costs in estimating the reproduction costs of the subject's non-tax exempt property.

20. With the exception of Mr. Anderson and Mr. Newberg, experts who testified for both Petitioner and Respondent on the issue of soft costs recognized that soft costs are a part of an electric generating plant's reproduction cost estimate (Mr. Paton, OH Tr Vol 5-A, p 115, ll 7-11; Mr. Oetzel, OH Tr Vol 18-A, p 31, ll 3-25, p 32, ll 1-25; OH Exhibit R-56, p.164). Mr. Joseph Tondu testified that, as a rule of thumb, soft costs are 25 percent of hard costs (RH Tr Vol 10-B, p 53, ll 18-25, p 54, ll 1-3). Mr. Anderson admitted that normally soft costs should be included in a reproduction cost appraisal (OH Tr Vol 15-A, p 20, ll 18-21).

21. The parties stipulated that in 1995, additions to taxable portions of the plant totaled $101,273 (May 7, 1997 Stipulation as to Taxable Value).

22. Respondent's appraisers, Mr. Anderson and Mr. Newberg, assumed in their

(Attachment #22)

appraisals that subject's Highest and Best Use was its current use as a QF COGEN Plant earning by means of the marketplace income evidenced by the Mean and Median income respectively of Michigan's seven existing PPA contracts in accordance with PURPA. Respondent's appraiser, Mr. Oetzel, agreed with their Highest and Best Use. Petitioner's principal appraiser, Mr. Paton, stated in his first appraisal, "[W]e conclude that the highest and best use of Filer is the use to which it is being put as an improved property – for use in connection with the operation of a relatively new cogeneration facility." (OH Exhibit P-1, p 7). (Emphasis supplied). In this regard, Mr. Paton appears to agree with the current use as the Highest and Best Use; however, he does not project any long term QF contract marketplace income stream that might have been reasonably attributable to subject's real property under that use; rather he hypothesizes a "merchant plant" that earns at a decidedly lower rate. Indeed, his "merchant plant" constitutes in appraisal terms an "alternative Highest and Best Use" that must, in order to be accepted, satisfy the four tests of Highest and Best Use.

23. Petitioner's appraisal is based, in part, upon its appraiser's faulty understanding of instructions given by Petitioner's counsel:

> "[S]ince the proper valuation of the Filer plant hinges upon the treatment of its contract revenues, we inquired of counsel for the petitioner as to whether, for Michigan property tax assessment purposes, an appraiser must include the actual income a property will receive from an existing contract in the future or whether the net operating income calculation must be based on current economic income. DAI is informed that Section 27 of the General Property Tax Act requires the assessor determining value to consider, among other things, "present economic income of structures" and "present economic income of land" if being put to an income producing use. ... We are informed that it is now established law in Michigan that it is the fee simple interest which must be valued, and that one must look to current economic rents or income in applying the income approach to

value, rather than to the actual rents or income attributable to a specific contract or lease." (OH Exhibit P-1, pp 8-9). (Emphasis Supplied)

Mr. Paton's understanding compelled him to conceive a "merchant plant" replacement model and project its income in place of the marketplace QF long term contract income. However, his understanding was faulty, because nothing in the aforementioned statement precludes the use of long term marketplace contract income for a QF in those instances where long term marketplace QF contract income was the basis for the current use in the first place. If Mr. Paton's understanding were to be correct, no income approach could ever be used on a QF COGEN, because its only income generating method is its long term contract. Its highest and best use could never be established because the maximum productivity test could never be met, and it could never be financed because no lender would loan on either the construction or the final real estate, absent a long term QF contract tied to that real property. If this were true, then all QF COGEN Plants could never be valued based on their current use, even though that is the only reasonable way they would be viewed in the marketplace. For property tax purposes, one would always have to develop a hypothetical "merchant plant" without a long term contract, even though there is no reasonable expectation that such a plant would ever be built in Michigan. Indeed, the ramifications of such a holding for other types of long term contract income properties would be immense.

24. Distinguishing Real Estate from Real Property helps our understanding of incorporeal "value influencers" as they may present themselves in the instant appraisal problem.

Real Estate, Real Property...

In real estate appraisal, an important distinction is made between the terms *real estate* and *real property*....

Real Estate is the physical land and the appurtenances affixed to the land – e.g., structures. Real Estate is immobile and tangible. The legal definition of *real estate* includes the following tangible components:

* Land
* All things that are a natural part of the land, such as trees and minerals
* All things that are attached to land by people, such as buildings and site improvements

In addition, all permanent building attachments (for example, plumbing, electrical wiring, and heating systems) as well as built-in items (such as cabinets and elevators) are usually considered part of the real estate. Real estate includes all attachments, both above and below the ground.

Real Property includes all interests, benefits, and rights inherent in the ownership of physical real estate. A right or interest in real estate is also referred to as an *estate*. Specifically, an estate in land is the degree, nature, or extent of interest that a person has in it.

The total range of ownership interests in real property is called the *bundle of rights*. Imagine a bundle of sticks where each "stick" represents a distinct and separate right or interest. The bundle of rights contains all the interests in real property, including the right to use the real estate, sell it, lease it, enter it, and give it away, and each "stick" can be separated from the bundle and traded in the market. Appraisal Institute, *The Appraisal of Real Estate*, (Chicago: Appraisal Institute, 12th Ed Appraisal Institute, 2001), pp 7-8, (Footnotes omitted, emphasis supplied).

It is important to remember that there is no "physical" or "tangible" difference between real estate and real property. The latter term includes rights, interests, and benefits, which are "non-corporeal" or "intangible," and to which may be added "value influencers," which are also "non-corporeal" or "intangible" in nature, and which may have great impact on the true cash value of a property. Often, this distinction is mistakenly overlooked by appraisers who either consider themselves to be focused on the physical assets, or are directed by their client to

(Attachment #22)

consider only the physical assets of the property. Such a mistake often leads to widely divergent opinions of value because the intangible aspects of the real property are not recognized; for example, see *Watson, infra.*

25. One of the fallacies in Petitioner's theory is that it confounds a hypothetical subject operating as a "merchant plant" selling power into the grid at rates negotiated between willing parties with an actual existing subject QF plant operating under its marketplace PPA in accordance with PURPA regulations selling power into the grid at "avoided cost" rates compelled by federal law between, not always willing, parties. This admixture of economics, rather than resulting in appraisal sense, results in appraisal non-sense. But for the QF designation and resultant PPA under PURPA regulations that obliges the regulated utility to buy power and capacity at "avoided cost" rates; there would be no subject facility. It would never have been conceived, financed, built, fitted and operated, because it was and is uneconomic in the marketplace. The only environment in which the subject facility makes economic sense is the environment created and administered under the laws and regulations of the federal/state power regulation apparatus. That is the subject facility's Highest and Best Use, because it is the only use that satisfies the fourth test of being Maximally Productive [highest net return to the land]. Petitioner's theory that a subject QF's PPA is a non-taxable intangible fails because its PPA is actually an intangible "value influencer" associated with placing this particular real property in beneficial use, and resulting in its highest and best use. Indeed, the value of the fee simple estate of the rights, interests, and benefits of this real property, together with any "value influencers" that may apply, cannot be meaningfully understood in any context other than that of

(Attachment #22)

the laws that created it as a QF with its PPA operating under the provisions of PURPA. That is the way the original developers looked at it, that is the way the financiers looked at it, that is the way the federal and state regulators looked at it, that is the way it was constructed and operated, and that is the way a prospective purchaser in the marketplace would look at it.

26. That indirect or "soft" costs are appropriate for inclusion in a proper cost approach can be evidenced through any major appraisal text. Table 14.1 from one such commentary demonstrates as follows:

Indirect Costs

- Architectural and engineering fees for plans, plan checks, surveys to establish building lines and grades and environmental studies
- Appraisal, consulting, accounting, and legal fees
- The cost of carrying the investment in land and contract payments during construction*
- All-risk insurance expense and ad valorem taxes during construction
- The cost of carrying the investment in the property after construction is complete but before stabilization is achieved
- Supplemental capital investment in tenant improvements and leasing commissions
- Marketing costs, sales commissions, and any applicable holding costs to achieve stabilized occupancy in a normal market
- Administrative expense of the developer

* If the property is financed, the points, fees or service charges, and interest on construction loans are indirect costs. Appraisal Institute, *The Appraisal of Real Estate*, (Chicago: Appraisal Institute, 12th Ed Appraisal Institute, 2001), p 359. (Footnotes omitted, emphasis supplied).

27. As regards to the testimony of Mr. Paton at OH Tr Vol 7-B, pp74-76, the Tribunal wishes its finding to be clear that Respondent's appraisers, Mr. Anderson (tax years 1993, 1994) and Mr. Newberg (tax year 1995), had the most reasoned credible and reliable rendition of the proper market QF PURPA PPA income to address for subject under its true Highest and Best

Use, being a QF under PURPA for the tax years at issue; which is, because of the variability involved, to consider all the Michigan PPAs in operation during that time. As expressed in "Respondent's Principal Contentions #17 and #18" respectively, *supra*, in this writing. This contraindicates the justification for the atypical Depreciation [ordinary physical deterioration, extraordinary functional and economic obsolescence] so fundamental to Petitioner's "merchant plant" Replacement Cost New theory, and supports Respondent's Reproduction Cost New less typical Depreciation [ordinary physical deterioration, extraordinary functional and economic obsolescence], as the real property method of choice for dealing with the fee simple estate of subject property for the tax years at issue.

III. CONCLUSIONS OF LAW

A. STATUTE AND CASE LAW - PROCEDURE

The assessment of real and personal property in Michigan is governed by the constitutional standard that such property shall not be assessed in excess of 50% of its true cash value, as equalized, and that beginning in 1995 the taxable value is limited by statutorily determined general price increases, adjusted for additions and losses.

> The legislature shall provide for the uniform general ad valorem taxation of real and tangible personal property not exempt by law...The legislature shall provide for the determination of true cash value of such property; the proportion of true cash value at which such property shall be uniformly assessed, which shall not...exceed 50 percent; ... and for a system of equalization of assessments. For taxes levied in 1995 and each year thereafter, the legislature shall provide that the taxable value of each parcel of property adjusted for additions and losses, shall not increase each year by more than the increase in the immediately preceding year in the general price level, as defined in section 33 of this article, or 5 percent, whichever is less until ownership of the parcel of property is transferred. When ownership of the parcel of property is transferred as defined by law, the parcel

> shall be assessed at the applicable proportion of current true cash value. *Michigan Const 1963, Art 9, § 3.* (Emphasis supplied)

The Michigan Legislature has defined "true cash value" to mean "the usual selling price."

> As used in this act, "cash value" means the usual selling price at the place where the property to which the term is applied is at the time of assessment, being the price that could be obtained for the property at private sale, and not at auction sale except as otherwise provided in this section, or at forced sale. *MCL 211.27(1).*

"True cash value" is synonymous with "fair market value." *CAF Investment Co* v *State Tax Comm*, 392 Mich 442, 450; 221 NW2d 588 (1974).

A proceeding before the Tax Tribunal is original, independent, and de novo. MCL 205.735 (1). The Tribunal's factual findings are to be supported by competent, material, and substantial evidence. *Antisdale* v *City of Galesburg*, 420 Mich 265, 277; 362 NW2d 632 (1984); *Dow Chemical Co* v *Dep't of Treasury*, 185 Mich App 458, 462-463; 452 NW2d 765 (1990). "Substantial evidence must be more than a scintilla of evidence, although it may be substantially less than a preponderance of the evidence." (Citations omitted) *Jones and Laughlin Steel Corp* v *City of Warren*, 193 Mich App 348, 352-353; 483 NW2d 416 (1992).

"The petitioner has the burden of establishing the true cash value of the property." MCL 205.737 (3). "This burden encompasses two separate concepts: (1) the burden of persuasion, which does not shift during the course of the hearing; and (2) the burden of going forward with the evidence, which may shift to the opposing party." *Jones and Laughlin, supra* at 354-355, citing *Kar* v *Hogan*, 399 Mich 529, 539-540; 251 NW2d 77 (1976); *Holy Spirit Ass'n for the Unification of World Christianity* v *Dep't of Treasury*, 131 Mich App 743, 752; 347 NW2d 707 (1984).

(Attachment #22)

"There are three traditional methods of determining true cash value, or fair market value, which have been found acceptable and reliable by the Tax Tribunal and the courts. They are: (1) the cost-less-depreciation approach, (2) the sales-comparison or market approach, and (3) the capitalization-of-income approach." *Meadowlanes Limited Dividend Housing Ass'n* v *City of Holland*, 437 Mich 473, 484-485; 473 NW2d 636 (1991); *Antisdale*, *supra* at 276-277, n 1. The market approach is the only appraisal method that directly reflects the balance of supply and demand for property in marketplace trading. *Antisdale*, *supra* at 276, n 1. "Variations of these approaches and entirely new methods may be useful if found to be accurate and reasonably related to the fair market value of the subject property." *Meadowlanes*, *supra* at 485, referencing *Antisdale*, *supra* at 277, n 1.

"It is the duty of the Tribunal to select the approach which provides the most accurate valuation under the circumstances of the individual case." *Antisdale*, *supra* at 277, citing *Pantlind Hotel Co* v *State Tax Comm*, 3 Mich App 170; 141 NW2d 699 (1966), aff'd 380 Mich 390 (1968).

Under MCL 205.737(1) [currently 205.737(2)], the Tribunal must find a property's true cash value in determining a lawful property assessment. *Alhi Development Co* v *Orion Twp*, 110 Mich App 764, 767; 314 NW2d 479 (1981). The Tribunal may not automatically accept a respondent's assessment but must make its own findings of fact and arrive at a legally supportable true cash value. *Pinelake Housing Cooperative* v *Ann Arbor*, 159 Mich App 208, 220; 406 NW2d 832 (1987); *Consolidated Aluminum Corp* v *Richmond Twp*, 88 Mich App 229, 232-233; 276 NW2d 566 (1979).

The Tribunal is not bound to accept either of the parties' theories of valuation. *Teledyne Continental Motors* v *Muskegon Twp*, 145 Mich App 749, 754; 377 NW2d 908 (1985). The Tribunal may accept one theory and reject the other, it may reject both theories, or it may utilize a combination of both in arriving at its determination. *Meadowlanes*, *supra* at 485-486; *Wolverine Tower Associates* v *City of Ann Arbor*, 96 Mich App 780; 293 NW2d 669 (1980). A similar position is stated in *Tatham* v *City of Birmingham*, 119 Mich App 583, 597; 326 NW2d 568 (1982): "The Tax Tribunal is not required to accept the valuation figure advanced by the taxpayer, the valuation figure advanced by the assessing unit, or some figure in between these two. It may reject both the taxpayer's and assessing unit's approaches."

B. STATUTE AND CASE LAW – ISSUES

1. PETITIONER'S FIRST CLAIM – TRUE CASH VALUE

The true cash value statute, MCL 211.27, et seq., in Michigan reads as follows, in pertinent part:

> Sec. 27. (1) As used in this act, "cash value" means the usual selling price at the place where the property to which the term is applied is at the time of assessment, being the price that could be obtained for the property at private sale, and not at auction sale except as otherwise provided in this section, or at forced sale. . . . A sale or other disposition . . . for rate-making purposes shall not be considered controlling evidence of true cash value for assessment purposes. In determining the value, the assessor shall also consider the advantages and disadvantages of location; quality of soil; zoning; existing use; present economic income of structures, including farm structures; present economic income of land if the land is being farmed or otherwise put to income producing use; quantity and value of standing timber; water power and privileges; and mines, minerals, quarries, or other valuable deposits known to be available in the land and their value. *Id.* (Emphasis supplied).

(Attachment #22)

The language of this particular statute it is important when one notes that the assessor "shall consider" the "advantages and disadvantages" of "existing use; present economic income of structures....and present economic income of land..." This seems particularly on point when considering Highest and Best Use to be the present use, unless economics can demonstrate otherwise; and the present QF PPA income stream over that of an alternative "merchant plant" replacement model.

a. REGULATORY VALUE INFLUENCERS

In *Antisdale* v *City of Galesburg*, 420 Mich 265; 362 NW2d 632 (1985), a case involving a federally subsidized low-income housing project, the Michigan Supreme Court observed that, absent the influence on value of the property's **Federal Tax Credits**, there was practically no value to a subsequent purchaser. The Court reversed and remanded for re-determination, and indicated:

> The foremost value of these properties [subsidized low income housing] is found in the tax benefits they generate to the owner. See, generally, *Kentwood Apts. v. City of Kentwood*, 1 MTTR 295 (1977). Indeed, since property such as that involved in the present case has little capacity to earn income, the availability of the tax benefits may be the only reason to purchase such property. To the extent that tax benefits to a typical owner affect the "usual selling price" of property, they are properly included within the true cash value of the property. Tax benefits, like deed restrictions, *Helin v. Grosse Pointe Twp.*, 329 Mich. 396, 45 N.W.2d 338 (1951), and zoning classifications, *Kensington Hills Development Co. v. Milford Twp.*, 10 Mich.App. 368, 159 N.W.2d 330 (1968), of course, are not real property. Nevertheless, such incorporeal items, not taxable in and of themselves, can increase or decrease the value of real property, and that amount should be reflected in the assessment process. As stated in *In re Appeal of Johnstown Associates*, 494 Pa. 433, 440, 431 A.2d 932 (1981):
>
> > Certainly, the tax status of the particular property owner is not a relevant inquiry under traditional circumstances; however,

> > depreciation tax shelter benefits associated with investment property ownership inherently affect market value, and the court is not constrained to determine market value as though real property ownership lacked tax shelter features." *Antisdale, supra*, at 285; 362 NW2d 632 (1985). (Emphasis supplied).

In *Meadowlanes Limited Dividend Housing Ass'n* v *City of Holland*, 437 Mich 473; 473 NW2d 636 (1991), some six years later, the Michigan Supreme Court again addressed the question of government regulatory value influencers in a remarkably similar case, also involving federal housing subsidy program value influence, this time of below-market government mortgage **Interest Subsidies.** The Michigan Supreme Court again reversed and remanded, and restated its intention to recognize intangible value influencers where they would bear on the true cash value of a subject property, and directed that this federally regulated program should receive similar attention to that outlined in *Antisdale*. The Court stated:

> This case presents issues similar to those addressed by this Court in *Antisdale v. City of Galesburg*, 420 Mich 265, 362 NW2d 632 (1984). Once again we must evaluate the *ad valorem* taxation of a federally subsidized housing complex.... *Meadowlanes, supra* at 482. (Emphasis supplied).
>
> . . .
>
> On remand, the true cash value of the subject property is to be redetermined using the three traditional valuation approaches. . . . We hold, similar to our decision in *Antisdale* . . ., that because the interest-subsidy payments made on behalf of the owner[-]mortgagor of the § 236 property affect the usual selling price of the property, it is proper for the Tax Tribunal to consider those payments in the valuation process. *Meadowlanes, supra*, at 495. (Emphasis supplied).
>
> In *Antisdale*, this Court addressed the true cash value of property similar to the Meadowlanes housing complex . . . In particular, we recognized that although these factors are intangibles, and not taxable in and of themselves, they can increase or decrease the value of property. We concluded that tax shelter benefits are also value-influencing factors and, although intangibles, should be reflected in the assessment process to the extent that they increase or decrease the value of the

(Attachment #22)

> subject real property. *Antisdale, supra*, pp 284-285, 362 NW2d 632. *Meadowlanes, supra* at 495-496, citing *Antisdale, supra*, at 284-285. (Emphasis supplied).

Recently, the California Court of Appeals addressed the issue of a federal subsidy program with regard to PURPA QFs and their PPAs within the electrical power generation industry. In *Watson Cogeneration Co* v *County of Los Angeles*, 120 Cal Rptr 2d 421 (2002), which is nearly identical in nature to the instant matter, the California Court of Appeals affirmed its Superior Court's use of the actual income stream for PPAs with regard to value influence:

> In this case we conclude it was proper for the Los Angeles County Assessor to consider the actual income stream resulting from an above-market price government-facilitated power purchase agreement [PPA] in the property tax valuation of an independent power plant developed and operating under that agreement. *Watson, supra* at 422.

> Appellant is Watson Cogeneration Company, an independent power producer which owns and operates a cogeneration power facility . . . developed as a "qualifying facility" in accordance with the Public Utility Regulatory Policies Act of 1978 (16 U.S.C. § 796 et seq.), a federal legislative scheme intended to encourage the development of cogeneration and small power production facilities. The rules promulgated by the Federal Energy Regulatory Commission as part of this program required utilities to purchase electric energy from a qualifying facility at the utility's avoided cost. This is the cost the utility would have incurred had it generated the electricity itself – the construction cost plus the operating costs. *Id.*

The California Supreme Court also referred to its previous decision in *Freeport-McMoran Resource Partners* v *County of Lake*, 16 Cal Rptr 2d 428 (Cal Ct App 1993), and stated that the very existence of the projects was based on these arrangements:

> The power generation projects in *Freeport-McMoran* and the present case were the result of government incentives and regulations specifically intended to encourage their development. Among these government-facilitated arrangements were the power purchase agreements, which assured a long-term stable income stream and facilitated financing for the development of the projects. The very existence of the projects was based on these arrangements. The power purchase

> agreement is inextricably intertwined with the creation and operation of the project as a qualified facility. So long as the project continues to operate as a qualified facility, receiving the predictable income stream agreed upon in the power purchase agreement, it is appropriate for the assessor to value the property based on its actual income... *Watson, supra* at 428. (Emphasis supplied).

> We find further support in the recent case of *Maples v. Kern County Assessment Appeals Bd.*, 117 Cal. Rptr. 2d 663 (2002). The property in *Maples* was developed under section 515 of the National Housing Act of 1949 (42 U.S.C. § 1485), an incentive program designed to provide low-income housing in rural areas. ...

> Interest on the loan is at market rate, but the owner receives an interest credit that reduces the effective mortgage interest rate to one percent. *Id.*

> The court held the assessor should utilize the actual debt component rate applicable to the specific market at issue – the highly regulated § 515 property market.... *Id.* (Emphasis supplied).

> The parallels to our case are strong. Watson's power facility also was developed as a result of government incentives. To encourage development of cogeneration and small power production facilities, the state, through the PUC, approved favorable contracts for qualifying facilities. . . . The assessor's use of the actual applicable terms to capitalize the property's income is an appropriate exercise of discretion. *Id.* (Emphasis supplied, footnotes omitted).

There are strong parallels between *Watson* and *Freeport-McMoran* and the matter before this Tribunal. Its commentary is directly on point and its language is of considerable and particular use, as it was developed specifically using the lexicon of the QF PURPA cogeneration marketplace.

Thus, the Michigan Supreme Court and Court of Appeals either observed or wrote favorably on the issue of intangibles as value influencers: [Deed Restrictions] *Helin, supra* (1951); [zoning classification] *Kensington Hills Development Co. supra* (1968); [tax benefits] *Kentwood Apts., supra* (1977); [interest] *Antisdale, supra* (1985); [interest] *Meadowlanes, supra* (1991). The Courts forcefully and clearly set forth that the bundle of rights and benefits

(Attachment #22)

appurtenant to the ownership of real property in their entirety, and value influencers, whether tangible or intangible, corporeal or incorporeal, would be faithfully considered in the appraisal process. The Courts concluded that true cash value appraisals would be sensitive to all value influences, positive or negative, that would be reflected in a usual sale price of the subject property. There would be no "carving away" of true cash value through the labeling of "non-taxable intangibles." Further, the Courts seemed less than impressed with the attempt to shield from taxation the very value influence which gave rise to the concept, design, financing, development, construction, and operation of the subject property—that being the federal and state mandated and regulated programs that initially provided the incentives for investors.

In another recent case involving value influencers, *Amway Grand Plaza Hotel* v *City of Grand Rapids*, 11 MTT 496 (2001), the Tribunal recognized that it correctly understood the admonitions of the Michigan Supreme Court and the Court of Appeals with regard to intangibles. In *Amway*, the Tribunal disagreed with Petitioner's characterization of intangibles as non-taxable attributes in Michigan. The Tribunal recognized the appropriateness of intangibles as they relate to the rights and privileges inherent in the ownership of real property, giving them full effect as "value influencers":

> . . . Another excellent example of a value-influencing item affecting the real property value in a positive or negative manner, but without separately marketable value, is a lease. . . the Michigan Court of Appeals has considered and rejected the argument that real property leases are intangibles, ruling in two other Tribunal matters brought for appeal. *Amway*, *supra* at 582. (Emphasis supplied).
>
> The first case was Troy Technology Park v City of Troy, an unpublished opinion per curiam of the Michigan Court of Appeals, decided July 25, 1997, COA Docket No. 193934; MTT Docket No. 190719. Leave to appeal was denied, 458 Mich 868; 586 NW2d 401 (1998). In Troy Technology, the Tribunal found, and the Court of Appeals upheld, that "the proper valuation was one that included the present value of leases," and that lease income was properly included

> in the valuation of the real property. The value influence linkage from Meadowlanes is obvious from page two of the Court of Appeals' Opinion:
>
> > . . . A lease has no value apart from the physical property to which it relates because the rights transferred are the rights to use or occupy that property. Consequently, a lease is not an intangible asset comparable to a patent or stock holding.... Furthermore, in Meadowlanes, *supra* at 496, the Supreme Court expressly held that intangibles may be taken into account where they influence the market value of the property. Therefore, even if the leases could be considered to be intangible property, they are properly "considered in the valuation and assessment process in the same manner as tax benefits, location, zoning, and other intangible value influences." *Id.*
>
> The second case is Freedom Village of Holland v City of Holland, an unpublished opinion per curiam of the Michigan Court of Appeals, decided April 24, 1998, COA Docket No. 192090; MTT Docket No. 170827. The case was remanded, but on other grounds (whether property taxes had been considered in the land lease). Leave to appeal was denied, 459 Mich 964; 591 NW2d 33 (1999), pending final review of the remanded questions by the Court of Appeals, which have now been concluded. Excerpts from the Freedom Village case follow, addressing the relevant concepts found in the subject property appeal:
>
> > We begin by noting that Const 1963, art 9, § 3 permits only the taxation of tangible property. It is well established in our jurisprudence that intangibles are not generally taxable in and of themselves, but may be considered in the valuation of property where they affect its market value. Michigan Bell, *supra* at 485-486; Meadowlanes, *supra* at 495-496; Antisdale, *supra* at 285. In determining the true cash value of property, the Legislature has expressly stated that the "present economic income of structures" is one factor that may be taken into consideration as an intangible influencing value, similar to location, zoning, etc. MCL 211.27(1); MSA 7.27(1). However, as we have noted, such intangibles are not themselves taxable property subject to assessment. Meadowlanes, *supra* at 495-496; Antisdale, *supra* at 285. (Freedom Village at 4).
> >
> > Essentially, petitioner claims that the value of the income from the monthly unit rentals is an intangible business asset that cannot be included in the valuation of the property. We disagree. Section 27(1) specifically provides that the present economic income of leased or rented property is properly taken into account when determining its value. The expected income derived from the rental of real property is fundamental to the use of the capitalization of income approach, which petitioner agrees is the appropriate methodology for valuation of the property. Meadowlanes, *supra* at 485, n 20; Antisdale v City of Galesburg, 420 Mich 265, 276-277; 362 NW2d 632 (1985). (Freedom Village at 4). *Amway*, *supra* at 582-583.

(Attachment #22)

> While the Troy Technology and Freedom Village cases are unpublished opinions, and not precedential, MCR 7.215(C), the principles of law cited are well established and relevant to firmly establishing the nature and function of value-influencing factors in the appraisal process of subject property. *Amway, supra* at 583.
>
> . . . On appeal, the court drew a parallel between business intangibles and the federal tax subsidies of Antisdale, issuing that well-quoted passage at 285: "Nevertheless, such incorporeal items not taxable in and of themselves, can increase or decrease the value of real property, and that amount should be reflected in the assessment process." That same portion of Antisdale at 285 was also the basis for a much later case expanding upon the concept of intangibles as "value-influencing factors," Meadowlanes at 495-496. In the same manner, the Tribunal finds that the "value-influencing factors" of the hotel functions are integral with the real property, serving to generate net income for payment of operating expenses of the entire going concern, the residual net income producing a market return attributable to the real property, absent market evidence of a business value diminishment. *Id.*

Amway continues to stand firmly for the proposition that real property possesses value influencing intangible attributes that are properly considered when estimating the true cash value. This position comports well with the Tribunal's understanding in the instant case that subject property's actual PPA is integral with the property in its attainment of QF status under PURPA and its ability to earn a market QF income stream at avoided costs.

b. HIGHEST AND BEST USE

This case is really a Highest and Best Use case, more than anything else. Petitioner is advancing an alternative Highest and Best Use (Merchant Plant) that is different from the present Highest and Best Use (QF/PPA COGEN Plant). The danger in this appraisal strategy, from Petitioner's standpoint, is that the entire case is conditioned upon the appraiser's alternative Highest and Best Use. If the alternative Highest and Best Use is flawed, Petitioner is left without a value premise or appraisal evidence with which to bear his burden of proof.

One treatment of Highest and Best Use that has achieved credibility in the general body of appraisal knowledge is illustrated in *The Appraisal of Real Estate*:

> When the purpose of an appraisal is to develop an opinion of market value, highest and best use analysis identifies the most profitable, competitive use to which the property can be put. Appraisal Institute, *The Appraisal of Real Estate* (Chicago: Appraisal Institute, 12th Ed, 2001), p 305. (Emphasis supplied).
>
> In all valuation assignments, opinions of value are based on use. The highest and best use of a property to be appraised provides the foundation for a thorough investigation of the competitive position of the property in the minds of market participants. Consequently, highest and best use can be described as the foundation on which the market value rests.
>
> Highest and Best use may be defined as follows:
>
> > The reasonably probable and legal use of vacant land or an improved property that is physically possible, appropriately supported, and financially feasible and that results in the highest value.
>
> Fundamentally, the concept of highest and best use applies to land alone. . . In practice, though, the contribution of value of the existing improvements and any possible alteration of those improvements must be recognized, so the highest and best use of the property as improved is equally important in developing and opinion of market value of the property. In many appraisal assignments of improved properties, there may be little if any question of possible change in the property's use . . . because . . . properties are being sold on the basis of their continued use. Appraisal Institute, *supra*, pp 305-306.
>
> . . . .
>
> Appraisal theory holds that as long as the value of a property as improved is greater than the value of the land as though vacant, the highest and best use is the use of the property as improved. Appraisal Institute, *supra*, p 306.
>
> * * *
>
> **Testing Criteria in Highest and Best Use Analysis**
>
> In addition to being reasonably probable, the highest and best use . . . must meet four implicit criteria. That is, the highest and best use must be

(Attachment #22)

1. Physically possible
2. Legally permissible
3. Financially feasible
4. Maximally productive

These criteria are often considered sequentially. The tests of physical possibility and legal permissibility must be applied before the remaining tests of financial feasibility and maximum productivity. A use may be financially feasible, but this is irrelevant if it is legally prohibited or physically impossible. Appraisal Institute, *supra*, pp 307-308. (Emphasis supplied, Footnotes omitted).

. . . .

The conclusion of highest and best use for a parcel of land should be as specific as the marketplace suggests. General categories such as "an office building," "a commercial building," or "a single family residence" may be adequate in some situations, but in others the particular use demanded by market participants must be specified, such as "a suburban office building with 10 or more floors" . . . Appraisal Institute, *supra*, p 310. (Emphasis supplied).

Highest and Best Use of Property as Improved

. . . . The highest and best use of a property as improved may be continuation of the existing use. In such a case, the appraiser need not analyze expenditures or rates of return for alternative uses except to test or support the conclusion of highest and best use. Appraisal Institute, *supra*, p 315. (Emphasis supplied).

. . . .

. . . . All appraisal reports should contain statements that describe the appraiser's analyses and conclusions pertaining to the highest and best use of the land as though vacant or of the property as improved. . . . As a general rule, the highest and best use statement should summarize the discussion that precedes it and follow the sequence of the four tests. ... Appraisal Institute, *supra*, p 319.

. . . .

The conclusions reported in the highest and best use section of a report should be consistent with conclusions in the other parts of the report. *Id.* (Emphasis supplied).

. . . .

> Because special-purpose properties are appropriate for only one use or for a very limited number of uses, appraisers may encounter practical problems in specifying highest and best use. The highest and best use of a special-purpose property as improved is probably the continuation of its current use if that use remains viable. Appraisal Institute, *supra*, p 306. (Emphasis supplied).

Thus, the four elements necessary for consideration are: (1) Legal Use; which speaks to eliminating from consideration those uses which are not thought likely to be legal, (2) Possible Use; which speaks to eliminating from consideration those uses to which it is not likely the property may reasonably be adapted, (3) Financially Feasible Use; which speaks to eliminating from consideration those uses which are not thought likely to be financially feasible from a profitability standpoint; and finally (4) Maximally Productive Use; which speaks to eliminating from consideration those uses which are not thought likely to return the maximum profitability to the land, once considerations for labor, capital and coordination are satisfied.

Indeed, Petitioner's appraisers have advanced an alternative hypothetical Highest and Best Use (that of a Merchant Plant) based upon a faulty understanding that the actual current Highest and Best Use (that of a QF COGEN operating under its PPA) was impermissible under Michigan Law. Petitioner alleges the QF/PPA is an intangible non-taxable element in Michigan thereby rendering its cash flow outside the value question and therefore requiring the search for another income stream (merchant plant) to support the facility. All of this rests upon the acceptance of Petitioner's theory that the actual QF/PPA cannot be considered. If, however, one rejects Petitioner's theory on this point, and considers the QF/PPA to be a value influencer of the

(Attachment #22)

variety mentioned in *Antisdale* and *Meadowlanes*; then Petitioner's Highest and Best Use must be rejected, as not meeting the fourth test regarding Maximally Productive Use.

Once again *Watson* becomes useful with regards to the Highest and Best Use question:

> Article XIII, section 2 of the Constitution gives the Legislature authority to exempt certain property from taxation. Accordingly, section 212, subdivision (c) provides that "the value of intangible assets and rights shall not enhance or be reflected in the value of taxable property. But subdivision (c) also provides that "Taxable property may be assessed and valued by assuming the presence of intangible assets or rights necessary to put the taxable property to beneficial or productive use." *Watson, supra* at 423. (Emphasis supplied).
>
> In accordance with this exemption, California decisions have held that assets such as copyrights, liquor licenses, airport car rental concessions, ballpark food concessions, and cable television franchises are intangible rights which cannot be directly subjected to property tax assessment. . . . But while "intangible property is exempted from direct property taxation, the courts in this state have repeatedly held that the value of such intangible property may be included in the valuation of otherwise taxable tangible property. . . . That is what was done in this case. *Id.* at 424.
>
> The California State Board of Equalization Assessors Handbook explains the interaction of these two concepts: "Even though intangible assets and rights are not subject to taxation, the second fundamental principle states that tangible property should nonetheless be assessed and valued by assuming the presence of those intangible assets and rights that are necessary to . . . beneficial or productive use of the property being valued. The 'beneficial or productive use' is equivalent to the highest and best use of the property." (State Bd. Of Equalization, Assessors' Handbook – Treatment of Intangible Assets and Rights (1998);. 150; See also *Pacific Mutual Life Ins. Co. v. County of Orange* (1985) . . . 232 Cal. Rptr. 233[.] The "highest and best use of property" is a factor in determining market value. *CAT Partnership v. County of Santa Cruz, supra*, 63 Cal.App 4th 1071, 1085[. L]and should "be valued at its highest and best use subject to the condition that the use be one which is legally permissible." *Id.* (Emphasis supplied).
>
> . . . .

(Attachment #22)

> Watson . . . argues the income approach was improperly applied, because the assessor did not remove the value of the power purchase agreement, an intangible asset, from the assessment. *Id.* at 425.
>
> The problem with this position is that undisputed evidence established that the highest and best use of the property as of the lien date was as a qualifying facility [QF], selling its power to Southern California Edison pursuant to the power purchase agreement [PPA]. That agreement assured Watson a guaranteed purchaser for its entire output, and provided for sale of that power at an above-market price. Where, as here, the income flow can be expected to remain stable, based on controlled pricing and assured usage, the value of the property "can best be estimated in terms of actual income rather than imputed income." (*De Luz Homes, Inc., v. County of San Diego, supra*, 45 Cal. 2d 546, 572.) *Id.*
>
> This is the conclusion reached in *Freeport-McMoran Resource Partners v. County of Lake* (1993) 16 Cal. Rptr. 2d 428, a case based on strikingly similar facts. The appellant in *Freeport-McMoran* was the owner of geothermal power plants, which were qualifying facilities [QF] operating under standard offer 4 (SO4) contracts. These were 20-year contracts, providing a fixed price for the first 10 years based upon Pacific Gas and Electric Company's (PG&E) projected avoided costs, and an adjustable price for the second 10 years, based on PG&E's short-run avoided costs. The prices under the SO4 contracts, like the prices under Watson's power purchase agreement, were above the market price. The owner claimed, as Watson does, that the county overvalued the property by basing its assessment on the income stream of the standard offer contracts rather than on market rates. *Id.*
>
> The evidence in *Freeport-McMoran* showed that the owner's plant would only be offered for sale in conjunction with the standard offer contract because "the contract is integral to the economic viability of the plant" and that a prospective purchaser would be willing to pay more for a plant with such contract than without because the contract guarantees a higher income. The court felt that ignoring these facts would artificially deflate the value of the property, in violation of the assessor's obligation to determine the full cash value of the property. . . Instead the court defined the relevant market as those power facilities with SO4 contracts. *Id.* at 426 (Citations omitted, emphasis supplied).
>
> Watson argues that these changes in the industry meant that as of the lien date, it no longer needed its power purchase agreement in order to operate its plant profitably. And since it theoretically could have operated profitably without the agreement, Watson claims it was improper for the assessor to utilize the above-

market pricing in the agreement for determination of Watson's future income stream. *Id.* at 427.

We disagree. As of the lien date, only the federal wholesale market was available to Watson. The Power Exchange did not begin operation for more than a year after that date. Watson's witness, Thomas Beach, testified that Watson could have operated profitably on the lien date without its power purchase agreement, but he acknowledged that it could not have operated as profitably without the power purchase agreement as with it. While Watson could have operated as a merchant plant selling its power on the federal wholesale market, the evidence was that the highest and best use of the property was as a qualifying facility with a power purchase agreement. *Id.* (Emphasis supplied).

Watson also seeks to distinguish *Freeport-McMoran* because after deregulation, it could have sold its power purchase agreement and its power plant as separate assets. . . The possibility that as of the lien date, Watson could have sold off its power purchase agreement does not change the fact that a buyer would have paid more for the plant with the agreement than without it. If in the future Watson sells the agreement separately, or if it enters into a buy-down agreement with Southern California Edison, its plant can then be assessed without the future income stream assured by the power purchase agreement. *Id.* (Emphasis supplied).

We find the reasoning of *Freeport-McMoran* still applicable, and therefore find not error in the County's consideration of the power purchase agreement in its determination of the income stream of the property. *Id.*

c. EXPERT APPRAISAL CREDIBILITY

Appraisers are increasingly being subjected to mechanisms that allow users of appraisal services to measure the credibility of their work. Licensing, certification and standards of practice are of particular use in real property appraisal circumstances. The most comprehensive and universally applied appraisal standards are known as the Uniform Standards of Professional Appraisal Practice (USPAP), and are mandated by congress and published annually. They are described below, in pertinent part. While

they are not always used by the Tribunal for "admissibility" purposes, they do remain quite helpful to gauge the "credibility" and "reliability" of the expert appraisers' testimony and appraisal work product in proceedings. As stated in USPAP:

> It is essential that a professional appraiser arrive at and communicate his or her analyses, opinions, and advice in a manner that will be meaningful to the client and will not be misleading in the marketplace. The Appraisal Foundation, *Uniform Standards of Professional Appraisal Practice* (Washington D.C.: The Appraisal Foundation, 1996 ed), p 1.
>
> . . . .
>
> . . . These Standards are for appraisers and the users of appraisal services. To maintain a high level of professional practice, appraisers must observe these Standards. The users of appraisal services should demand work performed in conformance with these Standards. *Id.*
>
> . . . .
>
> The development of an appraisal, review, or consulting service based on a **hypothetical condition is unethical** unless: 1) the use of the hypothesis is clearly disclosed; 2) the assumption of the hypothetical condition is clearly required for legal purposes, for purposes of reasonable analysis, or for purposes of comparison and would not be misleading; and 3) the report clearly describes the rationale for this assumption, the nature of the hypothetical condition, and its effect on the result of the appraisal, review, or consulting service. *Id.* at 2. (Emphasis supplied).
>
> . . . .
>
> **COMPETENCY PROVISION**
>
> The background and experience of appraisers varies widely and a lack of knowledge or experience can lead to inaccurate or inappropriate appraisal practice. The Competency Provision requires an appraiser to have both the knowledge and the experience required to perform a specific appraisal service competently. *Id.* at 5. (Emphasis supplied).
>
> **Standards Rule 1-1**

(Attachment #22)

In developing a real property appraisal, an appraiser must:

(a) be aware of, understand, and correctly employ those recognized methods and techniques that are necessary to produce a credible appraisal;

Comment: Departure from this binding requirement is not permitted. . . Important changes in the cost and manner of constructing and marketing commercial, industrial, and residential real estate and changes in the legal framework in which *real property rights and interests are created, conveyed*, and mortgaged have resulted in corresponding changes in appraisal theory and practice.

(b) not commit a substantial error of omission or commission that significantly affects an appraisal;

Comment: Departure from this binding requirement is not permitted. In performing appraisal services an appraiser must be certain that the gathering of factual information is conducted in a manner that is *sufficiently diligent* to ensure that the data that would have a material or significant effect on the resulting opinions or conclusions are considered. Further, an appraiser must use *sufficient care* in analyzing such data to avoid errors that would significantly affect his or her opinions and conclusions.

(c) not render appraisal services in a careless or negligent manner, such as a series of errors that, considered individually, may not significantly affect the results of an appraisal, but which, when considered in the aggregate, would be misleading.

Comment: Departure from this binding requirement is not permitted. Perfection is impossible to attain and competence does not require perfection. However, an appraiser must not render appraisal services in a careless or negligent manner. This rule requires an appraiser to use *due diligence* and *due care*. *Id.* at 13. (Emphasis supplied).

In this regard, the experts and counsel of both sides made errors of appraisal methodology and violated USPAP provisions, sometimes minor and sometimes of considerable consequence, as they are spelled out in the Body of Knowledge, Michigan Rules of Evidence, and USPAP in force at the time of the writing of the appraisal. On balance, across the whole

(Attachment #22)

record, particularly on the issues of consequence, the weight of the credibility is unquestionably in favor of Respondent.

For example, with regard to Petitioner's principal witness, Mr. Paton, it is not clear from the record that he claimed to be, or was qualified as, or represented to be, a real property appraiser. Following is Mr. McKim's opening statement about the qualifications of Mr. Paton:

> **Mr. Paton will not be qualified as a real property appraiser who appraises homes or barns or farms for a living.** Rather he will be offered as an expert with broad and extensive experience in the electrical generation industry in **advising buyers, sellers and financiers** in connection with the valuation of electrical generation facilities being constructed, bought or sold. In that he is an expert, Mr. Paton will establish the valuation approaches and techniques which are used by such buyers, sellers and financiers in making decisions whether to construct, at what prices to sell, or at what price to purchase electrical generation facilities. He will, therefore, establish the true cash value of the subject facility from the point of view of the reasonably prudent purchaser and/or seller in this case. (OH Tr Vol 1-A, p 36, ll 13-25, p 37, ll 1-7). (Emphasis supplied).

Respondent's counsel, Mr. Reed, vigorously objected to the admission of appraisals P-1 and P-2 on the grounds that Mr. Paton is not an expert real estate appraiser. (OH Tr Vol 1-B, p 50, ll 1-25, p 51, ll 1-14). (Emphasis supplied).

Q. Mr. McKIM: Before I ask you to go further, I think this is an appropriate time for me, Your Honor, to offer proposed Exhibits 1 and 2, P-1 and 2, which are the two appraisals prepared by this witness as to which he's testified, and I'll offer them, and then I'll ask him to, once they've been accepted, state for the record the value conclusions.

Q. JUDGE MARTELL: Any objections?

A. MR. REED: With all due respect to the Tribunal, there is simply no way that my duty would allow me not to object to these appraisals. First of all, this gentleman is not licensed nor designated as a legal [real] [sic] estate appraiser. This gentlemen [gentleman] [sic] has testified in other proceedings, and I believe will testify here, that he has never appraised real estate. He did not visit the property, inspect it, or lay eyes on it before attempting to estimate his fair market value. He did not utilize, correlate and utilize the applicable approaches to

> value available under the information which any appraiser would use; that is, the cost approach, in the first three years at issue, in violation of the mandate of the Michigan Supreme Court laid out in Meadowlanes versus City of Holland. Your Honor, there has been no adequate foundation that this individual presents with the expertise or the knowledge or that he applied the expertise or the knowledge, including actually seeing the property, before preparing these estimates. I respectfully submit I can't – with all due respect, these documents are incompetent.

While the record shows he was a graduate engineer, it contains no evidence that Mr. Paton was educated, trained or experienced in sufficient amount to be familiar with the appraisal theory, methodology and technique required to exercise credible and reliable appraisal judgment and reasoning for a complex real property assignment such as subject. Further, Petitioner's counsel appears to have directed that the appraisal assignment be accomplished in a certain way with certain definitions, interpretations of law, and applications of technique which necessarily should have resulted in a number of extraordinary assumptions, limiting conditions and hypothetical circumstances with regard to the Paton appraisals (P-1) and (P-2), severely limiting their reliability, credibility and usefulness to the Tribunal in coming to a reasoned supportable conclusion of true cash value. Mr. Paton states in his appraisal that:

> Since the proper valuation of the Filer plant hinges upon the treatment of its contract revenues, we inquired of counsel for the petitioner as to whether, for Michigan property tax assessment purposes, an appraiser must include the actual income a property will receive from an existing contract in the future or whether the net operating income calculation must be based on current economic income. ... We are informed that it is now established law in Michigan that it is the fee simple interest which must be valued, and that one must look to current economic rents or income in applying the income approach to value, rather than to the actual rents or income attributable to a specific contract or lease. (OH Exhibit P-1, pp 8-9) (Emphasis supplied, footnotes omitted)

(Attachment #22)

Mr. Paton mistakenly concluded, therefore, that he would not consider either the actual PPA income or a reasonable marketplace estimate of PPA income, derived from the median of the seven PPAs comprising the Michigan QF PPA marketplace. Further, he concluded that an income approach was the only approach that needed to be developed for the present assignment. He further concluded that the present use as a QF under PURPA was not the Highest and Best Use, but rather a replacement model implying a different merchant plant Highest and Best Use was the valid methodological application. All of these conclusions are suspect given the facts of the present case and serve to demonstrate a lack of valid real estate appraisal experience. Further, his willingness to perform such a complex assignment, the purpose of which was to prepare for a fully contested extended Entire Tribunal Proceeding, with a minimal "scope of work," ignoring out of hand the cost approach and Michigan's actual market PPAs and never visiting the site or the property, could only be described as inexperience, incompetence or indifference.

Mr. Dean signed P-1 but was never called to the stand, and little evidence of his participation existed in the appraisal or the record.

Mr. Moss was simply doing a process, not a true cash value appraisal; he didn't even claim it related to true cash value, rather, he called it a valuation report. The record does not indicate whether Mr. Moss's work product was right or wrong, or even correctly applied.

Mr. Oetzel, MAI, is a reputable and respected appraiser. He had never specifically performed an appraisal of a QF COGEN plant, but he did take the requisite steps required under USPAP to repair that inadequacy. More importantly, he did have substantial background as an

appraiser, insuring he was familiar with the valid and invalid application of appraisal principles, allowing those relying on his work to understand that he practiced under the requirements and penalties imposed by the USPAP applicable in the appraisal profession during the tax days at issue. And further, as a direct result of his appraisal experience, he made reasonable judgment calls with regard to appraisal methodology and technique.

Mr. Messer, MAI, was a reputable and respected appraiser; however, he was offered as a "theory" witness only. He signed no appraisal report and no appraisal review report; thus, he could offer no valuation testimony. Although he purported to consult with Mr. Paton exclusively on the 1996 work in P-2, the "scope" and/or "level of detail" of his understanding of the facts in the case seemed to be superficial on P-2, and nonexistent on P-1.

Following is from Mr. McKim's direct examination of Mr. Jay Messer, "Theory" Expert:

Q. Were you, sir, retained to counsel with Mr. Paton – Messrs. Paton and Achenbach in connection with the preparation of their 1996 appraisal of the subject Filer City Station facility?

A. Yes.

Q. Did you, sir, personally appraise that property?

A. No, sir I did not.

Q. Do you have any opinion of value - -opinion as to the true cash or fair market value of that property?

A. No, sir.

Q. Did you sign the appraisal, Exhibit P-2, relating to the 1996 estimate of value by Messrs. Achenbach and Paton?

(Attachment #22)

A. No, sir I did not. Did you discuss the approaches taken by Messrs. Achenbach and Paton, taken in the 1996 appraisal which they signed and which contain their estimate of value?

A. Yes, I did.

(OH Tr Vol 11-B, p 121, ll 20-25, p 122, ll 1-16)

A. . . . In this case my understanding is that there's the sale of electricity for which different rates are earned. But it's for the sale of electricity as well as from the—sale of steam. From the estimation of income, based again on its production capacity, in a typical income approach there would be a deduction for a vacancy and credit allowance. In this particular situation I think that the example would be more along the lines of production capacity. **I'm not an expert in this area, but my understanding is that there is** - - there are capacity rates for the production of electricity from this facility. And during the course of its operation there will be times when part of the facility would be out of production.

(OH Tr Vol 11-B, p 127, ll 16-25, p 128, ll 1-7)

The questions he was asked always involved a hypothetical. For example, he was not asked his opinion of subject's highest and best use, or of subject's appropriate market or subject's appropriate income; rather, he was supplied those concepts as givens either implied or expressed. The major judgment questions, so important to an expert's credibility and reliability, on issues particular to the case at bar, were never asked, indeed, could not have been asked, because this "theory" witness could not testify as to valuation. The practice of appraisal endorsement finds no support in USPAP. Were Mr. Messer's testimony given great weight in corroborating the methodology and technique of Mr. Paton, it could result in negating the competency and compliance sections of USPAP, and enable counsel to shield, until trial, the work of their actual experts from opposing counsel, by calling them "theory" witnesses. The

way Mr. Messer's "theory" witness testimony is being used is as an implied endorsement of the entirety of Mr. Paton's work in the instant case, an implication that is not supported in the record. Such an attempt to deliver the appearance of credible and reliable expertise, without the substance thereof, is deceptive. To advance such a process greatly increases the likelihood of misinformation being delivered to the Tribunal.

Respondent's two STC appraisers, Mr. Anderson and Mr. Newberg, were both experienced appraisers of regulated and non-regulated power generation plants, including COGENS, extant in Michigan for many years previous. Their work was credible and consistent with appraisal methodology, with the sole exception of "soft costs," which they did not apply. To the extent that Mr. Anderson's and Mr. Newberg's reproduction cost new significantly differs from Mr. Russell's and Mr. Oetzel's reproduction cost new, the explanation is found, at least in large part, in the practice of Mr. Anderson and Mr. Newberg of not including soft costs, such as interest during construction, in calculating an electric generating plant's reproduction cost new. This difference is accounted for in the final calculation section of this opinion and judgment.

Bass Pro Outdoor World and Taubman Auburn Hills Assoc, LP v *City of Auburn Hills*, MTT Docket No. 275731 (2003), speaks on point to the Tribunal's thinking with respect to determining the credibility and reliability of valuation testimony and work product that is offered for the assistance of the trier of fact. It is important to note that this case does not require designation, licensing or certification; rather, it affords the work of the possessors of those credentials an appropriate measure of credibility and reliability.

"Appraisal" . . . is relevant to the Tribunal in the following ways:

. . . .

> Three criteria must be satisfied before expert testimony will be admitted: (1) the witness must be a qualified expert; (2) expert testimony must "assist the trier of fact to understand the evidence or to determine a fact in issue"; and (3) there must be recognized scientific, technical, or other specialized knowledge in a particular area that "belongs more to an expert than to the common man." MRE 702.1 (footnote omitted, emphasis supplied). *Bass Pro, supra* at 25.

Those not possessing a Michigan License, of sufficient level and type[5] to appropriately present expert evidence in regards to subject property, are not entitled to the . . . credibility that such compliance would provide. *Id.*

> The determination of whether a witness is [an] "expert" is within the discretion of the trial court, and the decision will not be reversed on an appeal absent an abuse of discretion. The fundamental inquiry for the trial court is whether permitting the testimony [admissibility] will assist the trier of fact to understand the evidence or to determine a fact in issue, whether the opinion will confuse or mislead the trier of fact, and whether the facts and data upon which the expert bases the opinion are reliable. MRE 702.2 (footnotes omitted, commentary and emphasis supplied) *Id.* at 25-26.

. . . .

In all cases where true cash value is at issue, the Tribunal has a legitimate need to be assured that an expert's competency, standards of care, duly diligent research, proper application of technique/methodology and proper reporting have been carefully and seriously addressed prior to coming to an independent determination of true cash value while discharging its obligations of reliable fact finding and conclusions of law.[6] *Id.* at 26.

---

[5] Michigan has had several levels of licensure and certification premised on differing kinds and degrees of experience with differing types of real property [Limited Real Estate Appraiser; Real Estate Valuation Specialist; State Licensed Real Estate Appraiser; Certified Residential Real Estate Appraiser; Certified General Real Estate Appraiser]. For purposes of this comment it is not relevant to distinguish among them, therefore we use the global term licensing in the all-inclusive sense.

[6] *Ishakis v Southfield*, unpublished *per curiam* opinion of the Court of Appeals, issued November 19, 2002 (COA Docket No. 233414). In affirming the Tribunal's Decision (MTT Docket No. 266451) the COA held "...In weighing the value of plaintiff's evidence, the tribunal concluded that the lack of proof of certification or licensure

(Attachment #22)

The Tribunal concludes that neither Mr. Paton nor Mr. Achenbach, nor their appraisal work products for the tax years at issue 1993, 1994 and 1995 (Exhibit P-1) and 1996 (Exhibit P-2), warrant much, if any, credibility or reliability. Further, Petitioner's witness, Mr. Moss, testifying only in regards to the application of personal property multipliers as distinguished from what true cash value those multipliers should yield, has no effect in the final decision of the trier of fact. The Tribunal determines that reclassification appeals are not within its jurisdiction. The combination of these two events leaves Petitioner with no credible and/or reliable valuation evidence with which to carry its burdens or evaluate its true cash value claim.

2. PETITIONER'S SECOND CLAIM – RECLASSIFICATION

a. TRIBUNAL LACKS JURISDICTION

Petitioner advances, an alternative claim that the subject property should be reclassified as personal property and valued using the multipliers from Chapter 15 of the State Tax Commission Manual. While subject was in its first two years of operation [tax years not under appeal], it was assessed entirely as personal property and its true cash value estimated through the use of personal property multipliers by the local assessors. Respondent's appraisers treated the property as predominately real property under Chapter 12 of the State Tax Commission Manual. Petitioner contends that because similar properties in both the local township and

on plaintiff's appraisal diminished its credibility. See MCL 339.20601 *et seq.* We find no error in this determination." *Id.* at 3.

across Michigan were assessed with multipliers, the subject must be "reclassified" as personal property, and must have its true cash value derived from the application of multipliers.

Thus, in this alternative to Mr. Paton's true cash value conclusions, Petitioner invites the Tribunal to convert this proceeding into a classification appeal. Petitioner asks that Mr. Moss's "valuation report" be adopted by the Tribunal. Petitioner does not contend that Mr. Moss's conclusion is a fair market value appraisal, rather, Petitioner contends that:

> . . . the Tribunal must rule that Respondent's assessor must classify the subject's machinery and equipment as personal property, and must apply the STC multipliers. (Petitioner's Proposed Findings of Fact and Conclusions of Law, p 59.)

Petitioner has now apparently abandoned all claims that Mr. Moss's valuation report concludes to true cash value. Petitioner now seeks to convert this assessment valuation dispute into a pure assessment classification dispute. Assessment classification issues are not subject to Tribunal jurisdiction (MCL 205.731). Assessment classification appeals must initially be presented to the township's board of review. The decision of the board of review may then be reviewed by filing a Petition with the State Tax Commission not later than June 30th of the tax year in issue. Specifically, Section 34c of the General Property Tax Act (MCL 211.34c), in pertinent part, provides:

> Sec. 34c. (1) Not later than the first Monday in March in each year, the assessor shall classify every item of assessable property according to the definitions contained in this section. Following the March board of review, the assessor shall tabulate the total number of items and the valuations as approved by the board of review for each classification and for the totals of real and personal property in the local tax collecting unit. The assessor shall transmit to the county equalization department and to the state tax commission the tabulation of assessed valuations and other statistical information the state tax commission considers necessary to meet the requirements of this act...

(Attachment #22)

(6) An owner of any assessable property who disputes the classification of that parcel shall notify the assessor and may protest the assigned classification to the March board of review. An owner or assessor may appeal the decision of the March board of review by filing a petition with the state tax commission not later than June 30 in that tax year. The state tax commission shall arbitrate the petition based upon the written petition and the written recommendations of the assessor and the state tax commission staff. An appeal may not be taken from the decision of the state tax commission regarding classification complaint petitions and the state tax commission's determination is final and binding for the year of the petition. (Emphasis supplied).

(7) The department of treasury may appeal the classification of any assessable property to the residential and small claims division of the Michigan tax tribunal not later than December 31 in the tax year for which the classification is appealed.

(8) This section shall not be construed to encourage the assessment of property at other than the uniform percentage of the true cash value prescribed by this act.

Petitioner's proposed alternative remedy is legally incorrect for at least three reasons. First, it would necessitate that the Tribunal assume original jurisdiction over assessment classification disputes to the exclusion of the township board of review and the State Tax Commission. Second, it violates Subsection (8) above. Petitioner asks that the Tribunal find as fact that the generating equipment of some private industries are undervalued by application of the State Tax Commission personal property multipliers. Petitioner then asks that its generating plant also be undervalued by application of the State Tax Commission's personal property multipliers. The record in this proceeding cannot support a finding that some other generation plant is undervalued and, even if it did, Subsection (8) above prohibits use of a classification appeal to establish an assessment at less than 50% of true cash value. Third, Petitioner's suggested alternative would violate Chapter 12 of the *Assessor's Manual* which states:

When valuing and assessing cogeneration facilities, the same procedures should be followed as for similar electric generating plants owned and operated by utility companies.

(OH Exhibit P-111, p 12-5.)

Finally, Mr. Leslie Anderson, who spent 30 years in the Utility Valuation Section of the State Tax Commission, testified quite strongly that using the Chapter 15 personal property multipliers to value the subject generating plant would not create uniformity in assessments.

Q. Referring your attention to Exhibit R-52 and R-52.1 and R-53 and R-53.1, the property which you appraised in those appraisals, could one arrive at a true cash value, in your opinion, applying Chapter 15 personal property multipliers?

A. You could arrive at a number, but it would not be true cash value in my mind.

Q. Okay. Why?

A. Because the – in the appraisal of property there's three accepted methodologies that you use to arrive at the true cash value. It's the cost approach, income approach, and market approach. The personal property multipliers applied to – in general to a group of highly portable assets or equipment located at a site, and in this case where you have a large number of items, old, new, and of different types, this could produce a reasonable answer. But in my mind the personal property multipliers in and of themselves do not represent a reproduction cost, do not represent an income approach, and do not represent a market approach. To attempt to use that approach to value a facility such as this, which is a one purpose facility which generates a product which it is very measurable and marketable, to use this type of approach to value this type of facility is ridiculous.

(OH Tr Vol 13-B, p 15, ll 24-25, p 16, ll 1-25, p 17, ll 1-5.)

b. UNIFORMITY OF MODE VS. UNIFORMITY OF VALUE

(Attachment #22)

Uniformity of mode and/or method does not necessarily result in uniformity of true cash value, and it is uniformity of true cash value that ought to control. Mr. Anderson explained that there is a distinction between uniformity in method of valuation and uniform value which must be recognized. He testified:

(OH Tr Vol 13-B, p 25, ll 4-25, p 26, ll 1-25.) (Emphasis supplied)

A. Well, uniformity in my mind does not relate to the approach. It relates to that proportion of value which a property will be assessed. If you used a cost approach on all types of property, in my mind you would not -- it would be a uniform approach, but it would not necessarily generate a uniform value for each property. If I could use an example,

Q. Please do.

A. -- when I first joined the Commission in the early sixties, I was assigned to the Detroit office of the State Tax Commission which at that time -- well, it was -- there was quite a controversy between the City of Detroit and the Commission about their procedures used in evaluation of property, and they said they were uniform in their -- in their valuing of property, and they were -- they used basically a reproduction of cost depreciated for all their property. But if I may use an example, in the late twenties in Detroit a lot of -- it was a fairly good time in Detroit. They built a lot of apartment buildings all over the city, downtown and outlying areas of the city, but by the sixties the downtown area had decayed significantly, and they -- while they were still -- some of these apartments built in the twenties were basically good structures, but they were now in a -- I guess you'd call it a slum area of downtown Detroit. Some of these older apartments were located in northwest Detroit, which was a viable economic area, and they were well maintained and they had Class A tenants.

Now, if you used a reproduction cost depreciated on both of these situations, you could generate a number -- you would generate a number because they're the same age and same size that was basically the same number. Now, granted, they made some allowances for maintenance, but still, it did not properly value the property. They did not value the property uniformly. They used a uniform approach, but did not value the -- the resulting numbers were not uniform in their relationship to value.

(Attachment #22)

For Petitioner to continue advancing its alternate true cash values for the subject property, using uniformity of mode and/or method seems an act of desperation.

C. STATUTE AND CASE LAW – OTHER

It is the duty of an appraiser "to determine an estimate of the fair market value of both the physical real estate and all the interests, benefits, and rights inherent in ownership of that real property." *Meadowlanes Limited Dividend Housing Association* v *City of Holland*, 437 Mich 473, 485; 473 NW2d 636 (1991). "The ultimate goal of the valuation process is a well-supported conclusion that reflects the study of all factors that influence the market value of the subject property." *Meadowlanes, supra* at 486.

In order for an appraisal to be very credible, particularly for complex property tax hearing purposes, the appraiser should visit and inspect the subject property. MCL 339.2605 and MCL 339.2607; *Fairview Enterprises, Inc* v *Comins Township*, 7 MTTR 238, 247 (1991).

Use of a replacement model in a cost approach analysis is too speculative to be reliable if many of the components of the model do not exist at the subject, the model is hypothesized without specific design specifications, and when components of the subject do not exist in the model. *General Motors* v *Comstock Township*, 7 MTTR 168-170 (1991); *Bronson Properties, Inc* v *Oshtemo Township*, 10 MTT 33, pp 42-43 (1997).

Business functions (such as the power purchase agreement in this case), although capable of generating value for the subject property, must not be presumed to additionally possess a

market value of their own absent clear evidence indicating otherwise. *Amway Grand Plaza Hotel* v *City of Grand Rapids*, 11 MTT 496 (2001), pp 591-592.

There is no automatic presumption of marketable business value merely by the presence of business-related functions intertwined with real property operations. *Amway Grand Plaza Hotel* v *City of Grand Rapids*, *supra*, pp 133-134.

Chapter 15 cannot be used to conclude to a true cash value unless it is first demonstrated that the result achieved is a reasonable fair market value estimate. *Technidise, Inc* v *City of Clawson*, MTT Docket No. 214818, pp 8-9 (1996); *MC Sporting Goods Distributors* v *City of Detroit*, 9 MTTR 212, 218-219 (1996); *Unocal Corp* v *Township of Beaver Creek*, 8 MTTR 550, 555-556 (1994); *IBM Credit Corporation* v *City of Detroit*, 7 MTTR 850, 853 (1993).

Appraisal theory and generally accepted practice clearly support the inclusion of soft costs in a reproduction or replacement cost value estimate. *See* Appraisal Institute, *The Appraisal of Real Estate* (Chicago: Appraisal Institute, 12th ed, 2001), pp 358-360.

IV. ARGUMENT

One can accept, and this Tribunal does, that a QF's PPA operates as a "value influencer," and the PPA income, insofar as it represents the contract market income attributable to a fee simple interest in the property, is proper for true cash value consideration, in light of the several Michigan cases and California cases, previously reviewed herein, that so hold. Thus, it may become an important contributor to the overall appraisal solution, particularly to the income and cost approaches, as the circumstances of an individual property and case unfold.

Respondent's appraisers, Mr. Anderson, Mr. Newberg, and Mr. Oetzel, all considered actual PPA income from one or more of the seven QF PPAs in the Michigan market in their income approach. For their income approach, Mr. Anderson and Mr. Newberg used the Mean and Median respectively of all the seven PPAs, and then weighted them at +/- 20% at correlating to a final value conclusion. For his income approach, Mr. Oetzel used the subject property's actual PPA observing that it negated extraordinary functional and economic obsolescence, and then giving it no weight in correlating to a final value conclusion. The Tribunal finds Respondent's appraiser's actions to have been a reasoned exercise of appraisal judgment given the particulars of this case on the total record.

Indeed, even if an appraiser chooses not to capitalize the actual PPA income either directly or through yield into an income indication of value upon which they principally relied, because of the possible inclusion of other types of property, that does not mean the PPA income was not useful. Quite the contrary, in the instant case, the PPA income served ably and importantly to show that: (1) there was no extraordinary influence of functional and/or economic obsolescence in play; (2) subject's present use as a QF COGEN operating under a PPA was indeed the Highest and Best Use; and (3) the hypothetical merchant plant was unreasonably advanced as a substitute of like utility to the existing subject. All three of these elements serve important roles in a proper application of the cost approach, which in this instance better allowed the appraiser to deal with the removal of personal property, pollution control expenditures, and business enterprise value from the subject plant.

(Attachment #22)

Construction of the 70 MW Filer City Station was completed in 1990 at a cost of approximately $90,000,000, which includes both the taxable and tax-exempt components (RH Exhibit P-10L). The subject is well built and reliable, having many dual system components that insure continuous production of at least 50% of its capacity. During the tax years at issue, the subject routinely delivered 60 MW of electricity to the grid and approximately 50,000 pounds of steam to the steam host, Packing Corporation of America, earning its owners during the tax years at issue a net operating income before depreciation and debt service of between $16,761,533 and $20,550,067 annually.

Before the subject was built, long term contracts for the sale of its electric and steam output were secured (RH Tr Vol 3-B, p 32, ll 15-25, p 33, ll 1-4). Financing to build the subject could not have been obtained without long term contracts establishing the price for its product (OH Tr Vol 4-B, p 41, ll 24-25, p 42, ll 1-2; OH Tr Vol 9-B, p 104, ll 19-21). Petitioner's expert, John Shea, testified that without a long term power purchase agreement "... you couldn't build the plant" (OH Tr Vol 13-A, p 18, l 19). None of the QF facilities in Michigan, and presumably none of the LU class generating plants in lower Michigan, would have been built without securing long term power purchase agreements.

It is unreasonable to perform an income appraisal of property by ignoring the established contract market rates for its product and assuming a hypothetical market price, which hypothetically low price would result in the subject never having been built or, if built, possessing a value at less than one-third its construction costs. There is no support in appraisal theory for using industry-wide operating costs as a proxy for operating income in performing an

(Attachment #22)

income approach analysis. Petitioner's expert witness, Jay Messer, confirmed this (OH Tr Vol 12-A, p 88, ll 17-25, p 89, ll 1-11).

Even if, *arguendo*, Petitioner's Income Approach, using a discounted cash flow analysis is accepted and its "merchant plant" replacement model is used, it is fatally flawed in two ways. In their analysis, Petitioner's experts (1) underestimated subject's thermal energy capacity; and (2) underestimated the price which subject could reasonably expect to receive for its electricity. These deficiencies combine to significantly understate subject's reasonably anticipated net operating income (NOI) which in turn results in a drastic understatement of subject's true cash value. Further, the understatement of capacity and the understatement of reasonable market price are facts put into evidence by Petitioner's own witnesses and exhibits.

Joseph Tondu, President of Tondu Corporation, the principal owner of the subject, established as fact that "... we run the plant at 60 MW ..." (RH Tr Vol 11-B, p 44, ll 11-12). This testimony was also confirmed by Petitioner's expert, Lyle Thornton (RH Tr Vol 12-B, p 33, ll 18-21).

A. UNDERSTATEMENT OF CAPACITY

In Petitioner's Proposed Findings of Fact and Conclusions of Law, pp 49-50, dated January 27, 2003, Petitioner states:

> Mr. Paton, in Exhibit P-1, p. A10, computed energy revenues by assuming that the Facility's net operating availability was 54 new megawatts (with the 5-6 year major "tear down" spread evenly) at 95% uptime at 102.1%, times the 8,760 potential operating hours per year. He calculated separately the revenues received from electric energy and from electric capacity sales. Mr. Tondu testified that at 65,000 lbs. per hour, the plant should be able to produce optimally at the 57

> megawatt level, and Mr. Thornton agreed in terms of optimal design. Mr. Paton's 54 MW average, at 95% "up time" and 102.1% production are reasonable and supported assumptions. (Footnotes omitted).

Petitioner's counsel's contention that Mr. Paton calculated the subject's net operating capacity at 54 megawatts is a misstatement and inconsistent with Mr. Tondu's testimony concerning the subject's actual electric capacity. Mr. Tondu testified:

> We still had the gross generating capacity of 70 megawatts. That number didn't change. As soon as we started running the plant we felt quite lucky because we, our internal requirements were a little better than what we had planned for. We actually were getting in some days as low as three megawatts of internal consumption and about four megawatts was the average. So that we ended up with 66 megawatts of net equivalent generation for sale.
>
> Then the next thing we realized right out of the chutes that we didn't – we didn't have an obligation to provide PCA with 100,000 pounds of steam. We didn't – we found out that the contract didn't say that, and we found out that PCA didn't want it. We had the ability to provide them with five megawatts or 50,000 pounds of steam and which equated to only five megawatts of generation capacity. So that instead of having 100,000 pounds of steam and losing 10 megawatts, we were producing 50,000 pounds of steam or, I should say, we had the ability to produce 50,000 pounds of steam and lose only five megawatts.
>
> This left us with only 61 megawatts of electric capacity, of electric energy available for sale to Consumers, but the maximum contract that we could deliver to Consumers was 60 megawatts and they were real fussy about that number. When we delivered more than 60 by even a kilowatt, they considered that a free piece of energy and we get paid nothing for it. So we try very hard to get exactly the 60 and not over it.
>
> That left, in this example, one megawatt of surplus generating capacity that we didn't have anyplace to go with. That's the megawatt I talked about the other day that I've been trying to sell back to them for years and they claim their lines are so full they can't take even that single megawatt.

(Attachment #22)

> This is how we operate the plant with only one exception. PCA almost never takes 50,000 pounds of steam. So in reality we end up having, at most that – they try to average over the time period 25,000 pounds of steam an hour and in reality they get a little bit higher than that. They get into low 30s but never do they take 50,000 pounds. So we end up with three, four megawatts of unused capability in that plant that we have had no market for the last 10 years.

(RH Tr Vol 11-A, p 35, ll 6-25, p 36, ll 1 -25, p 37, ll 1-2.)

If one assumes hypothetically that subject is a merchant plant with no contract for the sale of its electricity, one should at least assume the sale of its actual electric capacity which, during the tax years at issue, was 63-64 megawatts. Mr. Paton's discounted cash flow analysis assumed only 54 megawatts of capacity for sale. Mr. Paton did not, as Petitioner's counsel asserts, calculate the 54 megawatts based upon 95% of up time at 102.1% times 8,760. Mr. Paton began with a net capacity number, the source of which was never fully explained, of 55.66 megawatts, which is stated at page 4 of his appraisal (OH Exhibit P-1, p 4). The 54 megawatts can be derived from the following calculation: 55.66 megawatts times 95% equals 52.877 megawatts which, when multiplied by 102.1% equals 53.987417 megawatts or 54 megawatts rounded.

The actual, more circular calculation, performed by Mr. Paton's computer program, was explained during his cross-examination (OH Tr Vol 6-B, p 47) and is demonstrated in OH Exhibit P-1, pp A4 and A5. Mr. Paton's 1993 energy rate, to use an example, was assumed to be .0255 cents per kilowatt hour and his 1993 capacity rate was assumed to be 0.0158 cents per kilowatt hour (OH Exhibit P-1, p A5). He applied his assumed rates to separate calculations of capacity and energy kilowatt hours of production (OH Tr Vol 6-B, p 47; OH Exhibit P-1, pp A4

and A5). The calculations are as follows [Mr. Paton's numbers appear always to be subject to computer rounding (OH Tr Vol 4-B, p 36, ll 2-11)]:

> 8,760 hrs x 54 MW = 473,040,000 kw hrs; 473,040,000 kw hrs x 1.021% = 482,973,840 kw hrs; 482,973,840 kw hrs x .0255 [cents] results in an estimated energy revenue of $12,315,832 which becomes $12,316,000 (OH Exhibit P-1, p A4). Similarly, if one assumes a capacity of 54 megawatts and 473,040,000 kw hrs at 95% capacity, the hours become 449,388,000 kw hours, which, when multiplied by .0158 [cents] results in an estimated capacity revenue of $7,100,330 reported as $7,097,000 (OH Exhibit P-1, pp A4 and A5).

The 54 megawatt number was apparently furnished to Mr. Paton by an unidentified source just as it appears to have been furnished to Mr. Thornton for his use in preparation of RH Exhibit P-55. As Mr. Tondu pointed out:

> So in lot of things and a lot of documents, a lot of people have accounted for that differently. They have used the term fifty megawatts as a hundred percent, and calculated the percentage of what we exceed that, when in fact if you really look at the way capacity factors should be calculated, it should be calculated on the sixty megawatts.
>
> From that perspective, we have exceeded the fifty megawatts I believe in every year except the first year.

(RH Tr Vol 11-B, p 36, ll 20-25, p 37, l 1-6.)

Mr. Paton can perhaps be excused from knowing the subject's actual performance inasmuch as he relied solely upon drawings and design specifications (OH Tr Vol 2-B, p 35, ll 9-25, p 36, ll 1-6), did not inspect or visit the subject before appraising it for the first three years at issue (OH Tr Vol 2-B, p 35, ll 9-25, p 36, ll 1-6), and apparently never made inquiry of Mr. Tondu concerning the subject's actual performance.

B. UNDERESTIMATE OF REASONABLE MARKET PRICE FOR SUBJECT'S ELECTRICITY

It is a fact firmly established in the record that neither the subject nor any other non-utility electric generating plant could have been built, nor would have been built, without an in-

place contract for the sale of its product. Knowing this fact, it is fundamental in an income approach analysis that a reasonable contract rate be estimated. There are several real world choices for such an estimate. The subject is in status class LU ("Life of Unit") which class commanded rates averaging between 6.12 and 6.54 cents per kilowatt hour during the tax years at issue, (RH Exhibit R-36, Attachment 6, pp 3-4; RH Tr Vol 8-A, p 63, ll 23-25, p 64, ll 1-3). It is also reasonable that the appraiser look to the rates being paid by Michigan's largest utilities to contract generators, which is where Mr. Anderson found the estimated rate of 5.7 cents per kilowatt that he used (OH Tr Vol 14-B, pp 7-8). It would also seem reasonable, following Mr. Newberg's example, to use a median rate from the rates being paid to Michigan's seven QF facilities during the tax years at issue (OH Exhibit R-19).

In addition, it has been held reasonable to use the subject's actual contract rate in place on the tax days at issue. *Watson Cogeneration Co* v *County of Los Angeles*, 120 Cal Rptr 2d 421 (2002) and *Meadowlanes Dividend Housing Assn* v *City of Hollaind*, 437 Mich 473; 473 NW2d 636 (1991).

A further possibility exists. Mr. McConnell and Mr. Allen identified 8 out of 10 power purchase agreement transactions which they testified resulted in restructured power purchase agreements at rates less than the original contract rate but greater than marginal rates (RH Exhibit P-10R). It would seem reasonable to examine the rates in these restructured contracts.

(Attachment #22)

Petitioner repeatedly refers to these 10 power purchase agreement transactions as sales. Respondent notes with interest the fact that when Mr. Paton initially testified concerning these restructuring transactions, some of which were the Citizens' transactions, he referred to them several times as "buy downs," "buy backs," or "terminations" (OH Tr Vol 4-B, pp 143-144; OH Tr Vol 2-A, p 20, ll 4-18; p 35, ll 7-17; OH Tr Vol 2-A, p 93, ll 7-21, p 94, ll 307; OH Tr Vol 2-B, p 72, ll 16-25, p 73, ll 1-17; OH Tr 7-B p 57, ll 6-22). In addition, Petitioner's rehearing exhibits related to the purported power purchase agreement "sales," (RH Exhibit P-2, P-3, P-6, P-7, P-10R; RH Tr Vol 2-B, p 76, ll 1-25), contain repeated references to the fact that the transactions were "terminations" as opposed to "sales." Also see Edison Electric Institute, PPA Buy Down Report (Exhibit P-173).

It is not reasonable to ignore the evidence of actual contract of PURPA market rates, either subject's actual PPA or the Mean/Median across all seven Michigan's PPAs, and assume a "merchant plant" market rate for subject's production at the level of the industry's average cost of production, which rate is so low that the subject could not be built. It becomes even less reasonable to compound the problem by substantially understating subject's productive capacity while overstating its expenses. Petitioner has estimated the true cash value of this newly built generating plant so low that the estimate is less than one-third of the cost to construct the plant. Petitioner's appraisers have estimated the true cash value of the subject property so low that it could not pay its debt service. Petitioner's appraisers have estimated a value for the subject so low that it could never exist.

It is these facts established in the record from Petitioner's own proofs that prove Respondent's theory and claim. Petitioner's appraisal method is factually flawed, unreasonable, and unlawful.

(Attachment #22)

If Petitioner's appraisers' income methodology is approved as correct, then the fair market value of each of the several hundred generating plants (nuclear, coal, gas, waste, etc.) in the entire ECAR region can be estimated by the income approach assuming that each sold its electricity for 4.13 cents, 4.06 cents, 3.74 cents, and 3.83 cents per kilowatt hour during 1993 through 1996. If approved, such a methodology could be used for every income-producing property that is part of a category of properties for which average operating cost data is available. One would simply assume the average industry operating cost as the subject's gross income and perform a discounted cash flow analysis. As Petitioner's appraisers demonstrated, this could be accomplished without ever visiting the property.

An appraisal method based upon the assumption that the subject's contract income stream is irrelevant because it is an unrelated intangible has been firmly rejected. It was rejected by the California Court of Appeal in *Watson Cogeneration Co v County of Los Angeles*, 98 Cal App 4th 1066; 120 Cal Rptr 2d 421 (2002). The Court held:

> The power purchase agreement is inextricably intertwined with the creation and operation of the project as a qualified facility. So long as the project continues to operate as a qualified facility, receiving predictable income stream agreed upon in the power purchase agreement, it is appropriate for the assessor to value the property based on its actual income. *Watson, supra*, at p 428.

The Court further stated:

> The assessor considered Watson's income stream based on its favorable, government-facilitated power purchase agreement. This was the type of agreement for the specific market at issue - the qualifying facility power production market. The assessor's use of the actual applicable terms to capitalize the property's income is an appropriate exercise of discretion. *Id.*

The Michigan Supreme Court rejected a similar theory and claim presented in a proceeding to test valuation methodology for subsidized housing cases in Michigan. In

Meadowlanes Limited Dividend Housing Association v City of Holland, 437 Mich 473; 473 NW2d 636 (1991), the Court ruled, at p 496:

> Similarly, although the mortgage-interest subsidy is an intangible, and not taxable in and of itself, it is a value-influencing factor . . .
>
> . . .
>
> As clarified above, the subsidy is not taxed in and of itself. It is merely an intangible value influencer to be considered in the valuation and assessment process in the same manner as tax benefits, location, zoning, and other intangible value influences. *Id.*

It would be improper appraisal methodology to hold that both the cost approach and the subject's actual income must be ignored in favor of an income approach analysis based on a hypothetical income stream derived from the average operating costs of the industry of which the subject is a part.

The subject's power purchase agreement is integral to the subject, just as the other agreements are necessary to be in place before construction of the subject. The Power Purchase Agreement is intrinsically connected to the Steam Purchase Agreement (OH Exhibit R-7), the Facilities Agreement (OH Exhibit R-4), the Operation and Maintenance Agreement (OH Exhibit R-8), the Coal Supply Agreement (OH Exhibit R-9), and the Coal Dock License Agreement (OH Exhibit R-12). These agreements have penalty clauses if subject does not operate so as to meet the contract requirements. Under the Steam Purchase Agreement, failure of PCA to purchase steam has a $1,000,000 penalty and failure to accept wood waste has up to a $10,000,000 penalty. (OH Exhibit R-7, p 22). The Facilities Agreement has a requirement that it may not be assigned unless the Power Purchase Agreement is assigned at the same time and in the same manner. (OH Exhibit R-4, p 20). The Coal Supply Agreement requires purchase of at least 150,000 tons of coal per year with an initial term of 15 years. (OH Exhibit R-9, p 3). The QF

(Attachment #22)

status attached to subject (OH Tr Vol 13-A, p 18, ll 15-19) was anticipated and is integral to the Power Purchase Agreement and the subject.

It is apparent from the record in this case that the only appropriate substitute plant for the subject is a coal-fired Stoker boiler plant. Only a Stoker boiler can burn wood and wood waste (RH Tr Vol 9-A, p 98, l 15 through p 100, l 8). The choice of fuel type for an electric generating plant is largely site specific (RH Tr Vol 7-B, p 18, ll 1-25). The Filer City site was, during the tax years at issue, a well-chosen site for a coal, wood, and wood waste generating plant with substantial competitive advantages, including access by water transportation, ready access to an electric grid interconnection, adequate permitted ash landfill capacity, with available air emission offsets, a large coal dock suitable for storage of coal, a low cost fuel with stable pricing, and located next to a major steam customer (RH Exhibit P-10L; OH Exhibit R-56; OH Tr Vol 18-B, p 7, l 6 through p 12, l 11).

Petitioner's Exhibit P-114-93, dated December 1995, at page 56, states that "clean coal technology is not standing still and coal remains a potentially strong competitor for gas-fired options, thanks to low and very stable coal prices." Further, and even more importantly, Mr. Tondu's tentative plan, explored in detail at the reopened hearing, to develop a new "Northern Lights Project" 300 megawatt pulverized coal fired plant, as recently as 2001-2002, on subject's site, were it able to achieve QF status and "renaissance zone" tax classification, does considerable injury to the credibility of Petitioner's claim that gas is the only fuel and CCGT the only technology. Indeed, fuel choice is less of an important factor to net income than is achieving QF status and obtaining a PPA to earn at a market contract rate. Add to that the cyclic nature of the various competing fuels' cost, their national and international availability, their transportation and delivery characteristics, energy trading scandals, regulation versus

deregulation, and a politicized energy policy over the span of a 35-year contract period. It cannot be determined with accuracy, even now, that Filer's present coal technology isn't an excellent choice over the long haul. Indeed, the issue of fuel source of choice in the power generation is not yet well settled, as shown by a careful reading of this publication, coming from the unlikely source of Petitioner's own appraisal.

> Similarly, coal plants tend to be capital intensive, but on a pure Btu (British thermal unit) basis coal enjoys a substantial price advantage over natural gas. By contract, most new generation facilities are gas-fired, because they entail substantial lower capital costs and higher variable costs. Accordingly, while gas-fired generation calculated on a total-cost base may be the superior provider of electric power in a market that has reached equilibrium, such facilities may prove early and disproportionate casualties in a marginal-cost price war.
>
> The disparity between capital/operating cost ratios will be exacerbated by excess capacity. In industries with excess capacity, marginal costs fall as production increases. In such situations, each competitor attempts to lower prices and expand output to each a lower point on its marginal cost curve. This attempt, in turn, drives the other competitors back up their marginal-cost curve and increases their losses at the new lower price. Again, notwithstanding their greater efficiency, smaller-scale combustion-turbine facilities with their high average variable costs would be severely disadvantaged in a race down a marginal-cost curve. *Generation, Deregulation and Market Power*, Public Utilities Fortnightly, October 15, 1996 (Petitioner's 1996 Appraisal Exhibit P-2, pp 38-39) (Emphasis supplied, footnotes omitted).

The author cautions, and the Tribunal appreciates, that one needs to be careful about projecting the long-term viability and competitive advantages and disadvantages of "gas" versus "coal" in these respective plants.

Further, it is helpful to remember, subject facility under its QF status and its PPA contract for the delivery of its product under PURPA could have paid off its entire original cost of development out of net income before recapture and debt service before the end of year five of a 35-year contract.

(Attachment #22)

Concluding to fair market value is an iterative process. If the income approach conclusion is appreciably lower than the cost approach conclusion, then it is quite possible that additional depreciation exists in the form of functional or external obsolescence. If the income approach conclusion is appreciably higher than the cost approach value, then one must investigate to determine whether the difference is attributable to such things as business enterprise value.

In this case, Respondent's expert, Mr. Oetzel, concluded that the difference between his income approach conclusion and his cost approach conclusion was attributable in part to the value contribution of exempt property, personal property and the favorable long-term power purchase agreement. Mr. Oetzel adopted the cost approach as providing the least speculative, factually supported and most reliable fair market value estimate for the subject property.

To the extent that Mr. Anderson's and Mr. Newberg's reproduction cost new significantly differs from Mr. Russell's and Mr. Oetzel's reproduction cost new, the explanation is found, at least in part, in the practice of Mr. Anderson and Mr. Newberg of not including soft costs, such as interest during construction, in calculating an electric generating plant's reproduction cost new. Appraisal theory, however, clearly supports the inclusion of soft costs such as interest during construction in estimating market value by the cost approach. Appraisal Institute, *The Appraisal of Real Estate* (Chicago: Appraisal Institute, 12th ed, 1996), p. 358. Despite his practice of not including them, Mr. Anderson testified that financing costs are legitimate costs that should be included in estimating true cash value (OH Tr Vol 15-A, p 20, ll 18-21). Mr. Paton and Mr. Achenbach included interest during construction in their replacement cost (OH Tr Vol 5-A, p 115, ll 7-11).

After trending subject's actual construction costs to the valuation date using the Handy-Whitman Index, each of Respondent's appraisers accounted for the negative value influence caused by depreciation. Respondent's appraisers followed appraisal theory by depreciating reproduction cost new according to the age life relationships of the subject's property. Mr. Anderson and Mr. Newberg used the State Tax Commission depreciation tables developed by the State Tax Commission utility valuation staff for use in valuing electric generating plants. Mr. Oetzel explains his depreciation beginning in OH Tr Vol 18-B, p 33. The relationship between the age of the property and the property's estimated life gives the depreciation percentage. Mr. Oetzel estimated a market-oriented 1% negative value influence for deferred maintenance (Tr Vol 18-B, p 34, ll 20-25 and p 35, ll 1-25 and p 36, l 1). Mr. Oetzel calculated $9,289,539 in incurable physical depreciation. (Tr Vol 18-B, p 34, ll 19-21 and OH Exhibit R-56.3, p 48, 6th column). Mr. Oetzel also calculated $2,350,000 in curable functional obsolescence to account for the ash handling situation at subject. (Tr Vol 18-B, p 36, ll 16-25, p 37, ll 1-25, and p 38, ll 1-14).

Mr. Anderson concluded to a true cash value for subject of $48,640,221 for 1993, and $50,000,000 for 1994. For 1994, Mr. Anderson's cost approach conclusion was $48,299,000 to which he assigned approximately 80% weighting and correlated it with his income approach conclusion of $57,005,000. In 1995, Mr. Newberg's cost approach conclusion was $48,241,274 to which he assigned approximately 73% weight when correlating with his income approach of $51,450,971. Mr. Newberg concluded to a true cash value for subject of $49,100,000 for 1995. Neither Mr. Anderson nor Mr. Newberg's cost approach appraisal recognized soft costs as a component of reproduction cost new. Mr. Oetzel concluded to a cost approach true cash value of $67,797,000 for tax year 1996, which included consideration of soft costs.

(Attachment #22)

TES Filer City Station vs. Filer Township - Opinion and Judgment
MTT Docket No. 192808

V. CONCLUSIONS

The Tax Tribunal has a duty to ascertain the true cash value of the subject property. *Clark Equipment* v *Leoni Township*, 113 Mich App 778, 786; 318 NW2d 586 (1982). Further, the Tax Tribunal has a duty to select the method to value the subject that is the most accurate method for the facts of the case. *Antisdale* v *City of Galesburg*, 420 Mich 265, 277; 362 NW2d 632 (1985).

It is unreasonable to ignore the cost approach without adequate explanation set forth in the appraisal. It is unreasonable to ignore the subject's actual operating income on the ground that it results from a long-term contract by alleging that the contract is an intangible.

In an income approach analysis it is unreasonable to substitute industry average operating costs as a proxy for a subject's reasonably anticipated income stream. It is unreasonable in a cost approach analysis to project replacement cost based upon a replacement plant for which neither design nor specifications are offered or equivalent utility established. It is unreasonable to use the multiplier tables of Chapter 15 of the Assessor's Manual to value an electric generating plant unless it is independently established that the result is fair market value.

Development of reproduction cost new for a plant of recent construction by trending actual construction costs using a nationally recognized and approved index is supported by appraisal practice and the State Tax Commission Assessor's Manual. Filer City Station was a QF facility operating under a power purchase agreement on each of the tax dates at issue, selling its electricity at energy and capacity rates established in the contract and slightly higher than the average for QF facilities in Michigan.

The evidence at trial showed that the cost approach is the most accurate and reliable valuation method under the facts of this case. It is recognized as an appraisal principal that indirect or "soft costs" are an integral part of reproduction cost new. The Tribunal should look to the evidence in this record to make an independent true cash value finding in this case.

Respondent proposes, and the Tribunal accepts, that 24% be added to Mr. Anderson's and Mr. Newberg's respective reproduction cost new estimates to properly account for the inclusion of indirect "soft" costs. Mr. Russell and Mr. Oetzel included indirect costs in their reproduction cost new.

Mr. Russell's and Mr. Oetzel's indirect costs approximate 24% of their reproduction cost new. (Exhibit R-56.2, p 1, line 2e, total indirect costs of $20,642,006 divided by line 3 total direct and indirect costs of $86,322,076 = 24%). Mr. Russell testified that: "General indirect costs for building a power plant are generally in the 20, 25, 30% range." (OH Tr Vol 16-A, p 52, ll 4-6).

To include indirect costs of 24% in the reproduction cost calculation performed by Mr. Anderson and Mr. Newberg, one needs to perform the following calculations:

Leslie V. Anderson's 12/31/92 RCN $53,622,233
(Exhibit R-52.2, first page, 4th column total)

1. To add 24% for indirect costs, divide 76% as direct costs into the reproduction cost new:

   $53,622,233 / .76 = $70,555,569 (RCN including indirect costs)

2. 9% is the sum of depreciation for Mr. Anderson's 12/31/92 appraisal (Exhibit R-52.2 difference between column 4 and column 7 totals is $5,033,907, or 9% of $53,622,233). Depreciate the reproduction cost new including indirect costs by multiplying it by 9% and

subtracting the resulting depreciation amount from the reproduction cost new including indirect costs:

   $70,555,569 x .09 = $6,350,001 (9% depreciation)
   $70,555,569 - $6,350,001 = $64,205,568 (reproduction cost new less depreciation)

3. Add Mr. Anderson's land value to reproduction cost new less depreciation to get true cash value:

   $64,205,568 + $51,895 = $64,257,463 (RCNLD plus land value)

4. True cash value = $64,257,463

Leslie V. Anderson's 12/31/93 RCN $55,102,282
(Exhibit R-53.2, first page, 4th column total)

1. To add 24% for indirect costs, divide 76% as direct costs into the reproduction cost new:

   $55,102,282 / .76 = $72,503,002 (RCN including indirect costs)

2. 12% is the sum of depreciation for Mr. Anderson's 12/31/93 appraisal (Exhibit R-53.2 difference between column 4 and column 7 totals is $6,855,515, or 12% of $55,102,282). Depreciate the reproduction cost new including indirect costs by multiplying it by 12% and subtracting the resulting depreciation amount from the reproduction cost new including indirect costs:

   $72,503,002 x .12 = $8,700,360 (12% depreciation)
   $72,503,002 - $8,700,360 = $63,802,642 (reproduction cost new less depreciation)

3. Add Mr. Anderson's land value to reproduction cost new less depreciation to get true cash value:

   $63,802,642 + $51,895 = $63,854,537 (RCNLD plus land value)

4. True cash value = $63,854,537.

(Attachment #22)

Eric R. Newberg's 12/31/94 RCN $56,980,117
(Exhibit R-54.1, last page, 4th column total)

1. To add 24% for indirect costs, divide 76% as direct costs into the reproduction cost new:

$56,980,117 / .76 = $74,973,838 (RCN including indirect costs)

2. 15.5% is the sum of depreciation for Mr. Newberg's 12/31/94 appraisal (Exhibit R-54.1 difference between column 4 and column 7 totals is $8,790,738, or 15.5% of $56,980,117). Depreciate the reproduction cost new including indirect costs by multiplying it by 15.5% and subtracting the resulting depreciation amount from the reproduction cost new including indirect costs:

$74,973,838 x .155 = $11,620,944 (15.5% depreciation)
$74,973,838 - $11,620,944 = $63,352,894 (reproduction cost new less depreciation)

3. Add Mr. Newberg's land value to reproduction cost new less depreciation to get true cash value:

$63,352,894 + $51,895 = $63,404,789 (RCNLD plus land value)

4. True cash value = $63,404,789.

The 24% adjustment is not required in Mr. Oetzel's value conclusion because he included indirect costs in his reproduction cost new.

On March 15, 1994, Michigan voters approved a constitutional amendment known as Proposal A. Proposal A as implemented by MCL 211.27a introduced two new terms used in property tax administration: "taxable value" and "capped value." Taxable value is the value against which taxes are spread. Capped value is the maximum amount to which the taxable value of each parcel can increase in any given year.

The formula for capped value is:

(Attachment #22)

Capped value = [prior years taxed value - LOSSES] x [the lower of 1.05 or the Consumers Price Index (CPI) expressed as a multiplier] plus ADDITIONS.

The formula for taxable value is:

Taxable value = The lower of SEV or capped value, unless there has been a transfer in the previous year. The taxable value for the 1995 and 1996 years would be:

1995 The parties stipulated that 1995 additions were $101,273 in the May 7, 1997 Stipulation as to Taxable Value.

'94 SEV x 1.026 + 50% of additions = capped value
$31,927,500 x 1.026 = $32,757,615 + $50,636 = $32,808,251

Taxable value = $31,702,500 (SEV is lower)

1996 '95 taxable value x inflation rate = '96 capped value
$31,702,500 x 1.028 = $32,590,170

Capped value of $32,590,170 is less than the '96 SEV, therefore,
Taxable value = $32,590,170

The significance of having subject property's Highest and Best Use as a QF COGEN operating under its actual PPA or a Median across the seven Michigan PPAs is that it defeats Petitioner's hypothetical "merchant plant" theory, which is the only way Petitioner's claims of extraordinary functional and economic external obsolescence can be justified and/or calculated. The justification and calculation of extraordinary obsolescence fails, in favor of normal depreciation justified and calculated in the proper application of the Cost Approach under conditions of a special purpose property, in accordance with the Tribunal's ruling in this case.

The instant appraisal problem is not one of hypothesizing a merchant plant under a false highest and best use; rather, it is one of a QF operating under its PPA. It is not one of an inferred leasehold situation; rather, it is one of a fee simple. It is not one of a real estate appraisal comprising physical tangible property only; rather, it is one of a real property appraisal comprising the physical tangible property, the full bundle of rights, plus any value influencers,

both tangible and intangible. It is not one of general market economics as they come to bear in the minds of buyers and sellers of general income properties; rather, it is one of QF PURPA market economics, which can only be properly understood to specialized buyers and sellers within the specialized market created by the environment of enabling federal and state legislation and its resulting implementation apparatus. It is not one of having MBAs, CPAs, PEs, DBAs, Economists, Financiers, Marketing Agents, Advocates, and other non-appraisers perform some appraisal technique, absent the experience and culpability which attaches to the proper practice of real estate appraisal under the prevailing licensing statute; rather, it is one of proper appraisal practice under the standards governing such practice in Michigan. It is not one of having counsel instruct the valuation witness as to the "applicable law of the situation" to the effect that major elements of judgment within the appraisal problem, the determination of highest and best use and the applicability of a hypothetical replacement model, are preempted; rather, it is one of allowing trained experienced appraisers exercise their judgment within the constraints of recognized standards, to conclude to their best expression of true cash value. And finally, it is not one of great complexity, involving considerable application of engineering and finance principles; rather, it is one of "being aware of understanding and correctly employing those recognized methods and techniques, necessary to produce a credible appraisal" and having the discipline to "not commit an error of omission or commission which significantly affects an appraisal" and exercising the "due diligence" necessary to see that all the information that may significantly impact an appraisal is discovered. The Appraisal Foundation, *Uniform Standards of Professional Appraisal Practice* (Washington, D.C. The Appraisal Foundation, 1996 ed), p 13.

Petitioner fails in its burden to persuade with regard to true cash value of subject property, in the first instance as a hypothetical merchant plant and in the second instance as a

reclassification to personal property determined by multipliers, by substantial evidence on the whole record. Respondent's proofs are the most persuasive. Respondent's expert appraisers are the most credible; while Petitioner's expert appraisers, who are not appraisers, are lacking in even basic credibility. Finding is for Respondent on substantial and credible evidence in a full and complete record.

To summarize, often, when one is faced with a considerable amount of information seeming to point in no particular direction, or worse, pointing in several different directions simultaneously, a return to basic principles is helpful. Such is the case in the matter before us today.

Indeed, this is the basic condition for nearly every complex appraisal assignment. The process for an appraisal practitioner starts years before the acceptance of an assignment through education, training, and experience needed to develop the skills and judgment to "...be aware of, understand and correctly employ these recognized methods and techniques that are necessary to produce a credible appraisal" (The Appraisal Foundation, *Uniform Standards of Professional Appraisal Practice* (Washington, D.C. The Appraisal Foundation, 1996 ed), p 13) and it is continued in the present assignment by the "sufficiently diligent" gathering of as much relevant factual information as possible that could have a material or significant effect on the value of subject, so as to "...not commit a substantial error of omission or commission that significantly affects an appraisal." The Appraisal Foundation, *Uniform Standards of Professional Appraisal Practice* (Washington, D.C. The Appraisal Foundation, 1996 ed), p 13.

While other professions may not necessarily be similarly bound, for professional appraisers operating under uniform appraisal standards, "Departure from these basic

(Attachment #22)

requirements is not permitted." The Appraisal Foundation, *Uniform Standards of Professional Appraisal Practice* (Washington, D.C. The Appraisal Foundation, 1996 ed), p 13.

Some basic appraisal questions and answers relating to subject are instructive:

1. Question: What are we appraising? Answer: The real property and tangible personal property of subject facility. That is to say, the "tangible" physical elements of the real estate; the "intangible" rights, benefits, and interests that make it real property; and any intangible value influencers.

2. Question: What is subject property's current use? Answer: It was conceived, designed, financed, constructed, outfitted and operated as a private electrical Cogeneration (COGEN) Qualified Facility (QF) under a Power Purchasing Agreement (PPA) contract for its product; all of which are mandated by the Public Utilities Regulation Policies Act of 1978 (PURPA), a federal act designed to force the regulated power monopolies to purchase power at "avoided costs" from independent power producers.

3. Question: Is the current use of such a kind that subject property is a "special use property"? Answer: Yes.

4. Question: What is the Highest and Best Use of subject property? Answer: The highest and best use is that legally permissible, physically possible, financially feasible use that demonstrates the maximum net financial return to the land.

5. Question: Is subject property's current use its highest and best use? Answer: Yes.

6. Question: If we use a market approach, what is the relevant market? Answer: the fee simple market under its unique current use. That being a QF COGEN operating under a market PPA contract, as mandated by PURPA.

7. Question: If we use a cost approach, what is a reasonable substitute for subject property? Answer: a property with equivalent utility.

8. Question: If we use an income approach, what is the relevant income? Answer: That income resulting from the highest and best use.

Thus, in a few simply put questions, the gravamen of an appraisal to estimate the true cash value in this case is revealed.

In concluding to the true cash value of the fee simple estate of subject facility special purpose property, the most credible information comes in the area of trending recent construction costs. The best fit for method is the cost approach using reproduction cost new, less normal depreciation, with support from the income approach capitalizing market contract income and market expenses. Petitioner fails in its burden of proof, the Tribunal finding their appraisal experts to lack any credibility. Respondent's appraisal experts do the most credible analysis. The Tribunal lacks jurisdiction to consider Petitioner's "reclassification" claim in the alternative.

The Tribunal finds that the true cash value and taxable value for the tax years at issue shall be revised as displayed in the following table:

YEAR	PARCEL NO	TCV	SEV	TV
1993	51-06-019-100-10	$64,257,000	$32,128,500	N/A
1994	51-06-019-100-10	$63,855,000	$31,927,500	N/A
1995	51-06-019-100-10	$63,370,220	$31,685,110	$31,685,110
	51-06-301-701-01	$34,780	$17,390	$17,390
1996	51-06-019-100-10	$67,760,000	$33,880,000	$32,572,293
	51-06-301-701-01	$37,000	$18,500	$17,877

VI. JUDGMENT

(Attachment #22)

IT IS ORDERED that the subject property's true cash value(s), assessed, and taxable value(s) shall be revised for the tax year(s) at issue, subject to the processes of equalization, as provided in the Conclusions of Law section of this Opinion and Judgment.

IT IS FURTHER ORDERED that the officer charged with keeping the assessment rolls for the tax years at issue shall correct or cause the assessment rolls to be corrected to reflect the property's revised assessed and taxable values provided in the Conclusions of Law section of this Opinion and Judgment, subject to the processes of equalization, within 20 days of the entry of this Order.

IT IS FURTHER ORDERED that the officer charged with collecting or refunding the affected taxes shall collect taxes and any applicable interest or issue a refund as required by this Order within 20 days of the entry of this Order. If a refund is warranted, it shall include a proportionate share of any property tax administration fees paid and of penalty and interest paid on delinquent taxes. The refund shall also separately indicate the amount of the taxes, fees, penalties, and interest being refunded. A sum determined by the Tribunal to have been unlawfully paid shall bear interest from the date of payment to the date of judgment and the judgment shall bear interest to the date of its payment. A sum determined by the Tribunal to have been underpaid shall not bear interest for any time period prior to 28 days after the issuance of this Order. As provided by 1994 PA 254 and 1995 PA 232, being MCL 205.737, as amended, interest shall accrue for periods after March 31, 1985, but before April 1, 1994, at a rate of 9% per year. After March 31, 1994, but before January 1, 1996, interest shall accrue at an interest rate set monthly at a per annum rate based on the auction rate of the 91-day discount treasury bill rate for the first Monday in each month, plus 1%. After December 1, 1995, interest shall accrue at an interest rate set each year by the Department of Treasury. Pursuant to 1995 PA 232,

interest shall accrue (i) after December 31, 1995, at a rate of 6.55% for calendar year 1996, (ii) after December 31, 1996, at a rate of 6.11% for calendar year 1997, (iii) after December 31, 1997, at a rate of 6.04% for calendar year 1998, (iv) after December 31, 1998, at the rate of 6.01% for calendar year 1999, (v) after December 31, 1999, at the rate of 5.49% for calendar year 2000, (vi) after December 31, 2000, at the rate of 6.56% for calendar year 2001, (vii) after December 31, 2001, at the rate of 5.56% for calendar year 2002, (viii) after December 31, 2002 at the rate of 2.78% for calendar year 2003, and (ix) after December 31, 2003 at the rate of 2.16% for calendar year 2004.

Interested school districts are Manistee Public, Manistee Intermediate, and Westshore Community College.

MICHIGAN TAX TRIBUNAL

Entered: January 23, 2004

By: Richard A. Southern

(Attachment #22)

MICHIGAN
LAND USE
INSTITUTE

Building citizen support for policy that protects the environment, strengthens the economy, and enhances quality of life.

BOARD OF DIRECTORS
Bob Sutherland
Chairman

Deborah J. Rohe
Secretary

Robert Otwell
Treasurer

Reg Bird
Sam Cummings
James F. Gehrke
Ralph Graham
Nancy Griffin
John Logie
Robert W. Marans
Maureen Martin
Helen Milliken
Joyce Petter
Hans Voss
Willard Wolfe
Timothy Young

MAIN OFFICE
205 South Benzie Blvd.
PO Box 500
Beulah, MI 49617-0500
TEL: (231) 882-4723

TRAVERSE CITY OFFICE
1200 West 11th St.
Suite 228
Traverse City, MI 49684-3193
TEL: (231) 941-6584

GRAND RAPIDS OFFICE
528 Bridge St. NW #1C
Grand Rapids, MI 49504-5349
TEL: (616) 308-6250

LANSING OFFICE
314-1/2 N. Walnut, 2nd Floor
Lansing, MI 48933-1124
TEL: (517) 367-7415

www.mlui.org

February 19, 2004

Planning Commission
City of Manistee
550 Maple Street
PO Box 358
Manistee, MI 49660

Dear Commission Members,

The Michigan Land Use Institute urges the Manistee Planning Commission to reject the special use permit application from the Manistee Saltworks Development Corporation for the construction of a coal-fired power plant on Manistee Lake.

The Institute supports carefully thought out economic development that creates jobs, revitalizes cities, and protects open space and natural resources. The proposed Northern Lights development fails to meet these criteria.

The sheer size of the proposed plant and its operation will harm the city. Locating it on Manistee Lake will drive down property values in surrounding neighborhoods, drive away residents who can afford to move, and permanently eliminate future residential, recreational, or commercial development around or near the lake. In short, the project will reduce, not increase, the city's non-industrial property tax base.

Yet the project will increase expenses for both the city and surrounding local governments. The very heavy truck traffic, the rapid filling of nearby landfills with coal ash, the dredging of Manistee Lake, the frequent traffic interruptions at the city's two drawbridges, the cost of buying and maintaining much larger scale emergency equipment, the greatly increased wear and tear on roads — these considerations add up to a very large bill for city and county taxpayers. The Institute is convinced the city would lose money on this project and sacrifice some of its quality of life.

But the bargain is worse than that because the plant would be municipally owned. It would not pay any of the potential $11 million or more in annual property taxes a privately owned facility would generate.

The plant's presence would change the very nature of the region by accelerating residential and commercial development outside, rather than inside, the city. It would create sprawling land use patterns that pave the countryside, generate significant traffic congestion, and ruin the beauty that is key to the city's current and future success. Manistee would become more like a suburb and less like what it now is: An attractive, charming city nestled between lake and countryside.

Printed on 100 percent post-consumer fiber. Please recycle.

(Attachment #23)

We also question how much the jobs projected for both the construction and operation of the plant would actually benefit Manistee-area residents. Skilled tradesmen from distant places will likely fill many of the construction jobs. They will live here for three years — making it much more difficult for tourists to find room at the inn — and then they will leave. Moreover, there are questions about whether the skills or experience necessary for many of the higher-paying jobs at the plant exist within the community. Much of the plant's projected payroll could well go to people who are not currently living here.

There are many unanswered questions about the proposal's economic impact on the region. They require in-depth, expert, independent analysis. Until the planning commission hires a well-credentialed firm to conduct this analysis, and until the commission and Manistee residents understand the full economic implications of this project, it is unwise to move forward with the approval process. We urge the commission to avoid a rush to judgment. It will take far longer than the six weeks remaining in the permit application process to obtain a proper analysis.

The Institute supports business-friendly solutions to economic, environmental, and development-related problems. This demands great creativity, honest and frank communication, flexibility, open minds, and patience from all involved. Today Manistee faces a situation ripe with opportunity. This beautiful and attractive area has seen its economy grow in profitable new directions, and we have a governor who says she is deeply committed to increasing economic security by helping citizens develop 21st-century technologies and thriving cities.

Studies indicate that alternative power technologies already bringing prosperity to Europe generate great numbers of high paying jobs, many of them requiring precisely the skills our unionized neighbors have. America's most forward-looking union leaders support a shift to alternative forms of power generation that will help, not hurt, workers. And Manistee County's largest single business interest and employer — the Little River Band of Ottawa Indians — says it intends to make major investments that will move that kind of visionary development forward.

We urge the Manistee Planning Commission to reject the current Northern Lights power plant proposal and do nothing more with the permit application until it receives the results of an independent analysis of the proposed project's immediate and long-term economic impact. The Institute urges the city administration to exhibit the great leadership it is so capable of and bring business, citizen, union, environmental, conservation, tourist, and neighboring government jurisdictions together. This group should engage with the governor's Department of Labor and Economic Growth and produce an energy development plan that serves this region's needs, not the designs of distant cities. This will allow Manistee to look ahead to a bright future rather than backward to a past that, no matter what the community chooses to do, is rapidly receding.

Sincerely yours,

Hans Voss
Executive Director

(Attachment #23)

I am S.A.M.S. a GRD and am presently Dir. of F.F. at G.A. Parish here in Manistee, and have been for 11 yrs.

As a GRD one of our four pillars which we commit ourselves to is fostering the stance that all the earth is sacred and interconnected. Questions we have asked ourselves about our care for the earth are:

1. Whose interest is being served?
2. In 100 years, what would people wish we had done?
3. What would happen, if we DON'T do anything?

As a resident of Manistee, I am opposed to the proposed coal plant of Tondu Corp. of Houston, TX, because I have grave concerns regarding air pollution with fly ash, water pollution with mercury, and land pollution with bottom and scrubber ash, AND the ramifications of the presence of each on the health and well-being of residents not only of Manistee, but in the extended areas as well, now and 100 years from now, and I implore you to bring in independant counsels for further study before a tragic decision could occur, particularly because of the statement of Mr. Tondu published in the BENZIE COUNTY RECORD PATRIOT, February 4, 2004 on page 3: "I was born and raised here in Manistee county. I wouldn't build anything if I thought it was going to have a negative impact on Manistee or the environment."

I believe it WILL have negative impact on Manistee and the environment, in 2005 AND 2105 and ask you to deny the presence of this company in Manistee.

We need to take responsibile action to avoid the possibility of serious and irreversible enviornmental harm, so that when we look at our world, we, like God in Genesis said, "It is good."

Thank you !

Sister Anne Monica Shelda, O.P.
501 Michael
Manistee 49660
723-4891

(Attachment #24)

MANISTEE COUNTY SPORT FISHING ASSOCIATION
MC SFA
P.O. Box 98 • Manistee, MI 49660 • 231-889-5769

February 19, 2004

Planning Commission:

The Manistee County Sport Fishing Association has 225 active members and is the largest sport fishing association in the region. Our purpose is to help promote the sport fishery and tourism in Manistee County.

Last year 840,141 angler hours were generated from people around the country who fished in Manistee lake, river and out of the port of Manistee. According to the 1996 US FWS study each angler day equates to 25 dollars in total spending in the local economy. Economically, fishing brought in 4.23 million dollars into to Manistee County in 2003.

We as an organization have some concerns about the proposed Coal-Fired Plant on the shores of Manistee Lake.

Will it have a thermal discharge? If so how many gallon out put? At what temperature? And how will this effect the salmon and steelhead migration that occurs in front of the proposed plant to the Little Manistee River. How will this affect the annual migration?

How much dredging needs to be done to accommodate the loading docks for the new coal storage facility? Will contaminants be released into the water table? How will this affect the current water quality in Manistee Lake and its fishery?

How many freighters will traverse the Manistee Harbor to supply the vast amounts of coal needed to fire the plant? How will this affect the fishing and the ability of anglers to fish the river channel and navigate it?

The little Manistee River is the only river in the region that harvests steelhead eggs. This strain of steelhead is the brood stock for all steelhead plants in the Great Lakes. Will the changes brought about by the Coal Plant affect the egg taking operation?

Also, can fish in the area take any additional mercury contamination? They are already on the DNR fish contamination advisory.

We are afraid that the fishing may not be able to accommodate the increased loads placed on it by the land use proposed by the Northern Lights Project.

Are the fish and the other creatures that inhabit Manistee Lake, who are going to be adjacent neighbors to the proposed plant, going to be compatible?

Finally, at this point, we feel that many questions need to be answered. Many of the questions can only be answered by thorough, longitudinal studies.

We know the fishery currently generated a conservative 4.23 million in 2003. Our group needs irrefutable assurances that the Northern Lights Project will not harm the fish and fishing economy in Manistee County. Until these fishery impact questions are answered our association is opposed to the Northern Lights Development

(Attachment #25)

Manistee County
Sport Fishing Fact Sheet

This fact sheet shows the annual value of the sport fishery in the Manistee River, from Tippy dam to Manistee Lake, Manistee Lake, and the ports of Onekama and Manistee to be in excess of 5.8 million dollars and is a conservative value. This is broken down between charter fishing and non-charter fishing with values of $2,043,954.90 and $3,783,550.00 respectively.

1. Non-Charter Sport Fishing

Site	Angler Hours	Angler Days	Dollar Values
Port of Manistee	194,561	36,330	$908,250.00
Manistee Lake	65,334	14,596	$364,900.00
Manistee River	580,246	100,416	$2,510,400.00
	840,141	151,342	$3,783,550.00

- Estimates of hours and days from Fisheries Division – MDNR angler creel surveys and are an annual estimate, based on 1998 – 2003 data.
- Dollar value based on 1996 U.S. Department of Interior study that one angler day is valued at $25.00, which is a minimal value. Using a $35.00/day figure, a value of $5.3 million is derived.
- The MDNR creel survey found 80% of the angler days are from out of Manistee County residents, which means $3.03 million of the total is dollars brought into the county from other counties or states.

2. Charterboat Sport Fishing

Site	# Trips	$ Value	Charter Fees	Total
Onekama	189	$134,898.75	$94,500.00	$229,398.75
Manistee	1,495	$1,067,056.20	$747,500.00	$1,814,556.20
				$2,043,954.90

- The dollar value of one charter trip was from a 2002 MSU Sea Grant study and is $713.75.
- The dollar value of charter fees was from a 2002 MSU Sea Grant study and is $500 per charter trip.
- Between Onekama and Manistee, there are 39 registered charterboats, which represent a $3,814,941.00 ($97,819.00 per boat from 2002 MSU Sea Grant study) investment in the community.

(Attachment #25)

February 26, 2004
Manistee Planning Board

My name is Lynise Hensel and I live at 2567 Crescent Beach Rd in Manistee.

I want you know that I'm a mild mannered, quiet lady and usually keep my thoughts to myself. But tonight is different – tonight I'm brave because I feel my future grandchildren and all the future children of Manistee are in danger. I am compelled to express my extreme opposition to the coal-fueled power plant.

Tonight I'm speaking to you as a mother, a grandmother and a woman. For the past 33 years, I've done everything in my power to protect my family from anything that could cause them harm.

I'd like to start with a story. Last weekend my granddaughter and I went sledding (she is almost 4) and, as all kids do, she was licking snow off her mittens. I had to catch myself from yanking her hand away from her mouth. I kept thinking of all the toxins she could be taking into her little body. It brought tears to my eyes. All children eat snow, play outside, get dirty, and track dirt inside the house, but what about the stuff you can't see – the toxins that are in the dirt, air, water? How can we protect them from that stuff? Well, for starters, we can trust our planning board to deny the special use permit because they know we depend on them to do everything in their power to protect us and they have kids and grandkids too.

Women, on the board, I don't need to remind you that we are unique. Like men, the toxic substances that fall from the sky and into the waters influence us, but unlike men, we're born with all the eggs we will ever make. **ALL OF OUR FUTURE CHILDREN ARE WITHIN US!** So, when we're exposed to pollutants as fetuses within our own mothers, as children or as adults, our unique DNA code is also exposed. If this blueprint is exposed to toxins, then there is an increased likelihood that our children will suffer from a multitude of problems. WE have the awesome responsibility of being protectors of future generations. So, if a company is going to pollute our air and water, it's OUR duty NOT to allow this. If a coal-fueled power plant wants to move into our town, we, women, should be on the front lines against it. We owe it to each other and to our kids and grandkids.

Most of us women feel responsible for anything that is wrong with our children. We're the ones who take care of them and worry about their future. If only we'd done this or not done that. Women take vitamins, stop smoking and drinking. Some are even afraid to take an aspirin for fear of harming their unborn child. We've heard from Manistee's local physicians as well as several retired physicians from the area that are highly concerned about this plant and its health risks. We have not heard from a single medical doctor that this plant will be good for anyone's health. Listen to your own doctors and don't **knowingly allow this plant to be built in our town. You know now from hundreds of scientific studies that these plants are the biggest remaining man-made source of mercury and other pollutants.**

How many jobs can we justify for one child with learning disabilities, or small lungs, or a weak heart? How about 60 jobs? How many children are we willing to sacrifice to low IQs or physical defects? How about a fee for service? How many children is that worth?

We, all, need to unite to keep this coal plant out of town. We can't just sit back and allow others to decide our future. We can't let mostly men, who are excited about 60 jobs, make this decision for us. As women, we've fought to prove to men that we know what we're talking about, and in most things, we usually know what is best for our families. You have all the medical, health and safety

(Attachment #26)

reasons presented here to deny this application for a special use permit. It doesn't properly evaluate the health risks for the women and children of Manistee or anyone else in this community. On behalf of women, and all reasonable people, I ask for an independent health impact assessment that will absolutely prove to all of us that this power plant will be safe for our future generations. I just read that Ontario has decided that by 2007 all coal-fired generation will be phased out. Ontario weighed all the risks and decided that even if it costs the taxpayers more it is better to have clean air. We should consider their lead here in the US.

Members of the planning commission, we want you to know that if you allow this plant you will be risking the health of generations to come. It is up to you, adults, to act responsibly on behalf of children who have no voice. We should all be protectors of the future for that is our most important possession.

*Enclosed are a few of the hundreds of important documents that I read over the past two months backing up my presentation. I f you need any more please contact me as I have piles and piles. I'm afraid to burn them because I don't want to pollute the air. Hopefully in a few months I can go around and sell all the reams of paper that have been generated by this controversial issue to the local paper manufacturer and retire.

(Attachment #26)

Practice what you Preach

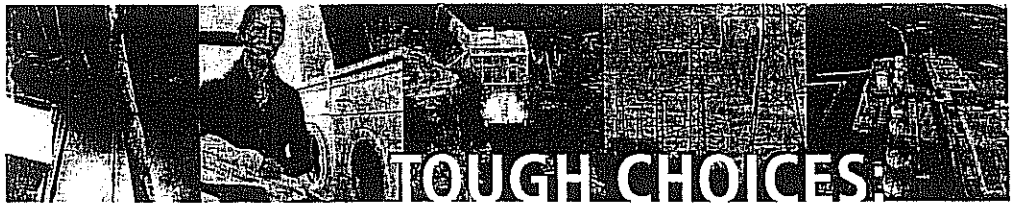
"Air pollution remains a significant concern with coal-fired generating facilities, even though contemporary plants that burn low sulfur coal are far less a threat than older plants.

Nevertheless, such facilities should not be sited near planned or existing residential areas, and special care should be taken to avoiding areas that already have a significant air pollution problem."

Erin Kilpatrick, Planner
Williams & Works, Inc.
Grand Rapids, MI
Planning & Zoning News
November 2002

* NOTE: This person is employed by the same firm as Jay Kilpatrick, under contract with the Planning Commission, as a consultant to their process for the proposed Northern Lights project.

ECSTF
Electricity Conservation & Supply Task Force



Addressing Ontario's Power Needs

Final Report to the Minister
January 2004

Planning Board,

This is the first part of a 120+ page report that I am inclosing with my paper. It is to the ministry of energy in Ontario and was presented in January of 2004. It describes how Ontario will decommission their coal-burning power plants by 2007 and switch over to primarily natural gas as well as other forms of renewable energy sources. This article is readily available on the Internet:
http://www.energy.gov.on.ca/english/pdf/electricity/TaskForceReport.pdf

If you just read the names of the task force you will see that it is comprised of people from the energy sector. They had testimony from nearly 100 experts representing different companies and stakeholder organizations and decided that even if it cost more they owed it to their citizens to provide clean air.

Submitted by: Lynise Hensel February 26, 2004

ECSTF
Electricity Conservation & Supply Task Force

(Attachment #26)

January 9, 2004

The Honourable Dwight Duncan, MPP
Minister of Energy
4th Floor, Hearst Block
900 Bay Street
Toronto, Ontario
M7A 2E1

Dear Minister:

The Electricity Conservation & Supply Task Force *(ECSTF)* has the honour of presenting its report to you in accordance with the mandate and terms of reference set out for its creation on June 27, 2003.

The recommendations in our report represent a broad consensus on changes that need to be made if the Ontario electricity industry is to successfully meet the challenge of a growing gap between future demand and supply. While not all members of the Task Force agree with all the recommendations, all members concur with the basic findings and the general directions that have been suggested.

The Task Force was privileged to have advice from over ninety experts, as well as access to staff in many organizations. We would like to express our appreciation to the many participants and presenters who contributed to our understanding of the issues and challenges currently faced by the Ontario electricity sector.

Respectfully submitted,

Courtney Pratt

Courtney Pratt - Chair of the Task Force

PSR: Physicians for Social Responsibility

Environment and Health Program
January 29, 2004
For Immediate Release
Contact:
Nadia Khatchadourian,
202-478-6187 or
Daniel J. Weiss,
202-478-6307

New Mercury Rule Fails to Protect Kids, Say EPA's Own Child Health Advisors

Letter to Administrator Leavitt Urges Tougher Standards for Power Plants

WASHINGTON ‹ As the U.S. Environmental Protection Agency (EPA) prepares to formalize its proposal to establish mercury pollution limits for power plants, the EPA's respected Children's Health Protection Advisory Committee (CHPAC) sent a letter to EPA Administrator Michael Leavitt this week in an unprecedented move urging him to significantly strengthen the proposed rule to reduce the threat of
mercury to children. EPA's proposed rule, expected to be published in the Federal Register on Friday, January 30, 2004, would postpone major mercury reductions from power plants until 2018 or beyond, allowing as much as 650,000 pounds of excess mercury to be released into the atmosphere. In addition, the proposed rule would remove mercury from power plants from EPA's list of hazardous (toxic) air pollutants.

The EPA's Children's Health Protection Advisory Committee (CHPAC) found that the mercury proposal
'does not sufficiently protect our nation's children.' The CHPAC includes doctors, nurses and other child and public health experts from academia, state agencies, industry, and the public sector, all of whom
were appointed by the current administration. The letter marks the first time that the CHPAC has ever formally objected to an EPA proposed rule-making for its failure to protect children's health. The letter adds, 'While cost effectiveness is important, the priority should be to protect children's health in a timely manner.'

'EPA's mercury rule ignores sound science and our children's health,' said Susan West Marmagas, M.P.H., Director, Environmental & Health Programs, Physicians for Social Responsibility, and a

member
of the CHPAC.

'We know that mercury can damage our children's intellectual and emotional development. It is unacceptable that EPA's proposal allows power plants to pump out excess mercury for another fifteen years, contaminating our air, water, food, and our children,' Marmagas noted.

Children, infants and women of child-bearing age are particularly vulnerable to mercury exposure. Mercury can harm fetal development and impair children's cognitive growth, including motor skills, learning capacity, and memory, along with other symptoms of neurological damage. Currently, about 8 percent of women of child-bearing agedliterally millions of American womenchave blood mercury concentrations higher than the level considered safe by the EPA. New research made public by EPA scientists this week indicates that as many as 600,000 children annually may be adversely affected. Women and children are commonly exposed to mercury when they eat contaminated fish. Late last year the U.S. Food and Drug Administration began developing new guidelines for fish consumption indicating
that children and women of child-bearing age should limit their consumption of tuna and other common fish species as a result of unsafe mercury levels. Forty five states have so far issued 2,140 specific fish consumption advisories due to mercury contamination, a 138% increase from 1993 to 2002.

The EPA has determined that coal-fired power plants are the largest emitter of mercury in the United States, responsible for more than one-third of all industrial mercury pollution. Airborne mercury eventually deposits in water bodies and has contaminated 10.2 million acres of lakes, estuaries, and wetlands and 415,000 miles of streams, rivers, and coastline. This pollution becomes concentrated in the food chain, particularly in fish.

In addition to the proposed delay in the mercury reductions, CHPAC is also concerned about EPA's proposal to allow power plants to Œcap-and-trade' their emissions. According to CHPAC, the Œcap-andtrade'
approach 'may not address existing hot spots and may create new local hot spots for mercury, disproportionately impacting local communities.'

Since mercury is a toxic and accumulative pollutant, the cap-and-trade model proposed by EPA is likely to impact communities with particularly high levels of toxic mercury pollution relative to other geographic areas.

Physicians for Social Responsibility (PSR) is a leading public policy organization with nearly 30,000 members representing the medical and public health professions and concerned citizens, working together
for nuclear disarmament, a healthy environment, and an end to the epidemic of gun violence.

# # #

For a copy of the CHPAC letter, please contact Nadia Khatchadourian at 202-478-6187 or nadiak@nrss.com.

(Attachment #26)

Bryne Purchase
Deputy Minister of Energy

Mary-Ellen Richardson
President, Association of Major Power Consumers

Notes:

- From July to November, the Task Force was co-chaired by Peter Budd (Powerbudd LLP) and Gunars Ceksters.
- John O'Toole (MPP for Durham) was a member of the Task Force until October and Ron Osborne (then President and CEO of Ontario Power Generation) was a member until November.
- Michael Lio (Executive Director of the Consumers Council of Canada) participated on the Task Force starting in August.
- Donna Cansfield (Parliamentary Assistant to the Minister of Energy) and Richard Patten (Parliamentary Assistant to the Minister of Education) participated starting in October.
- Howard Wetston (Chair, Ontario Energy Board) participated in many Task Force sessions, but was not a voting member.
- Don MacKinnon, President of the Power Workers' Union, was a member of the Task Force and supports much of its work, but based on his concern that the recommendations with respect to coal and gas fired generation were insufficiently strong, declined to sign the Final Report.

(Attachment #26)

Executive Summary

Ontario faces a looming electricity supply shortfall as coal-fired generation is taken out of service and existing nuclear plants approach the end of their planned operating lives. Early action is needed to ensure that Ontarians continue to enjoy an affordable and reliable supply of power and that electricity prices in the province remain competitive with prices in jurisdictions with which Ontario competes for investment and jobs.

The Electricity Conservation and Supply Task Force was established in June 2003 to develop an action plan for attracting new generation, promoting conservation and enhancing the reliability of the transmission grid. The Task Force consisted of nineteen leaders from all parts of the electricity industry, including representatives of consumers, workers and environmental groups. The Task Force met weekly, and heard presentations from nearly 100 experts representing different companies and stakeholder organizations. We heard and debated a wide range of options from "stay the course" to "close the market and go back to regulated prices".

The Task Force concluded that the market approach adopted in the late 1990's needs substantial enhancement if it is to deliver the new generation and conservation Ontario needs, within the timeframes we need them. Major changes in the energy economy and in public policy have undermined the viability of the original market design.

The four most important changes have been (1) the demise of the merchant generation and related financial markets following the collapse of Enron and other energy traders (2) the increase in the level and volatility of natural gas prices, which many experts believe will continue to at least the end of the decade (3) the Government's commitment to phase out coal-fired generation by 2007, and (4) the Government's commitment to keep all its generation assets in public ownership, which necessitates a review of the Market Power Mitigation Agreement and the role of Ontario Power Generation.

ECSTF
Electricity Conservation & Supply Task Force

Bruce Ander
Chair, Canadian Energy Efficiency Alliance

Bruce Boland
Senior Vice President, Ontario Power Generation

John Brace
President, Association of Power Producers of Ontario

Gunars Ceksters
President and CEO, Enersource Corporation

Mike Crawley
President and CEO, AIM PowerGen Corporation

Don Gibson
Partner, McCarthy Tétrault

Dave Goulding
President and CEO, Independent Market Operator

ECSTF
Electricity Conservation & Supply Task Force

Duncan Hawthorne
CEO, Bruce Power

Ed Houghton
Chair, Electricity Distributors Association

Rebecca MacDonald
Chair and CEO, Energy Savings Income Fund

David McFadden
Chair, Stakeholders' Alliance for Electricity Competition and Customer Choice

Paul Norris
President, Ontario WaterPower Association

Tom Parkinson
President and CEO, Hydro One Inc.

Jan Peeters
Chairman and CEO, Olameter Inc.

(Attachment #26)

COPY

Subject: Re: Next Northern Lights Meeting
Date: Tue, 06 May 2003 09:29:40 -0400
From: "Daniel E. Cooper" <dcooper@mpower.org>
Organization: Michigan Public Power Agency
To: Shea Charles <scharles@ci.hart.mi.us>
CC: Joe Tondu <joe@tonducorp.com>, "Howard, Loren" <lhhoward@hollandbpw.com>, Jack Bierl <bierlj@mscpa.net>, Glen White <whiteg@mscpa.net>

I don't know who Joe Tondu has spoken to there, but I am forwarding this to him as an FYI.

Thanks, Shea.

Dan

Shea Charles wrote:

> Anyone talk to the City of Manistee yet? Mitch Diesch is the City Manager, I suspect we might run into an issue with being tax exempt and resistance from the City. The upside is that I think Manistee has a Brownfield Redevelopment authority and Tondu may be able to get grants for the redevelopment of the property. Typically you can get $20K per job created from MEDC.
>
> Shea
>
> > ----Original Message----
> > **From:** Daniel E. Cooper [mailto:dcooper@mpower.org]
> > **Sent:** Tuesday, May 06, 2003 9:06 AM
> > **To:** Shea Charles
> > **Subject:** Re: Next Northern Lights Meeting
> >
> > There was a development (no pun intended), in that another, larger, piece of property is available farther north on Lake Manistee. The property appears to have advantages since it is closer to the water treatment facility, has more unloading space for lake vessels, and potentially has a shorter and easier transmission route. It would also provide an option, so that Filer Twp wouldn't be able to make as many demands. The new site is in the City of Manistee.
> >
> > Potential downside for the new site is that there are substantial facilities on the site at present (a Morton Salt plant) that would have to be removed. A rough estimate of demolition cost is $600,000 - $700,000.
> >
> > Tondu said he was going to try and get a more solid estimate of the cost of demolition of existing facilities and get a preliminary site assessment, but he believes it is worth optioning the site. The cost of this would be on Tondu. Once a site is selected, the project will purchase the land as a part of the project. Until then, though, Tondu is bearing land costs.

Public Hearing
Feb. 26, 2004
Behring
Page 1

GOOD EVENING
I AM DANIEL BEHRING
I LIVE AT 3695 LAKESHORE DRIVE
I AM A TEACHER AND RESEARCHER OF MANAGEMENT AND ORGANIZATIONAL BEHAVIOR

FIRST I WANT TO THANK YOU FOR ARRANGING TO HAVE MACTECH TO ANALYZE AND REPORT ON A NUMBER OF VERY FINE ENVIRONMENTAL QUESTIONS. I DID NOT LEARN OF THE ACTION ON YOUR PART UNTIL LAST SATURDAY. THANK YOU FOR TAKING THAT INITIATIVE.

THIS PLANNING COMMISSION REVIEW HAS BEEN DIFFICULT BECAUSE IT HAS BEEN OVER SHADOWED WITH SO MANY OTHER ISSUES.

FIRST WAS THE ISSUE OF JOBS. PROVIDING JOBS HAS NOTHING TO DO WITH YOUR ANALYSIS. IT HAS CLOUDED THE REVIEW PROCESS BECAUSE, IN MY OPINION, THE TONDU CORPORATION OF HOUSTON, TEXAS INTENDED TO USE IT TO DISTRACT MANISTEE CITIZENS AND OFFICIALS FROM THE ISSUES THAT ARE ALWAYS RAISED WHEN SITING A COAL FUELED POWER PLANT. SITING A COAL-FUELED POWER PLANT IS NEXT ONLY TO NUCLEAR FACILITIES IN DIFFICULTY FOR A DEVELOPER. THE DEVELOPER KNEW MANISTEE'S VULNERABILITY WHEN IT CAME TO DISCUSSING JOBS. IT WAS AN INTENTIONAL PUBLIC RELATIONS EFFORT TO KEEP THE FOCUS ON JOBS TO KEEP THE COMMUNITY OFF OF THE REAL ISSUES.
THE ISSUE OF JOBS IS NOT YOUR RESPONSIBILITY. HOWEVER, IF YOU ALL READ THE PERMIT APPLICATION TO THE DEQ AS THE APPLICANT SUGGESTED YOU DO IN THEIR RESPONSE TO YOUR REQUEST FOR AN ENVIRONMENTAL ASSESSMENT, ON PAGE 69 OF THAT REPORT YOU WILL FIND THAT THE APPLICANT STATES THAT THE NUMBER OF JOBS ASSOCIATED WITH THE PLANT WILL BE MINIMAL COMPARED TO OTHER EMPLOYERS AND THAT THERE WOULD BE MINIMAL RESIDENTIAL AND OTHER INDUSTRIAL AND BUSINESS GROWTH.

THE NEXT ISSUE THAT OVER SHADOWED YOUR PROCESS WAS THE ISSUE OF HOW THE PROPOSED PROJECT WAS GOING TO BE FINANCED. THE FINANCIAL STRUCTURING OF THE PROJECT WAS KEPT UNDER CLOSE WRAPS BY THE APPLICANT UNTIL THE ELEVENTH HOUR WHEN THROUGH THE DILIGENT WORK OF A LOT BRIGHT AND HIGHLY TALENTED CITIZENS, THE CAT WAS LET OUT OF THE BAG AND IT HAS BEEN SCREAMING EVER SINCE. THAT TOO IS NOT YOUR JOB AS YOU KNOW. THAT ISSUE IS BEING ADDRESSED ELSEWHERE.

AND THEN THE ISSUE OF NO TAXES COMING FROM THE CITIES DESIGNED TO OWN THE PROPOSED PLANT CAME UP AS DID THE REFUSAL OF THE MANISTEE SALTWORKS DEVELOPMENT COMPANY TO

(Attachment #28)

PAY REGULAR BUSINESS TAX. THAT TOO IS NOT YOUR RESPONSIBILITY, BUT IT TOO CAUSED A DISTRACTION TO YOUR WORK. I AM CERTAIN THAT THE ISSUE OF CITY UTILITY COMPANIES INVOLVED WITH A PRIVATE CORPORATION FOR THE PURPOSE OF GENERATING ELECTRICITY AND REDUCING TAXES WILL ALSO BE ADDRESSED APPROPRIATELY ELSEWHERE AS WELL.

AND THEN THE ISSUE OF THE CREDIBILITY OF THE APPLICANT CAME UP REGARDING WHETHER OR NOT THE PRINCIPALS INVOLVED WERE GOOD COMMUNITY STEWARDS. IT SEEMS TO ME THAT THE TESTIMONY OF THE JUDGE FROM THE TAX TRIBUNAL SEALED THAT ONE PRETTY WELL AS DID THE TESTIMONY YOU HAVE HEARD FROM THE CITIZENS WHO LIVE IN THE VICINITY OF THE CURRENT PLANT PARTIALLY OWNED BY THE APPLICANT. THAT TOO IS NOT YOUR RESPONSIBILITY.
SOMETHING ELSE THAT MADE ME PERK UP MY EARS IS THE WAY THE APPLICANT ANSWERED COMMISSIONER O'SHEA IN A RECENT APPLICANT UPDATE SESSION WITH THE BOARD OF COMMISSIONERS. MR. O'SHEA ASKED THE APPLICANT WHAT HE THOUGHT WAS THE USEFUL LIFE OF THE TES FILER PLANT. THE APPLICANT TOLD MR. SHEA THAT WOULD BE A GOOD QUESTION TO ASK THE PARTNERSHIP OF THAT FACILITY. DID THE APPLICANT FORGET THAT THEY WERE A PART OF THAT PARTNERSHIP? MAYBE THE ISSUE OF CREDIBILITY OF THE DATA RECEIVED SHOULD BE A SIGNIFICANT PART OF YOUR DELIBERATIONS.

IT HAS BEEN TOO BAD, IN MY OPINION, THAT THE WAY IN WHICH THE FINANCES OF THE PROPOSED PROJECT HAVE BEEN STRUCTURED, THE WAY IN WHICH THE CITY AND COUNTY WERE NOT DEALT WITH IN A FORTHRIGHT MANNER, THE ATTEMPT OF THE APPLICANT TO PLAY ON THE EMOTIONS OF THE COMMUNITY SURROUNDING JOBS AND ISSUES SURROUNDING THE CREDIBILITY OF THE DATA THE APPLICANT SUPPLIES HAS OVERSHADOWED YOUR TASK.

I DO UNDERSTAND YOUR TASK. I PERSONALLY HAVE TRIED TO FOCUS MY ATTENTION IN ALL THE MAIL I HAVE SENT TO YOU ON WHAT I BELIEVE TO BE YOUR TASK.

AS YOU KNOW, I DID NOT BELIEVE THAT THE APPLICANT ADDRESSED YOUR ENVIRONMENTAL CONCERNS AT ALL IN THEIR RESPONSE AND AS I MENTIONED AT TIMES WERE PATRONIZING IN THEIR RESPONSE, BORDERING ON DISRESPECT. I AM PLEASED THAT YOU HAVE CONTRACTED WITH AN INDEPENDENT CONTRACTOR TO ANSWER SOME VERY IMPORTANT ENVIRONMENTAL QUESTIONS BEFORE MOVING FORWARD.

I KNOW THAT YOU NEED TO EVALUATE THE APPLICATION BECAUSE THE APPLICANT IS ASKING FOR A VARIANCE OF ZONING ORDINANCES BECAUSE OF ADJUSTMENT OF THE LAKE SHORE, ACTIVITY OUTSIDE A BUILDING AND HEIGHT RESTRICTIONS. I ALSO UNDERSTAND THAT THERE ARE A LIST OF ADDITIONAL PERMITS THAT THE APPLICANT NEEDS TO OBTAIN FOR AIR, WATER USE, DISCHARGE, DREDGING OF A POLLUTED LAKE BOTTOM, AND MORE. I KNOW THAT MORE GOVERNMENT AUTHORITIES, INCLUDING THE U.S. EPA AND OTHER DIVISIONS OF THE FEDERAL GOVERNMENT WILL BE INVOLVED IN THE RESOLUTION.

HOWEVER, YOU CAN MAKE A DIFFERENCE RIGHT HERE AND NOW.

BECAUSE THE APPLICANT HAS APPLIED FOR A SPECIAL USE PERMIT, YOU HAVE A SERIES OF ADDITIONAL STANDARDS THAT THE APPLICANT MUST MEET. THE STANDARDS MOST CRITICAL TO THIS PROPOSED PROJECT ARE DOES THE USE OF THE LAND PROTECT THE HEALTH, WELFARE AND SAFETY OF THE COMMUNITY, IS THE USE COMPATIBLE WITH ADJACENT LAND USES AND CAN THE CITY'S INFRASTRUCTURE AND SERVICES HANDLE THE ADDITIONAL LOAD THE PROJECT WOULD PRESENT.

AS I JUST LEARNED YOU ARE CONDUCTING A STUDY OVER NINE IMPORTANT ENVIRONMENTAL QUESTIONS, I PERSONALLY AM MORE ASSURED. AS I HAD PREPARED SOME DOCUMENTS AND MATERIALS FOR LAST WEEKS MEETING I WOULD STILL LIKE TO PRESENT THEM TO YOU. I DO BELIEVE THEY CAN HELP IN YOUR JUDGMENT OF WHETHER OR NOT THE PROJECT MEETS THE STANDARD OF PROTECTING THE HEALTH SAFETY AND WELFARE OF THE COMMUNITY.
FIRST I WILL PRESENT YOU WITH TWO POWER POINT PRESENTATIONS THAT I DEVELOPED WHICH, WHILE ONLY TAKING ABOUT 10 MINUTES EACH TO VIEW WOULD NOT FIT INTO THE TIME FRAME THAT IS ALLOWED. I HOPE YOU WILL TAKE THE TIME TO VIEW THEM.

THE FIRST IS AN OVERVIEW OF THE ISSUES SURROUNDING THE PROPOSED PROJECT THROUGH MY EYES. I HAVE ALSO PROVIDED SOME SUGGESTED ALTERNATIVES.

THE SECOND IS A STORY ABOUT THE AMERICAN ELECTRIC POWER COMPANY AND THE TOWN OF CHESSHIRE, OHIO. THE AMERICAN ELECTRIC POWER COMPANY CONSTRUCTED A COAL-FUELED POWER PLANT NEXT TO THE LITTLE TOWN OF CHESSHIRE 30 YEARS AGO. IN THE YEAR 2002, THE POWER COMPANY, WITH SCRUBBERS IN PLACE AS I UNDERSTAND IT, OFFERED EACH PROPERTY OWNERS THREE TIMES THE VALUE OF THEIR PROPERTIES IN RETURN FOR A PROMISE OF THEM NEVER SUING THE COMPANY FOR HEALTH OR OTHER REASONS.

(Attachment #28)

THERE ARE 14 HOMES LEFT IN THE COMMUNITY, THE REST HAVE BEEN DEMOLISHED AND COVERD OVER. WHAT IS THE LESSON? DON'T BUILD A COAL-FUELED POWER PLANT NEXT TO OR IN A RESIDENTIAL AREA.

AS I HAVE REMINDED YOU SEVERAL TIMES, EVEN AN ASSOCIATE OF YOUR CONSULTANT TO THIS PROCESS HAS PUBLISHED A STATEMENT TO THAT EFFECT THAT HAS BEEN DISTRIBUTED BROADLY. THE SECOND POWER POINT TELLS THAT STORY.

I HAVE ALSO PROVIDED FOR YOU DOWNLOADED FORM R'S FROM THE EPA FOR THE TES FILER PLANT THAT SHOWS EMISSIONS OF MERCURY, SULFURIC ACID AND DIOXINS FOR THE YEAR 2001. THESE FORMS MUST BE COMPLETED EACH YEAR AND FILED LOCALLY WITH THE OFFICE OF EMERGENCY PLANNING AND ALSO SENT TO THE EPA. I ASK THAT YOU LOOK AT WHAT THE SUPERINTENDANT OF THE PLANT REPORTED ON THE FORM.

AS YOU MUST ASSESS ENVIRONMENTAL IMPACT OF THE NEW PLANT ON THE BURDEN OUR AIR AND WATER ALREADY SUSTAIN, I HAVE INCLUDED THE FORM R'S FOR PCA ON AMMONIA, PHENOL AND METHANOL RELEASES.

I HAVE ALSO INCLUDED AN EPA REPORT THAT LISTS THE SITES OF TOXIC EMISSIONS IN MANISTEE SINCE 1987 UPTO 2001. THERE WERE 123 TOXIC RELEASES REPORTED AND THEY INCLUDED, LEAD, FORMALDEHYDE, CHROMIUM COMPOUNDS, SULFURIC ACID, PHOSPHORIC ACID, ZINC COMPOUNDS, DIMETHYLAMINE, SODIUM HYDROXIDE AND OTHERS.

I KNOW YOUR CONSULTANT CAN LOOK AT THESE AND REPORT TO YOU, BUT I BELIEVE IT IS A GOOD IDEA WHEN ONE IS MAKING A JUDGMENT ABOUT AS SIGNIFICANT ISSUE AS THIS THAT EACH DECISION MAKER SHOULD BE ABLE TO SEE THE DATA.

TO HELP YOU ADDITIONALLY ASSESS THE BURDEN ON THE AIR AND WATER, I HAVE INCLUDED COMPUTER MAPS FROM THE U.S. EPA MAPPING SERVICE THAT IDENTIFY ALL SITES IN THE MANISTEE LAKE BASIN AND THE INDUSTRIAL PARK TO THE NORTH THAT ARE REGULATED BY THE EPA. I HOPE THAT YOU WILL LOOK AT THEM AND THAT YOU WILL BE AS SHOCKED AS I WAS WHEN I REVIEWED THEM.

I WISH WE HAD BEEN MONITORING OUR AIR, BECAUSE I FIRMLY BELIEVE THAT GIVEN WHAT I SEE WITH MY EYES EVERYDAY AND WHAT I SEE ON THESE MAPS, THAT IF WE HAD BEEN MONITORING OUR AIR, YOU AND I WOULD NEVER BE HERE TONIGHT.

FINALLY, I HAVE INCLUDED IN YOUR PACKET THE LIST OF ALL THOSE HAZARDOUS AIR POLLUTANTS, INCLUDING THOSE KNOWN OR EXPECTED TO BE CARCINOGENS THAT THE APPLICANT TOLD THE DEQ WOULD BE RELEASED FROM THIS PLANT.

YOU HAVE PROBABLY WONDERED WHY I GOT INTO THIS SITUATION. YOU HAVE PROBABLY ASKED WHAT'S IN THIS FOR HIM. I WANT YOU TO KNOW WHY. A LONG TIME AGO I MADE A COMMITMENT TO MYSELF, BECAUSE IT IS SOMETHING I WATCHED MY FATHER DO. WHENEVER I THINK I SEE THAT UNSUSPECTING PEOPLE MIGHT BE HURT AS A RESULT OF ACTION TAKEN BY ANOTHER I PROMISED MYSELF I WOULD LOOK INTO IT. SO, WHEN MR. TONDU SUGGESTED AT THE FIRST EVER PUBLIC COMMENT SESSION THAT I ATTENDED THAT MERCURY WAS LIKE ASPIRIN, I WENT UP TO HIM AT THE BREAK AND INTRODUCED MYSELF. I ASKED HIM ABOUT WHAT HE MEANT THAT MERCURY WAS LIKE ASPIRIN. WELL HE TOLD ME THAT MERCURY WAS A RELATIVELY NEW TOXIN. WHEN I CHALLENGED THAT, HE SUGGESTED THAT WE STILL DIDN'T KNOW A LOT ABOUT IT. WE HAD A FEW MORE PLEASANT EXCHANGES WHEN I SUGGESTED TO HIM THAT THE PEOPLE IN MANISTEE WERE A LOT SMARTER THAN HE APPARENTLY THOUGHT.

WELL, THAT STARTED ME DOWN THE PATH OF DISCOVERY. MY WIFE AND I DECIDED TO DO RESEARCH, ASK QUESTIONS AND BEGIN TO ACCUMULATE FACTS. OUR DISCOVERY LED US FROM LANSING TO MANISTEE AND THE CITIES YOU NOW KNOW ABOUT IN BETWEEN. THE MORE I LOOKED, THE MORE I DISCOVERED. THE MORE I DISCOVERED THE MORE THERE APPEARED TO BE PRACTICES AND ACTIVITIES THAT APPEARED QUESTIONABLE. THAT DROVE ME ON. ALONG THE WAY I MET SOME WONDERFUL PEOPLE, PEOPLE WE HAD NEVER MET BEFORE.

THEY ARE BRIGHT, CARING PEOPLE OF ALL AGES WHO BELIEVE IN THE DEMOCRATIC PROCESS AND THAT THEIR ATTEMPTS TO MAKE A DIFFERENCE WILL BE RESPECTED. THEY WERE PEOPLE OF ALL AGES FROM YOUNG TO OLDER THAN ME AND MR. ERVIN HEUER AND HIS SISTER DOROTHY COME TO MIND.

THEY ARE THE KIND OF PEOPLE I WANT MY GRANDCHILDREN TO GET TO KNOW. I HAVE NOT FOUND ONE "TEETH GNASHER" IN THE GROUP, AND THEY CERTAINLY ARE NOT PATRONIZING, ARROGANT OR DEMEANING.

BEFORE I MAKE MY SUMMARY STATEMENT, I WOULD LIKE TO THANK YOU FOR ALL THE TIME YOU HAVE GIVEN TO ME. I APPRECIATE THE TIME THAT YOU MUST HAVE TAKEN TO READ WHAT I SENT TO YOU, BUT YOU WERE MY ONLY HOPE THAT I HAD THAT I MIGHT MAKE A DIFFERENCE IN THESE DELIBERATIONS. THANK YOU.

HOPE GROWS IN YOUNG PEOPLE WHEN THEY SEE INTEGRITY AND COMMITMENT AND DELIGHT WITH LIFE AMONG THE ADULTS AROUND THEM;

NOT RESIGNATION, DESPAIR AND A SENSE OF BEING HELPLESS, UNABLE TO SHAPE THEIR OWN FUTURES.

PLEASE KEEP HOPE ALIVE FOR OUR YOUNG PEOPLE. WE NEED JOBS THAT CREATE POSSIBILITIES FOR THEM TO INVENT THEIR FUTURE. WE NEED JOBS THAT WILL CHALLENGE THEM WHILE PROVIDING ABOVE AVERAGE EARNINGS, NOT JOBS THAT WILL MAKE THEM DEPENDENT ON A COMPANY THAT VIOLATES THEIR ENVIRONMENT AND THREATENS THEIR OWN HEALTH AND THE HEALTH OF THEIR CHILDREN. **AND WE NEED AN ECONOMY THAT WILL GENERATE JOBS EVERY YEAR NOT JUST ONCE.**

GIVEN ALL THE DATA THAT YOU HAVE AND JUDGING IT AGAINST THE STANDARDS OF THE ZONING ORDINANCES I HAVE MENTIONED, I ASK THAT YOU NOT APPROVE OF THIS SPECIAL USE PERMIT. IN MY OPINION THE STANDARD OF PROTECTING THE HEALTH, SAFETY AND WELFARE OF OUR COMMUNITY CANNOT BE MET AND THE PROPOSED PROJECT IS CERTAINLY NOT COMPATIBLE WITH A RESIDENTIAL ENVIRONMENT ADJACENT TO IT. I ALSO ASK THAT YOU NOT APPROVE OF THE APPLICATION FOR OUR CHILDREN AND THEIR HOPE. AND I ASK YOU NOT APPROVE THIS APPLICATION SO THAT WE CAN MOBILIZE AS RESIDENTS OF THIS COMMUNITY TO TAKE CONTROL OF OUR FUTURE AND BUILD THE TYPE OF COMMUNITY WE WANT WITH AN ECONOMY THAT WILL SUSTAIN ITSELF AND GROW AND PROVIDE ELECTRICITY FOR MANISTEE THAT IS CLEAN AND THAT WE OWN. I ASK THAT YOU NOT APPROVE OF THIS PERMIT WHICH BENEFITS THE CITIZENS OF WEALTHY COMMUNITIES AND A LARGE CORPORATION FROM HOUSTON, TEXAS AND BRINGS ONLY RISKS TO OUR HEALTH, SAFETY AND WELFARE, HAS THE POTENTIAL OF DESTROYING NEIGHBORHOODS AND PLACING AN UNDO BURDEN ON INFRASTRUCTURE AND SERVICES.

THANK YOU.
DANIEL W. BEHRING, CITIZEN OF MANISTEE COUNTY

(Attachment #28)

Power Play

By Jeff Smith

NOTE NEXT PAGE
THIS IS WHAT WE NEED TO DO.

Last fall, Joe Tondu approached the city of Manistee with a plan, a plan that sounded pretty good to a lot of people in Manistee—both Manistees, actually, the county and the city. Tondu, the owner of Tondu Corporation, a Houston-based developer of industrial projects, wanted to build a $700-million, 425-megawatt coal-fired power plant within the city limits, right on the shore of Lake Manistee. The construction phase alone would spin millions of dollars into the local economy, jawning hotels and restaurants with workers for three years. Longer-term, the plant would create 50 to 60 jobs that would pay $25,000 to $40,000 a year, Tondu said.

Those numbers sounded a lot better than other numbers the city leaders had looked at over the past couple of decades. In the 1980s and early '90s, four major plant closings cost the town 3,000 jobs, and the city's population shrank from 12,000 to 6,000. These days, Manistee is trying to remake itself as a resort community and signs of revival are clear, but boomtown it's not.

Manistee County commissioners became so enthused over Tondu's plant that they passed a resolution expressing support for it right away, though they knew only the barest of details. After all, if the plant were built and taxed at standard industrial rates, it would pay about $10 million annually to the county and another $5 million to the city. By comparison, the city's total general fund budget is just over $10 million.

But not everybody was as enthused about the plant as the county commission. Fred LaPoint, who helped form the Citizens for Responsible Development in response to the Tondu plan, was looking at numbers too, and what he saw concerned him. He and his group didn't like the idea of a 250-foot-tall building with a 400-foot-tall smokestack rising near Manistee neighborhoods—towering far above every building in town.

He also was concerned about pollution numbers, especially those for mercury emissions. The plant would emit an estimated 420 pounds of mercury a year. When added to the mercury emissions from the other four coal burning factories on Lake Manistee, the area would be second only to Detroit's Ford Rouge plant in state mercury releases. Mercury is a potent neurotoxin that builds up in living organisms and has led to fish advisories, like those that say pregnant women shouldn't eat even a single serving of many fish species caught in Michigan.

Some Manistee citizens question the wisdom of allowing a power plant to be built in their town.

Tondu's Web site explains that the plant would meet all relevant mercury-emission standards. But of course, that's the problem: Power plants are entirely exempt from mercury standards, and President George W. Bush just passed a rule that would delay standards that are being developed. Bush wants to encourage more coal-fired power plant construction. Ironically, about the same time that Tondu made his proposal, Governor Jennifer Granholm was announcing a major anti-mercury initiative that would eliminate mercury pollution by 2020.

Despite an ambitious public education campaign, LaPoint and his opposition group were getting little traction until a startling disclosure in late fall. Based on questioning by Manistee City Manager Mitch Deisch, Tondu revealed that he had been courting municipalities throughout Michigan to invest, including several along the Lake Michigan coast, like Petoskey, Harbor Springs, Traverse City and Holland. They would put up the money to build the plant and be majority owners. With municipal ownership, the plant would not be required to pay any taxes—city or county. "I couldn't have revealed that because nobody had signed on yet," says Jim Tondu, Joe's brother. But city officials say that Tondu acknowledged he had not been forthright in the matter. On top of that, since Manistee wouldn't be investing in the plant, the town would not receive any of the power, even though its citizens would be living with the pollution and looming presence.

Tondu since has entered closed negotiations with the city for a community services fee instead of standard taxes, but he has not done so with the county. LaPoint feels those negotiations should be public.

Even some of the investors Tondu has been courting were not pleased about the lack of disclosure. "You don't wait till the 11th hour to do this. You need to be upfront," says Richard Smith, the executive director of Traverse City Light and Power.

Smith says that prior to building anything, municipalities in Northern Michigan should conduct a regional power study to determine the lowest-polluting means of answering the region's burgeoning power requirements. Municipalities should purchase a site and build their own power plant, one that uses less-polluting technology, Smith says. He likes circulating fluidized bed boilers because they are the cleanest coal burners, with fewer emissions of sulfur oxides and nitrogen oxides than the plant proposed by Tondu.

The Manistee planning commission is currently reviewing Tondu's application for a special-use permit and could be voting on it before April. The city commission then could choose to review the application itself if it feels the board erred in its decision. State and federal officials also would have to issue permits, but if all goes as planned, Tondu predicts that the plant could be operating by 2008.

Jeff Smith is editor of TRAVERSE.
traverse@traversemagazine.com

DON BUTKOVICH
ANTIQUES & APPRAISALS · ESTATE JEWELRY
Over 30 Years Experience
Member National Association of Dealers in Antiques
Buying & Selling of Fine Antiques & Art
Antique Jewelry · Appraisals · Estate Dispersals · Consignments
State Wide Service
For Appointment Call (231) 922-0750 • Fax (231) 922-0770 • Traverse City, MI

Up North ... It's a Wonderful Life!

Century 21 Pearson-Cook
Independently owned & operated
Steve Riecker
REALTOR/Consultant
241 E. State Street
Traverse City, MI 49684
231.218.1792
www.tclovelyhomes.com

Leelanau Vacation Rentals
Over 120 Great Places to Stay Including...
Homestead Condominiums, Homes & Cottages on or near Lake Michigan, Glen Lake and other inland lakes!

for The Seasons of Leelanau
Water sports, golfing, hiking, biking, tennis, quaint villages, sand dunes, shopping (antiques, art & local products), great restaurants, wine tasting tours (18 vineyards) or just relaxing in the sun!
6546 South State Street · Glen Arbor, MI 49636
www.leelanau.com/vacation · (231) 334-6100

(Attachment #28)

(Attachment #28)

HOW A TINY AMOUNT OF MERCURY CAN AFFECT A WETLANDS

1/70 OF A TEASPOON OF MERCURY (Hg) PER YEAR CAN INFLUENCE 25 ACRES OF WETLANDS

THINK THIS IS IMPOSSIBLE!!!!! HERE IS SOME OF THE BASIC SCIENCE

1/70 TEASPOON = 1 DROP= 1 GRAM

THERE ARE 3,000,000,000,000,000,000,000 ATOMS OF MERCURY IN 1 GRAM

THAT IS 3 BILLION TRILLION ATOMS IN A GRAM OF MERCURY

IF YOU SPREAD THESE ATOMS EVENLY OVER 25 ACRES OF WETLANDS THERE ARE 2,700,000,000,000,000 ATOMS PER SQUARE FOOT OF WETLANDS

2 THOUSAND SEVEN HUNDRED TRILLION ATOMS PER SQ FT OF WETLANDS A YEAR

BACTERIA TRANSFORM ELEMENTAL MERCURY INTO METHYL MERCURY

METHYL MERCURY IS A NEUROTOXIN AND BIOACCUMULATES UP THE FOOD CHAIN

ORGANISMS (BACTERIA, PLANTON, SMALL FISH, BIGFISH, MAMMALS, BIRDS AND PEOPLE) CANNOT EXCRETE IT AS FAST AS THEY TAKE IT IN AND THIS EFFECT IS MULTIPLIED UP THE FOOD CHAIN EACH STEP OF THE WAY (BIOACCUMULATION)
WOMEN, FETUSES AND CHILDREN ARE PARTICULARLY AT RISK TO MERCURY'S NEUROTOXIC EFFECTS

HERE'S ALL THE MATH NEEDED TO PROVE THE ABOVE:

MERCURY (Hg) ATOMIC WEIGHTS 200.59 GRAMS THEREFORE 200.59 GRAMS IS 1 MOLE

1 MOLE OF AN ELEMENT IS 6.02×10^{23} ATOMS

THEREFORE 1 GRAM OF MERCURY (Hg) = 3×10^{21} OR 3,000,000,000,000,000,000,000 ATOMS

1 ACRE = 43,560 SQ FT 25 ACRES = 1,089,000 SQ FT 1.089×10^{6} SQ FT

3×10^{21} ATOMS DIVIDED BY 1.089×10^{6} SQ FT =

APPROXIMATELY 2.700×10^{12} ATOMS PER SQ FT PER YEAR

U.S. Environmental Protection Agency

Toxics Release Inventory (TRI)

TRI

FORM R REPORTS

Report an Error

MERCURY EMISSIONS
T.E.S. FILER
2001 137.360085
PUMOS

PART I. FACILITY IDENTIFICATION INFORMATION *(FORM R)*

DOCUMENT CONTROL NUMBER: 1301150617583

More Info Facility Registry System ID: 110000412054

Section 1. Reporting Year

Reporting Year: 2001

Section 2. Trade Secret Information

2.1 Trade Secret: NO

2.2 Sanitized Copy: Unsanitized

Section 3. Certification

CERTIFYING OFFICIAL'S NAME	CERTIFYING OFFICIAL'S TITLE	CERTIFYING OFFICIAL'S SIGNATURE	DATE SIGNED
JERRY SCHAEFER	O & M SUPERINTENDENT	Original	28-JUN-02

Section 4. Facility Identification

TRI Facility ID: 49634TSFLR700ME

4.1 Facility Name and Address.

Facility Information

NAME	STREET	CITY	COUNTY	STATE	ZIP CODE
T.E.S. FILER CITY STATION	700 MEE ST.	FILER CITY	MANISTEE	MI	49634

Mailing Information

NAME	STREET	CITY	COUNTY	STATE	ZIP CODE
T.E.S. FILER CITY STATION	700 MEE ST.	FILER CITY		MI	49834

PROVINCE	COUNTRY (NON - US)
NO DATA	NO DATA

4.2 Facility Classification

ENTIRE FACILITY	PARTIAL FACILITY	FEDERAL FACILITY	GOCO FACILITY
YES	NO	NO	NO

4.3 Technical Contact

Not Available to the Public as this information is only for Intranet.

4.4 Public Contact

NAME	PHONE
JERRY SCHAEFER	2317236573

4.5 SIC Codes

SIC CODE	SIC CODE DESCRIPTION
4911	ELECTRIC SERVICES

4.6 Location

LATITUDE	LONGITUDE
044-12-58	086-17-29

4.7 Dun & Bradstreet Numbers

DUNS NUMBER
779988898
NA

4.8 RCRA ID Numbers

RCRA ID NUMBER
NA

4.9 NPDES Permit Numbers

NPDES PERMIT NUMBER
NA

(Attachment #28)

4.10 Underground Injection Well Code (UIC) ID Number

UIC ID NUMBER
NA

5 Parent Company Information

Parent Company Name: NA

Parent Company DUNS Number: NA

PART II. CHEMICAL - SPECIFIC INFORMATION

DOCUMENT CONTROL NUMBER: 1301150617583

Section 1. Toxic Chemical Identity

1.1 CAS Number: N458

1.2 Toxic Chemical or Chemical Category Name: MERCURY COMPOUNDS

1.3 Generic Chemical Name: NA

1.4 Distribution of Each Member of the Dioxin and Dioxin like Compounds Category

NA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
NO																	

Section 2. Mixture Component Identity

2.1 Supplier Provided Generic Chemical Name: NA

Section 3. Activities and Uses of the Toxic Chemical

3.1 Manufacture the Toxic Chemical:
Produce: YES Import: NO On-Site Use/Processing: NO
Sale/Distribution: NO Byproduct: YES Impurity: NO

3.2 Process the Toxic Chemical:
Reactant: NO Formulation Component: NO Article Component: NO Repackaging: NO Impurity: NO

3.3 Otherwise Use the Toxic Chemical:
Chemical Processing Aid: NO Manufacturing Aid: NO Ancillary or Other Use: YES

Section 4. Maximum Amount of the Toxic Chemical Onsite During the Calendar Year

Maximum Chemical Amount: 0 - 99 pounds

(Attachment #28)

Section 5. Quantity of the Toxic Chemical Entering each Environmental Medium Onsite

5.1 Fugitive or Non-Point Air Emissions

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.2 Stack or Point Air Emissions

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
NO	137.3600885	Pounds	E - PUBLISHED EMISSION FACTORS

5.3 Discharges to Receiving Streams or Water Bodies

STREAM/WATER BODY NAME	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE	% FROM STORMWATER
NA				0

5.4.1 Underground Injection Onsite to Class I Wells.

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.4.2 Underground Injection Onsite to Class II-V Wells.

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.5 Disposal to Land Onsite

5.5.1A RCRA Subtitle C Landfills

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.5.1B Other Landfills

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.5.2 Land Treatment/Application Farming

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.5.3 Surface Impoundment

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.5.4 Other Disposal

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

Section 6. Transfers of the Toxic Chemical in Wastes to Off-Site Locations

6.1 Discharges to Publicly Owned Treatment Works (POTWs)

6.1.A Total Quantity Transfered to POTWs and Basis of Estimate

6.1.A.	TOTAL TRANSFERS (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
1	NO DATA		NO DATA

6.1.B POTW Locations

6.1.B.	POTW NAME	ADDRESS	CITY	STATE	COUNTY	ZIP CODE
1	NA					

6.2 Transfers to other Off-Site Locations

RCRA Number: NA
Name: NA
City:
County:
Country Code (Non - US):
Parent Company Controlled:
Address:
State:
Zip Code:
Province:

TOTAL TRANSFERS (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE	WASTE MANAGEMENT TYPE
NO DATA		NO DATA	NO DATA

Section 7A. On-Site Waste Treatment Methods and Efficiency

7A.1a. Waste Stream: GASEOUS

7A.1b.	WASTE TREATMENT METHOD(S) SEQUENCE
1	A03 - SCRUBBER
2	NA

7A.1c. Range of Influent Concentration: 1 PPB TO 1 PPM
7A.1d. Waste Treatment Efficiency Estimate: 0
7A.1e. Based on Operating Data?: NO

7A.2a. Waste Stream: SOLID WASTE STREAMS

7A.2b.	WASTE TREATMENT METHOD(S) SEQUENCE
1	P12 - FILTRATION
2	NA

7A.2c. Range of Influent Concentration: 1 PPB TO 1 PPM

7A.2d. Waste Treatment Efficiency Estimate: 0

7A.2e. Based on Operating Data?: NO

Section 7B. On-Site Energy Recovery Processes

ON SITE ENERGY RECOVERY PROCESSES
NA

Section 7C. On-Site Recycling Processes

ON SITE RECYCLING PROCESSES
NA

Section 8. Source Reduction and Recycling Activities

SECTION	TYPE OF QUANTITY	UNITS	PRIOR YEAR	CURRENT REPORTING YEAR 2001	FOLLOWING YEAR 2002	SECOND FOLLOWING YEAR ~~2002~~ 2003
8.1	Quantity Released	Pounds	0	137.3600885	140	140
8.2	Quantity Used for Energy Recovery Onsite		NA	NA	NA	NA
8.3	Quantity Used for Energy Recovery Offsite		NA	NA	NA	NA
8.4	Quantity Recycled Onsite		NA	NA	NA	NA
8.5	Quantity Recycled Offsite		NA	NA	NA	NA
8.6	Quantity Treated Onsite		NA	NA	NA	NA
8.7	Quantity Treated Offsite		NA	NA	NA	NA

8.8 One-Time Event Release:

8.9 Production Ratio: .88

8.10 Source Reduction Activities

SOURCE REDUCTION ACTIVITIES	METHOD 1	METHOD 2	METHOD 3
NA			

8.11 Additional Data Indicator: NO

EPA - Envirofacts Warehouse - TRI wysiwyg://210/http://oaspub.epa.gov/envir...ear=2001&dcn_num=130115061758 3&ban_flag=Y

EPA Home | Privacy and Security Notice | Contact Us

Last updated on Wednesday, February 18th, 2004
http://oaspub.epa.gov/enviro/tri_formr_partone.get_thisone

(Attachment #28)

U.S. Environmental Protection Agency

Toxics Release Inventory (TRI)

TRI

FORM R REPORTS

Report Has Error

SULFUIC ACID
T.E.S FILER
2001 AIR 2622 POUNDS

PART I. FACILITY IDENTIFICATION INFORMATION *(FORM R)*

DOCUMENT CONTROL NUMBER: 1301150617557 U

Facility Registry System ID: 110000412054

Section 1. Reporting Year

Reporting Year: 2001

Section 2. Trade Secret Information

2.1 Trade Secret: NO

2.2 Sanitized Copy: Unsanitized

Section 3. Certification

CERTIFYING OFFICIAL'S NAME	CERTIFYING OFFICIAL'S TITLE	CERTIFYING OFFICIAL'S SIGNATURE	DATE SIGNED
JERRY SCHAEFER	O & M SUPERINTENDENT	Original	28-JUN-02

Section 4. Facility Identification

TRI Facility ID: 49634TSFLR700ME

4.1 Facility Name and Address.

Facility Information

NAME	STREET	CITY	COUNTY	STATE	ZIP CODE
T.E.S. FILER CITY STATION	700 MEE ST.	FILER CITY	MANISTEE	MI	49634

(Attachment #28)

Mailing Information

NAME	STREET	CITY	COUNTY	STATE	ZIP CODE
T.E.S. FILER CITY STATION	700 MEE ST.	FILER CITY		MI	49634

PROVINCE	COUNTRY (NON - US)
NO DATA	NO DATA

4.2 Facility Classification

ENTIRE FACILITY	PARTIAL FACILITY	FEDERAL FACILITY	GOCO FACILITY
YES	NO	NO	NO

4.3 Technical Contact

Not Available to the Public as this information is only for Intranet.

4.4 Public Contact

NAME	PHONE
JERRY SCHAEFER	2317236573

4.5 SIC Codes

SIC CODE	SIC CODE DESCRIPTION
4911	ELECTRIC SERVICES

4.6 Location

LATITUDE	LONGITUDE
044-12-58	086-17-29

4.7 Dun & Bradstreet Numbers

DUNS NUMBER
779988898
NA

4.8 RCRA ID Numbers

RCRA ID NUMBER
NA

4.9 NPDES Permit Numbers

NPDES PERMIT NUMBER
NA

4.10 Underground Injection Well Code (UIC) ID Number

UIC ID NUMBER
NA

5 Parent Company Information

Parent Company Name: NA

Parent Company DUNS Number: NA

PART II. CHEMICAL - SPECIFIC INFORMATION

DOCUMENT CONTROL NUMBER: 1301150617557

Section 1. Toxic Chemical Identity

1.1 CAS Number: 007664939

1.2 Toxic Chemical or Chemical Category Name: SULFURIC ACID (1994 AND AFTER "ACID AEROSOLS" ONLY)

1.3 Generic Chemical Name: NA

1.4 Distribution of Each Member of the Dioxin and Dioxin like Compounds Category

NA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
NO																	

Section 2. Mixture Component Identity

2.1 Supplier Provided Generic Chemical Name: NA

Section 3. Activities and Uses of the Toxic Chemical

3.1 Manufacture the Toxic Chemical:
Produce: YES Import: NO On-Site Use/Processing: NO
Sale/Distribution: NO Byproduct: YES Impurity: NO

3.2 Process the Toxic Chemical:
Reactant: NO Formulation Component: NO Article Component: NO Repackaging: NO Impurity: NO

3.3 Otherwise Use the Toxic Chemical:
Chemical Processing Aid: NO Manufacturing Aid: NO Ancillary or Other Use: NO

Section 4. Maximum Amount of the Toxic Chemical Onsite During the Calendar Year

(Attachment #28)

Maximum Chemical Amount: 0 - 99 pounds

Section 5. Quantity of the Toxic Chemical Entering each Environmental Medium Onsite

5.1 Fugitive or Non-Point Air Emissions

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.2 Stack or Point Air Emissions

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
NO	2622	Pounds	M - DATA MONITORING OR MEASUREMENTS

5.3 Discharges to Receiving Streams or Water Bodies

STREAM/WATER BODY NAME	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE	% FROM STORMWATER
NA				0

5.4.1 Underground Injection Onsite to Class I Wells.

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.4.2 Underground Injection Onsite to Class II-V Wells.

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.5 Disposal to Land Onsite

5.5.1A RCRA Subtitle C Landfills

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.5.1B Other Landfills

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.5.2 Land Treatment/Application Farming

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.5.3 Surface Impoundment

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.5.4 Other Disposal

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

Section 6. Transfers of the Toxic Chemical in Wastes to Off-Site Locations

6.1 Discharges to Publicly Owned Treatment Works (POTWs)

6.1.A Total Quantity Transfered to POTWs and Basis of Estimate

6.1.A.	TOTAL TRANSFERS (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
1	NO DATA		NO DATA

6.1.B POTW Locations

6.1.B.	POTW NAME	ADDRESS	CITY	STATE	COUNTY	ZIP CODE
1	NA					

6.2 Transfers to other Off-Site Locations

RCRA Number: NA Parent Company Controlled:
Name: NA Address:
City: State:
County: Zip Code:
Country Code (Non - US): Province:

TOTAL TRANSFERS (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE	WASTE MANAGEMENT TYPE
NO DATA		NO DATA	NO DATA

Section 7A. On-Site Waste Treatment Methods and Efficiency

7A.1a. Waste Stream: GASEOUS

7A.1b.	WASTE TREATMENT METHOD(S) SEQUENCE
1	A03 - SCRUBBER
2	NA

(Attachment #28)

7A.1c. Range of Influent Concentration: 1 PPB TO 1 PPM
7A.1d. Waste Treatment Efficiency Estimate: 98
7A.1e. Based on Operating Data?: NO

7A.2a. Waste Stream: SOLID WASTE STREAMS

7A.2b.	WASTE TREATMENT METHOD(S) SEQUENCE
1	P12 - FILTRATION
2	NA

7A.2c. Range of Influent Concentration: 1 PPB TO 1 PPM
7A.2d. Waste Treatment Efficiency Estimate: 0
7A.2e. Based on Operating Data?: NO

Section 7B. On-Site Energy Recovery Processes

ON SITE ENERGY RECOVERY PROCESSES
NA

Section 7C. On-Site Recycling Processes

ON SITE RECYCLING PROCESSES
NA

Section 8. Source Reduction and Recycling Activities

SECTION	TYPE OF QUANTITY	UNITS	PRIOR YEAR	CURRENT REPORTING YEAR	FOLLOWING YEAR	SECOND FOLLOWING YEAR
8.1	Quantity Released	Pounds	2835	2622	2700	2700
8.2	Quantity Used for Energy Recovery Onsite		NA	NA	NA	NA
8.3	Quantity Used for Energy Recovery Offsite		NA	NA	NA	NA
8.4	Quantity Recycled Onsite		NA	NA	NA	NA
8.5	Quantity Recycled Offsite		NA	NA	NA	NA
8.6	Quantity Treated Onsite	Pounds	138925	128452	130000	130000
8.7	Quantity Treated Offsite		NA	NA	NA	NA

8.8 One-Time Event Release:

8.9 Production Ratio: .88

8.10 Source Reduction Activities

SOURCE REDUCTION ACTIVITIES	METHOD 1	METHOD 2	METHOD 3
NA			

8.11 Additional Data Indicator: NO

(Attachment #28)

U.S. Environmental Protection Agency

Toxics Release Inventory (TRI)

TRI

FORM R REPORTS

Report an Error

DIOXIN EMISSIONS
T.E.S. FILER
2001
2.86 grams

PART I. FACILITY IDENTIFICATION INFORMATION *(FORM R)*

DOCUMENT CONTROL NUMBER: 1301155170867

Facility Registry System ID: 110000412054

Section 1. Reporting Year

Reporting Year: 2001

Section 2. Trade Secret Information

2.1 Trade Secret: NO

2.2 Sanitized Copy: Unsanitized

Section 3. Certification

CERTIFYING OFFICIAL'S NAME	CERTIFYING OFFICIAL'S TITLE	CERTIFYING OFFICIAL'S SIGNATURE	DATE SIGNED
JERRY SCHAEFER	O & M SUPERINTENDENT	Original	29-NOV-02

Section 4. Facility Identification

TRI Facility ID: 49634TSFLR700ME

4.1 Facility Name and Address.

Facility Information

NAME	STREET	CITY	COUNTY	STATE	ZIP CODE
T.E.S. FILER CITY STATION	700 MEE ST.	FILER CITY	MANISTEE	MI	49634

Mailing Information

NAME	STREET	CITY	COUNTY	STATE	ZIP CODE
T.E.S. FILER CITY STATION	700 MEE ST.	FILER CITY		MI	49634

PROVINCE	COUNTRY (NON - US)
NO DATA	NO DATA

4.2 Facility Classification

ENTIRE FACILITY	PARTIAL FACILITY	FEDERAL FACILITY	GOCO FACILITY
YES	NO	NO	No Data

4.3 Technical Contact

Not Available to the Public as this information is only for Intranet.

4.4 Public Contact

NAME	PHONE
JERRY SCHAEFER	2317236573

4.5 SIC Codes

SIC CODE	SIC CODE DESCRIPTION
4911	ELECTRIC SERVICES

4.6 Location

LATITUDE	LONGITUDE
044-12-58	086-17-29

4.7 Dun & Bradstreet Numbers

DUNS NUMBER
779988898
NA

4.8 RCRA ID Numbers

RCRA ID NUMBER
NA

4.9 NPDES Permit Numbers

NPDES PERMIT NUMBER
NA

(Attachment #28)

4.10 Underground Injection Well Code (UIC) ID Number

UIC ID NUMBER
NA

5 Parent Company Information

Parent Company Name: NA

Parent Company DUNS Number: NA

PART II. CHEMICAL - SPECIFIC INFORMATION

DOCUMENT CONTROL NUMBER: 1301155170867

Section 1. Toxic Chemical Identity

1.1 CAS Number: N150

1.2 Toxic Chemical or Chemical Category Name: DIOXIN AND DIOXIN-LIKE COMPOUNDS

1.3 Generic Chemical Name: NA

1.4 Distribution of Each Member of the Dioxin and Dioxin like Compounds Category

NA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
NO	0	0	0	0	0	0	0	0	0	0	0	0	50	50	0	0	0

Section 2. Mixture Component Identity

2.1 Supplier Provided Generic Chemical Name: NA

Section 3. Activities and Uses of the Toxic Chemical

3.1 Manufacture the Toxic Chemical:
Produce: YES Import: NO On-Site Use/Processing: NO
Sale/Distribution: NO Byproduct: YES Impurity: NO

3.2 Process the Toxic Chemical:
Reactant: NO Formulation Component: NO Article Component: NO Repackaging: NO Impurity: NO

3.3 Otherwise Use the Toxic Chemical:
Chemical Processing Aid: NO Manufacturing Aid: NO Ancillary or Other Use: NO

Section 4. Maximum Amount of the Toxic Chemical Onsite During the Calendar Year

Maximum Chemical Amount: 0 - 99 pounds

Section 5. Quantity of the Toxic Chemical Entering each Environmental Medium Onsite

5.1 Fugitive or Non-Point Air Emissions

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.2 Stack or Point Air Emissions

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
NO	2.86	Grams	O - OTHER APPROACHES

5.3 Discharges to Receiving Streams or Water Bodies

STREAM/WATER BODY NAME	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE	% FROM STORMWATER
NA				

5.4.1 Underground Injection Onsite to Class I Wells.

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.4.2 Underground Injection Onsite to Class II-V Wells.

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.5 Disposal to Land Onsite

5.5.1A RCRA Subtitle C Landfills

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.5.1B Other Landfills

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.5.2 Land Treatment/Application Farming

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

(Attachment #28)

5.5.3 Surface Impoundment

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.5.4 Other Disposal

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

Section 6. Transfers of the Toxic Chemical in Wastes to Off-Site Locations

6.1 Discharges to Publicly Owned Treatment Works (POTWs)

6.1.A Total Quantity Transfered to POTWs and Basis of Estimate

6.1.A.	TOTAL TRANSFERS (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
1	NO DATA		NO DATA

6.1.B POTW Locations

6.1.B.	POTW NAME	ADDRESS	CITY	STATE	COUNTY	ZIP CODE
1	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA

6.2 Transfers to other Off-Site Locations

RCRA Number:	Parent Company Controlled:
Name:	Address:
City:	State:
County:	Zip Code:
Country Code (Non - US):	Province:

TOTAL TRANSFERS (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE	WASTE MANAGEMENT TYPE
NO DATA		NO DATA	NO DATA

Section 7A. On-Site Waste Treatment Methods and Efficiency

7A.1a. Waste Stream: GASEOUS

7A.1b.	WASTE TREATMENT METHOD(S) SEQUENCE
1	A03 - SCRUBBER
2	NA

7A.1c. Range of Influent Concentration: LESS THAN 1 PPB

7A.1d. Waste Treatment Efficiency Estimate: 0

7A.1e. Based on Operating Data?: NO

7A.2a. Waste Stream: SOLID WASTE STREAMS

7A.2b.	WASTE TREATMENT METHOD(S) SEQUENCE
1	P12 - FILTRATION
2	NA

7A.2c. Range of Influent Concentration: LESS THAN 1 PPB

7A.2d. Waste Treatment Efficiency Estimate: 0

7A.2e. Based on Operating Data?: NO

Section 7B. On-Site Energy Recovery Processes

ON SITE ENERGY RECOVERY PROCESSES
NA

Section 7C. On-Site Recycling Processes

ON SITE RECYCLING PROCESSES
NA

Section 8. Source Reduction and Recycling Activities 2001

SECTION	TYPE OF QUANTITY	UNITS	PRIOR YEAR	CURRENT REPORTING YEAR	FOLLOWING YEAR	SECOND FOLLOWING YEAR
8.1	Quantity Released	Grams	1.22	2.86	2.8	2.8
8.2	Quantity Used for Energy Recovery Onsite		NA	NA	NA	NA
8.3	Quantity Used for Energy Recovery Offsite		NA	NA	NA	NA
8.4	Quantity Recycled Onsite		NA	NA	NA	NA
8.5	Quantity Recycled Offsite		NA	NA	NA	NA
8.6	Quantity Treated Onsite		NA	NA	NA	NA
8.7	Quantity Treated Offsite		NA	NA	NA	NA

8.8 One-Time Event Release:

8.9 Production Ratio: 1.05

8.10 Source Reduction Activities

(Attachment #28)

SOURCE REDUCTION ACTIVITIES	METHOD 1	METHOD 2	METHOD 3
NA			

8.11 Additional Data Indicator: NO

EPA Home | Privacy and Security Notice | Contact Us

Last updated on Wednesday, February 18th, 2004
http://oaspub.epa.gov/enviro/tri_formr_partone.get_ihtsone

(Attachment #28)

U.S. Environmental Protection Agency

Toxics Release Inventory (TRI)

FORM R REPORTS

Report an Error

TRI

PS 17
Phenol
AIR 13,524 Pnds

PART I. FACILITY IDENTIFICATION INFORMATION *(FORM R)*

DOCUMENT CONTROL NUMBER: 1301150424911

more info Facility Registry System ID: 110000412045

Section 1. Reporting Year

Reporting Year: 2001

Section 2. Trade Secret Information

2.1 Trade Secret: NO

2.2 Sanitized Copy: Unsanitized

Section 3. Certification

CERTIFYING OFFICIAL'S NAME	CERTIFYING OFFICIAL'S TITLE	CERTIFYING OFFICIAL'S SIGNATURE	DATE SIGNED
ROBERT J. PERETIN,	MILL MANAGER	Original	27-JUN-02

Section 4. Facility Identification

TRI Facility ID: 49634PCKGN2245U

4.1 Facility Name and Address.

Facility Information

NAME	STREET	CITY	COUNTY	STATE	ZIP CODE
PACKAGING CORP. OF AMERICA	2246 UDELL ST.	FILER CITY	MANISTEE	MI	49634

Mailing Information

NAME	STREET	CITY	COUNTY	STATE	ZIP CODE
PACKAGING CORP. OF AMERICA	2246 UDELL ST.	FILER CITY		MI	49634

PROVINCE	COUNTRY (NON - US)
NO DATA	NO DATA

4.2 Facility Classification

ENTIRE FACILITY	PARTIAL FACILITY	FEDERAL FACILITY	GOCO FACILITY
YES	NO	NO	NO

4.3 Technical Contact

Not Available to the Public as this information is only for Intranet.

4.4 Public Contact

NAME	PHONE
RICHARD D. BROWN	2317238148

4.5 SIC Codes

SIC CODE	SIC CODE DESCRIPTION
2621	PAPER MILLS

4.6 Location

LATITUDE	LONGITUDE
044-12-45	086-17-10

4.7 Dun & Bradstreet Numbers

DUNS NUMBER
060047151
NA

4.8 RCRA ID Numbers

RCRA ID NUMBER
MID006015911
NA

4.9 NPDES Permit Numbers

NPDES PERMIT NUMBER
MI0001171
NA

4.10 Underground Injection Well Code (UIC) ID Number

UIC ID NUMBER
NA

5 Parent Company Information

Parent Company Name: NA

Parent Company DUNS Number: NA

PART II. CHEMICAL - SPECIFIC INFORMATION

DOCUMENT CONTROL NUMBER: 1301150424911

Section 1. Toxic Chemical Identity

1.1 CAS Number: 000108952

1.2 Toxic Chemical or Chemical Category Name: PHENOL

1.3 Generic Chemical Name: NA

1.4 Distribution of Each Member of the Dioxin and Dioxin like Compounds Category

NA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
NO																	

Section 2. Mixture Component Identity

2.1 Supplier Provided Generic Chemical Name: NA

Section 3. Activities and Uses of the Toxic Chemical

3.1 Manufacture the Toxic Chemical:
Produce: YES Import: NO On-Site Use/Processing: NO
Sale/Distribution: NO Byproduct: YES Impurity: NO

3.2 Process the Toxic Chemical:
Reactant: NO Formulation Component: NO Article Component: NO Repackaging: NO Impurity: NO

3.3 Otherwise Use the Toxic Chemical:

(Attachment #28)

Chemical Processing Aid: NO Manufacturing Aid: NO Ancillary or Other Use: NO

Section 4. Maximum Amount of the Toxic Chemical Onsite During the Calendar Year

Maximum Chemical Amount: 1,000 - 9,999 pounds

Section 5. Quantity of the Toxic Chemical Entering each Environmental Medium Onsite

5.1 Fugitive or Non-Point Air Emissions

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
NO	0	Pounds	O - OTHER APPROACHES

5.2 Stack or Point Air Emissions

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
NO	13520	Pounds	E - PUBLISHED EMISSION FACTORS

5.3 Discharges to Receiving Streams or Water Bodies

STREAM/WATER BODY NAME	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE	% FROM STORMWATER
LAKE MICHIGAN	0	Pounds	O - OTHER APPROACHES	

5.4.1 Underground Injection Onsite to Class I Wells.

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.4.2 Underground Injection Onsite to Class II-V Wells.

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.5 Disposal to Land Onsite

5.5.1A RCRA Subtitle C Landfills

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.5.1B Other Landfills

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.5.2 Land Treatment/Application Farming

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.5.3 Surface Impoundment

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.5.4 Other Disposal

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

Section 6. Transfers of the Toxic Chemical in Wastes to Off-Site Locations

6.1 Discharges to Publicly Owned Treatment Works (POTWs)

6.1.A Total Quantity Transfered to POTWs and Basis of Estimate

6.1.A.	TOTAL TRANSFERS (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
1	NO DATA		NO DATA

6.1.B POTW Locations

6.1.B.	POTW NAME	ADDRESS	CITY	STATE	COUNTY	ZIP CODE
1	NA					

6.2 Transfers to other Off-Site Locations

RCRA Number: MID126878362 Parent Company Controlled: NO
Name: HARLANDS LANDFILL Address: 3890 CAMP ROAD
City: MANISTEE State: MI
County: MANISTEE Zip Code: 49660
Country Code (Non - US): Province:

TOTAL TRANSFERS (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE	WASTE MANAGEMENT TYPE
4	Pounds	O - OTHER APPROACHES	M72 - Landfill/Disposal Surface Impoundment

Section 7A. On-Site Waste Treatment Methods and Efficiency

7A.1a. Waste Stream: WASTEWATER

(Attachment #28)

7A.1b.	WASTE TREATMENT METHOD(S) SEQUENCE
1	P11 - SETTLING/CLARIFICATION
2	B11 - BIOLOGICAL TREATMENT -- AEROBIC
3	P11 - SETTLING/CLARIFICATION
4	NA

7A.1c. Range of Influent Concentration: 1 PPB TO 1 PPM
7A.1d. Waste Treatment Efficiency Estimate: 100
7A.1e. Based on Operating Data?: NO

7A.2a. Waste Stream: SOLID WASTE STREAMS

7A.2b.	WASTE TREATMENT METHOD(S) SEQUENCE
1	P13 - SLUDGE DEWATERING (NON-THERMAL)
2	NA

7A.2c. Range of Influent Concentration: 1 PPB TO 1 PPM
7A.2d. Waste Treatment Efficiency Estimate: 0
7A.2e. Based on Operating Data?: NO

7A.3a. Waste Stream: GASEOUS

7A.3b.	WASTE TREATMENT METHOD(S) SEQUENCE
1	A03 - SCRUBBER
2	A06 - MECHANICAL SEPARATION
3	NA

7A.3c. Range of Influent Concentration: 1 PPM TO 100 PPM
7A.3d. Waste Treatment Efficiency Estimate: 0
7A.3e. Based on Operating Data?: NO

7A.4a. Waste Stream: GASEOUS

7A.4b.	WASTE TREATMENT METHOD(S) SEQUENCE
1	F99 - OTHER INCINERATION/THERMAL TREATMENT
2	A06 - MECHANICAL SEPARATION
3	NA

7A.4c. Range of Influent Concentration: 1 PPM TO 100 PPM
7A.4d. Waste Treatment Efficiency Estimate: 98
7A.4e. Based on Operating Data?: NO

Section 7B. On-Site Energy Recovery Processes

ON SITE ENERGY RECOVERY PROCESSES
NA

Section 7C. On-Site Recycling Processes

ON SITE RECYCLING PROCESSES
NA

Section 8. Source Reduction and Recycling Activities

SECTION	TYPE OF QUANTITY	UNITS	PRIOR YEAR	CURRENT REPORTING YEAR	FOLLOWING YEAR	SECOND FOLLOWING YEAR
8.1	Quantity Released	Pounds	28135	13524	13524	13524
8.2	Quantity Used for Energy Recovery Onsite		NA	NA	NA	NA
8.3	Quantity Used for Energy Recovery Offsite		NA	NA	NA	NA
8.4	Quantity Recycled Onsite		NA	NA	NA	NA
8.5	Quantity Recycled Offsite		NA	NA	NA	NA
8.6	Quantity Treated Onsite	Pounds	2779	10235	10235	10235
8.7	Quantity Treated Offsite		NA	NA	NA	NA

8.8 One-Time Event Release: 0 Pounds

8.9 Production Ratio: .72

8.10 Source Reduction Activities

SOURCE REDUCTION ACTIVITIES	METHOD 1	METHOD 2	METHOD 3
NA			

8.11 Additional Data Indicator: NO

(Attachment #28)

U.S. Environmental Protection Agency

Toxics Release Inventory (TRI)

TRI

FORM R REPORTS

PCB Ammount

Report to Error

500 Pounds Air
13 Pounds Manistee Lake

PART I. FACILITY IDENTIFICATION INFORMATION *(FORM R)*

478 Pounds Lake Michigan

DOCUMENT CONTROL NUMBER: 1301150424935

Facility Registry System ID: 110000412045

Section 1. Reporting Year

Reporting Year: 2001

Section 2. Trade Secret Information

2.1 Trade Secret: NO

2.2 Sanitized Copy: Unsanitized

Section 3. Certification

CERTIFYING OFFICIAL'S NAME	CERTIFYING OFFICIAL'S TITLE	CERTIFYING OFFICIAL'S SIGNATURE	DATE SIGNED
ROBERT J. PERETIN,	MILL MANAGER	Original	27-JUN-02

Section 4. Facility Identification

TRI Facility ID: 49634PCKGN2245U

4.1 Facility Name and Address.

Facility Information

NAME	STREET	CITY	COUNTY	STATE	ZIP CODE
PACKAGING CORP. OF AMERICA	2246 UDELL ST.	FILER CITY	MANISTEE	MI	49634

Mailing Information

NAME	STREET	CITY	COUNTY	STATE	ZIP CODE
PACKAGING CORP. OF AMERICA	2246 UDELL ST.	FILER CITY		MI	49634

PROVINCE	COUNTRY (NON - US)
NO DATA	NO DATA

4.2 Facility Classification

ENTIRE FACILITY	PARTIAL FACILITY	FEDERAL FACILITY	GOCO FACILITY
YES	NO	NO	NO

4.3 Technical Contact

Not Available to the Public as this information is only for Intranet.

4.4 Public Contact

NAME	PHONE
RICHARD D. BROWN	2317238146

4.5 SIC Codes

SIC CODE	SIC CODE DESCRIPTION
2621	PAPER MILLS

4.6 Location

LATITUDE	LONGITUDE
044-12-45	086-17-10

4.7 Dun & Bradstreet Numbers

DUNS NUMBER
060047151
NA

4.8 RCRA ID Numbers

RCRA ID NUMBER
MID006015911
NA

4.9 NPDES Permit Numbers

NPDES PERMIT NUMBER
MI0001171
NA

4.10 Underground Injection Well Code (UIC) ID Number

UIC ID NUMBER
NA

5 Parent Company Information

Parent Company Name: NA

Parent Company DUNS Number: NA

PART II. CHEMICAL - SPECIFIC INFORMATION

DOCUMENT CONTROL NUMBER: 1301150424935

Section 1. Toxic Chemical Identity

1.1 CAS Number: 007664417

1.2 Toxic Chemical or Chemical Category Name: AMMONIA

1.3 Generic Chemical Name: NA

1.4 Distribution of Each Member of the Dioxin and Dioxin like Compounds Category

NA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
NO																	

Section 2. Mixture Component Identity

2.1 Supplier Provided Generic Chemical Name: NA

Section 3. Activities and Uses of the Toxic Chemical

3.1 Manufacture the Toxic Chemical:
Produce: NO Import: NO On-Site Use/Processing: NO
Sale/Distribution: NO Byproduct: NO Impurity: NO

3.2 Process the Toxic Chemical:
Reactant: NO Formulation Component: NO Article Component: NO Repackaging: NO Impurity: NO

3.3 Otherwise Use the Toxic Chemical:

(Attachment #28)

Chemical Processing Aid: NO Manufacturing Aid: NO Ancillary or Other Use: YES

Section 4. Maximum Amount of the Toxic Chemical Onsite During the Calendar Year

Maximum Chemical Amount: 1,000 - 9,999 pounds

Section 5. Quantity of the Toxic Chemical Entering each Environmental Medium Onsite

5.1 Fugitive or Non-Point Air Emissions

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
NO	500	Pounds	O - OTHER APPROACHES

5.2 Stack or Point Air Emissions

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.3 Discharges to Receiving Streams or Water Bodies

STREAM/WATER BODY NAME	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE	% FROM STORMWATER
MANISTEE LAKE	13	Pounds	M - DATA MONITORING OR MEASUREMENTS	100
LAKE MICHIGAN	478	Pounds	M - DATA MONITORING OR MEASUREMENTS	

5.4.1 Underground Injection Onsite to Class I Wells.

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.4.2 Underground Injection Onsite to Class II-V Wells.

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.5 Disposal to Land Onsite

5.5.1A RCRA Subtitle C Landfills

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.5.1B Other Landfills

(Attachment #28)

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.5.2 Land Treatment/Application Farming

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.5.3 Surface Impoundment

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.5.4 Other Disposal

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

Section 6. Transfers of the Toxic Chemical in Wastes to Off-Site Locations

6.1 Discharges to Publicly Owned Treatment Works (POTWs)

6.1.A Total Quantity Transfered to POTWs and Basis of Estimate

6.1.A.	TOTAL TRANSFERS (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
1	NO DATA		NO DATA

6.1.B POTW Locations

6.1.B.	POTW NAME	ADDRESS	CITY	STATE	COUNTY	ZIP CODE
1	NA					

6.2 Transfers to other Off-Site Locations

RCRA Number: MID126878362 Parent Company Controlled: NO
Name: HARLANDS LANDFILL Address: 3890 CAMP ROAD
City: MANISTEE State: MI
County: MANISTEE Zip Code: 49660
Country Code (Non - US): Province:

TOTAL TRANSFERS (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE	WASTE MANAGEMENT TYPE
622	Pounds	O - OTHER APPROACHES	M72 - Landfill/Disposal Surface Impoundment

Section 7A. On-Site Waste Treatment Methods and Efficiency

7A.1a. Waste Stream: WASTEWATER

7A.1b.	WASTE TREATMENT METHOD(S) SEQUENCE
1	P11 - SETTLING/CLARIFICATION
2	B11 - BIOLOGICAL TREATMENT – AEROBIC
3	P11 - SETTLING/CLARIFICATION
4	NA

7A.1c. Range of Influent Concentration: 1 PPB TO 1 PPM

7A.1d. Waste Treatment Efficiency Estimate: 0

7A.1e. Based on Operating Data?: NO

7A.2a. Waste Stream: SOLID WASTE STREAMS

7A.2b.	WASTE TREATMENT METHOD(S) SEQUENCE
1	P13 - SLUDGE DEWATERING (NON-THERMAL)
2	NA

7A.2c. Range of Influent Concentration: 1 PPM TO 100 PPM

7A.2d. Waste Treatment Efficiency Estimate: 0

7A.2e. Based on Operating Data?: NO

Section 7B. On-Site Energy Recovery Processes

ON SITE ENERGY RECOVERY PROCESSES
NA

Section 7C. On-Site Recycling Processes

ON SITE RECYCLING PROCESSES
NA

Section 8. Source Reduction and Recycling Activities

SECTION	TYPE OF QUANTITY	UNITS	PRIOR YEAR	CURRENT REPORTING YEAR	FOLLOWING YEAR	SECOND FOLLOWING YEAR
8.1	Quantity Released	Pounds	5088	1613	1613	1613
8.2	Quantity Used for Energy Recovery Onsite		NA	NA	NA	NA
8.3	Quantity Used for Energy Recovery Offsite		NA	NA	NA	NA
8.4	Quantity Recycled Onsite		NA	NA	NA	NA
8.5	Quantity Recycled Offsite		NA	NA	NA	NA
8.6	Quantity Treated Onsite		NA	NA	NA	NA
8.7	Quantity Treated Offsite		NA	NA	NA	NA

8.8 One-Time Event Release: 0 Pounds

8.9 Production Ratio: .72

8.10 Source Reduction Activities

SOURCE REDUCTION ACTIVITIES	METHOD 1	METHOD 2	METHOD 3
NA			

8.11 Additional Data Indicator: NO

EPA Home | Privacy and Security Notice | Contact Us

Last updated on Wednesday, February 18th, 2004
http://oaspub.epa.gov/enviro/tri_formr_partone.get_tlidsone

(Attachment #28)

EPA - Enviroflacts Warehouse - TRI wysiwyg://237/http://oaspub.epa.gov/envir...ear=2001&dcn_num=1301150424935&ban_flag=Y

EPA - Envirofacts Warehouse - TRI wysiwyg://240/http://oaspub.epa.gov/envir...car=2001&dcn_num=1301150424974&ban_flag=Y

U.S. Environmental Protection Agency

Toxics Release Inventory (TRI)

FORM R REPORTS

TRI

Report an Error

DCA
METHANOL
AR 382 POUNDS

PART I. FACILITY IDENTIFICATION INFORMATION *(FORM R)*

DOCUMENT CONTROL NUMBER: 1301150424974

more info Facility Registry System ID: 110000412045

Section 1. Reporting Year

Reporting Year: 2001

Section 2. Trade Secret Information

2.1 Trade Secret: NO

2.2 Sanitized Copy: Unsanitized

Section 3. Certification

CERTIFYING OFFICIAL'S NAME	CERTIFYING OFFICIAL'S TITLE	CERTIFYING OFFICIAL'S SIGNATURE	DATE SIGNED
ROBERT J. PERETIN,	MILL MANAGER	Original	27-JUN-02

Section 4. Facility Identification

TRI Facility ID: 49634PCKGN2245U

4.1 Facility Name and Address.

Facility Information

NAME	STREET	CITY	COUNTY	STATE	ZIP CODE
PACKAGING CORP. OF AMERICA	2246 UDELL ST.	FILER CITY	MANISTEE	MI	49634

Mailing Information

NAME	STREET	CITY	COUNTY	STATE	ZIP CODE
PACKAGING CORP. OF AMERICA	2246 UDELL ST.	FILER CITY		MI	49634

PROVINCE	COUNTRY (NON - US)
NO DATA	NO DATA

4.2 Facility Classification

ENTIRE FACILITY	PARTIAL FACILITY	FEDERAL FACILITY	GOCO FACILITY
YES	NO	NO	NO

4.3 Technical Contact

Not Available to the Public as this information is only for Intranet.

4.4 Public Contact

NAME	PHONE
RICHARD D. BROWN	2317238148

4.5 SIC Codes

SIC CODE	SIC CODE DESCRIPTION
2621	PAPER MILLS

4.6 Location

LATITUDE	LONGITUDE
044-12-45	086-17-10

4.7 Dun & Bradstreet Numbers

DUNS NUMBER
060047151
NA

4.8 RCRA ID Numbers

RCRA ID NUMBER
MID006015911
NA

4.9 NPDES Permit Numbers

(Attachment #28)

NPDES PERMIT NUMBER
MI0001171
NA

4.10 Underground Injection Well Code (UIC) ID Number

UIC ID NUMBER
NA

5 Parent Company Information

Parent Company Name: NA

Parent Company DUNS Number: NA

PART II. CHEMICAL - SPECIFIC INFORMATION

DOCUMENT CONTROL NUMBER: 1301150424974

Section 1. Toxic Chemical Identity

1.1 CAS Number: 000067561

1.2 Toxic Chemical or Chemical Category Name: METHANOL

1.3 Generic Chemical Name: NA

1.4 Distribution of Each Member of the Dioxin and Dioxin like Compounds Category

NA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
NO																	

Section 2. Mixture Component Identity

2.1 Supplier Provided Generic Chemical Name: NA

Section 3. Activities and Uses of the Toxic Chemical

3.1 Manufacture the Toxic Chemical:
Produce: YES Import: NO On-Site Use/Processing: NO
Sale/Distribution: NO Byproduct: YES Impurity: NO

3.2 Process the Toxic Chemical:
Reactant: NO Formulation Component: NO Article Component: NO Repackaging: NO Impurity: NO

3.3 Otherwise Use the Toxic Chemical:

(Attachment #28)

Chemical Processing Aid: NO Manufacturing Aid: NO Ancillary or Other Use: NO

Section 4. Maximum Amount of the Toxic Chemical Onsite During the Calendar Year

Maximum Chemical Amount: 1,000 - 9,999 pounds

Section 5. Quantity of the Toxic Chemical Entering each Environmental Medium Onsite

5.1 Fugitive or Non-Point Air Emissions

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
NO	980	Pounds	O - OTHER APPROACHES

5.2 Stack or Point Air Emissions

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
NO	162821	Pounds	E - PUBLISHED EMISSION FACTORS

5.3 Discharges to Receiving Streams or Water Bodies

STREAM/WATER BODY NAME	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE	% FROM STORMWATER
LAKE MICHIGAN	382	Pounds	O - OTHER APPROACHES	

5.4.1 Underground Injection Onsite to Class I Wells.

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.4.2 Underground Injection Onsite to Class II-V Wells.

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.5 Disposal to Land Onsite

5.5.1A RCRA Subtitle C Landfills

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.5.1B Other Landfills

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.5.2 Land Treatment/Application Farming

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.5.3 Surface Impoundment

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

5.5.4 Other Disposal

NA	TOTAL RELEASE (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
YES			

Section 6. Transfers of the Toxic Chemical in Wastes to Off-Site Locations

6.1 Discharges to Publicly Owned Treatment Works (POTWs)

6.1.A Total Quantity Transfered to POTWs and Basis of Estimate

6.1.A.	TOTAL TRANSFERS (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE
1	NO DATA		NO DATA

6.1.B POTW Locations

6.1.B.	POTW NAME	ADDRESS	CITY	STATE	COUNTY	ZIP CODE
1	NA					

6.2 Transfers to other Off-Site Locations

RCRA Number: MID126878362 Parent Company Controlled: NO
Name: HARLANDS LANDFILL Address: 3890 CAMP ROAD
City: MANISTEE State: MI
County: MANISTEE Zip Code: 49660
Country Code (Non - US): Province:

TOTAL TRANSFERS (per year)	UNIT OF MEASURE	BASIS OF ESTIMATE	WASTE MANAGEMENT TYPE
308	Pounds	O - OTHER APPROACHES	M72 - Landfill/Disposal Surface Impoundment

Section 7A. On-Site Waste Treatment Methods and Efficiency

7A.1a. Waste Stream: WASTEWATER

7A.1b.	WASTE TREATMENT METHOD(S) SEQUENCE
1	P11 - SETTLING/CLARIFICATION
2	B11 - BIOLOGICAL TREATMENT – AEROBIC
3	P11 - SETTLING/CLARIFICATION
4	NA

7A.1c. Range of Influent Concentration: 1 PPM TO 100 PPM
7A.1d. Waste Treatment Efficiency Estimate: 99.7
7A.1e. Based on Operating Data?: NO

7A.2a. Waste Stream: SOLID WASTE STREAMS

7A.2b.	WASTE TREATMENT METHOD(S) SEQUENCE
1	P13 - SLUDGE DEWATERING (NON-THERMAL)
2	NA

7A.2c. Range of Influent Concentration: 1 PPM TO 100 PPM
7A.2d. Waste Treatment Efficiency Estimate: 0
7A.2e. Based on Operating Data?: NO

7A.3a. Waste Stream: GASEOUS

7A.3b.	WASTE TREATMENT METHOD(S) SEQUENCE
1	A03 - SCRUBBER
2	A05 - MECHANICAL SEPARATION
3	NA

7A.3c. Range of Influent Concentration: 1 PPM TO 100 PPM
7A.3d. Waste Treatment Efficiency Estimate: 0
7A.3e. Based on Operating Data?: NO

7A.4a. Waste Stream: GASEOUS

7A.4b.	WASTE TREATMENT METHOD(S) SEQUENCE
1	F99 - OTHER INCINERATION/THERMAL TREATMENT
2	A05 - MECHANICAL SEPARATION
3	NA

7A.4c. Range of Influent Concentration: 100 PPM TO 1 PERCENT
7A.4d. Waste Treatment Efficiency Estimate: 98
7A.4e. Based on Operating Data?: NO

Section 7B. On-Site Energy Recovery Processes

ON SITE ENERGY RECOVERY PROCESSES
NA

Section 7C. On-Site Recycling Processes

(Attachment #28)

ON SITE RECYCLING PROCESSES
NA

Section 8. Source Reduction and Recycling Activities

SECTION	TYPE OF QUANTITY	UNITS	PRIOR YEAR	CURRENT REPORTING YEAR	FOLLOWING YEAR	SECOND FOLLOWING YEAR
8.1	Quantity Released	Pounds	275649	164491	164491	164491
8.2	Quantity Used for Energy Recovery Onsite		NA	NA	NA	NA
8.3	Quantity Used for Energy Recovery Offsite		NA	NA	NA	NA
8.4	Quantity Recycled Onsite		NA	NA	NA	NA
8.5	Quantity Recycled Offsite		NA	NA	NA	NA
8.6	Quantity Treated Onsite	Pounds	226875	240618	240618	240618
8.7	Quantity Treated Offsite		NA	NA	NA	NA

8.8 One-Time Event Release: 0 Pounds

8.9 Production Ratio: .72

8.10 Source Reduction Activities

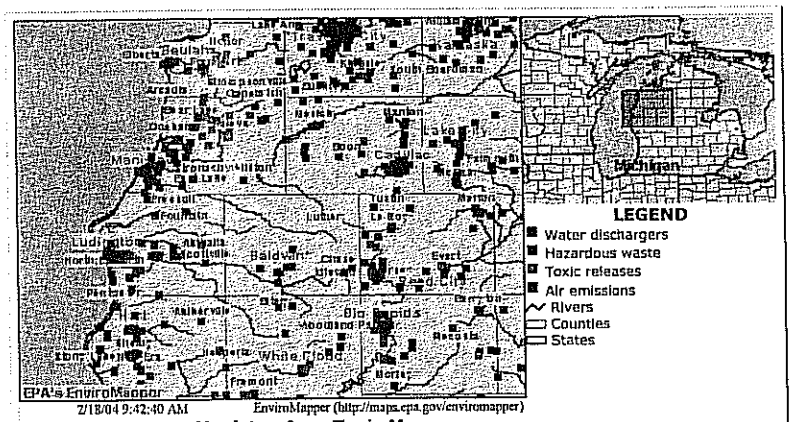
SOURCE REDUCTION ACTIVITIES	METHOD 1	METHOD 2	METHOD 3
NA			

8.11 Additional Data Indicator: NO

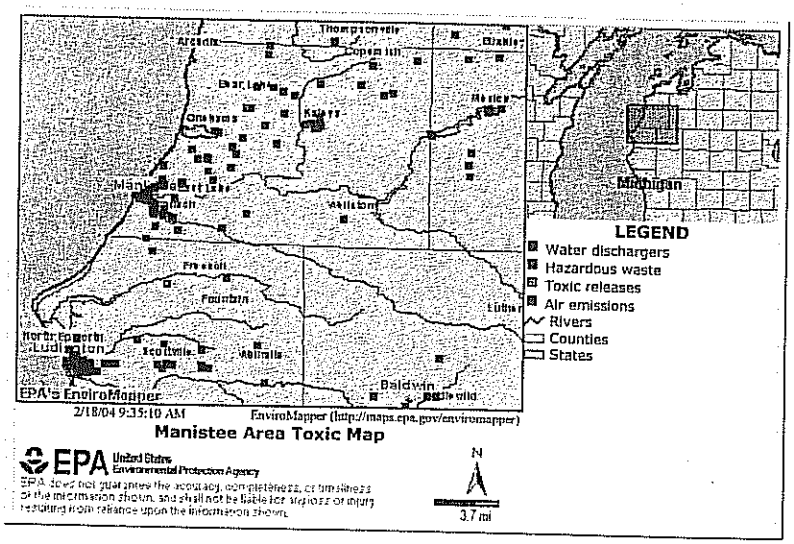
EPA Home | Privacy and Security Notice | Contact Us

Last updated on Wednesday, February 18th, 2004
http://oaspub.epa.gov/enviro/tri_formr_partone.get_thisone

(Attachment #28)



Submitted By Daniel Behring
Re: Application For Special Use
Permit By MSWDC
2/19/2004



(Attachment #28)

U.S. Environmental Protection Agency

Quick Start

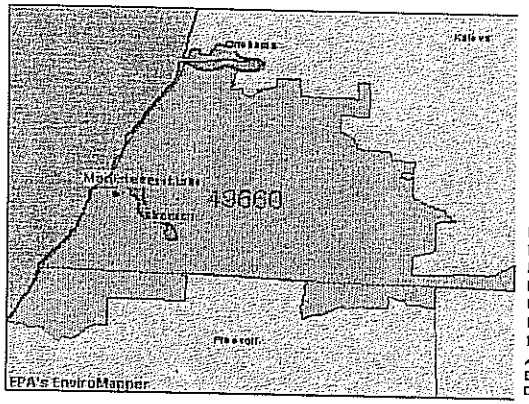
Recent Additions | Contact Us | Print Version EF Search: GO

EPA Home > Envirofacts > Quick Start

Envirofacts

ZIP Code: 49660

See following PAGES



To view the above map interactively, click EnviroMapper

Additional information about ZIP Code 49660, click Window To My Environment

Envirofacts information about ZIP Code 49660

- AIR
  - Facilities that produce and release air pollutants: 27
- TOXICS
  - Facilities that have reported toxic releases: 7
- WASTE
  - Facilities that have reported hazardous waste activities: 65
    - Number of Large Quantity Generators: 1
    - Number of Small Quantity Generators: 6

- Potential hazardous waste sites that are part of Superfund that exist: 0
- Facilities that generate hazardous waste from large quantity generators: 0

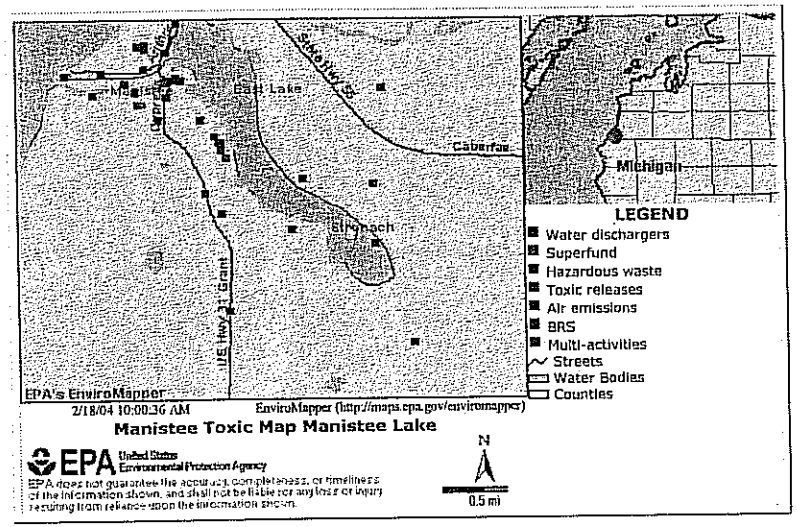
- WATER
  - Facilities issued permits to discharge to waters of the United States: 5
  - Community Water Systems that serve the same people year-round (e.g. in h or businesses): 11
  - Transient Non-Community Water Systems that do not consistently serve the people (e.g. rest stops, campgrounds, gas stations): 83
  - Non-Transient Non-Community Water Systems that serve the same people, not year-round (e.g. schools that have their own water system): 7

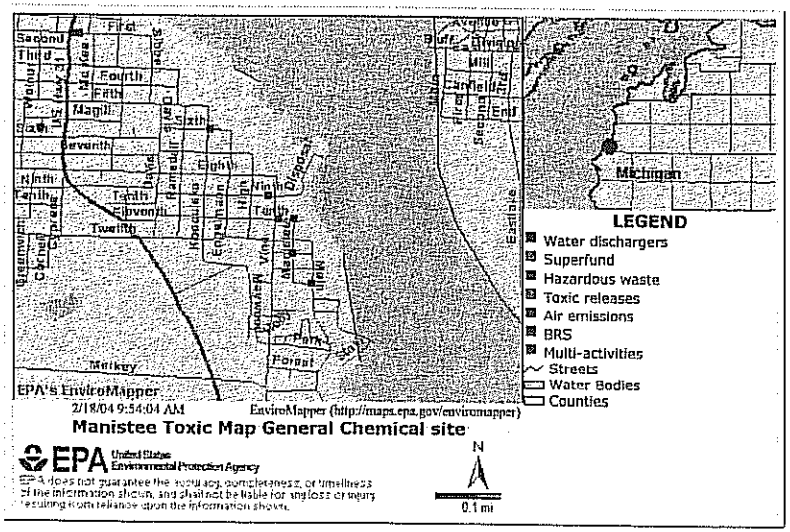
Additional information about ZIP Code 49660, click Window To My Environment

- Watershed(s) in your area:
  - Lake Michigan. Illinois, Indiana, Michigan, Wisconsin.
  - Pere Marquette-White. Michigan
  - Betsie-Platte. Michigan
  - Manistee. Michigan.

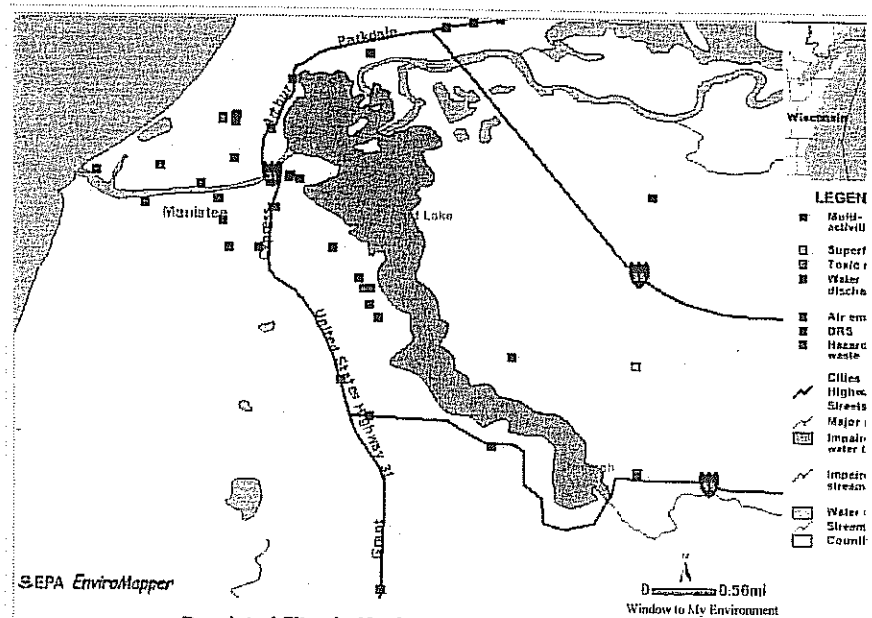
Return to more topical information

(Attachment #28)





(Attachment #28)



MANISTEE IS AN IMPAIRED LAKE ACCORDING TO EPA

U.S. Environmental Protection Agency

Total Maximum Daily Loads

Listed Water Information

CYCLE : 2000

Click here to see metadata for this report.

Cycle: 2000 **State:** MI **List ID:** MI081901A
Waterbody Name: MANISTEE LAKE
Listed Water Map Link: MAP 303(d)

Comments:
CSO, UNTREATED SEWAGE DISCHARGE, PATHOGENS (RULE 100).

State Impairments:

State Impairment	Parent Impairment	Priority	Rank	Targeted Flag	Anticipated TMDL Submittal
MERCURY	METALS				DEC-31-2011
PATHOGENS					DEC-31-2006
PCBS	PCBS				DEC-31-2010

Potential Sources of Impairement:

There were no potential sources reported to EPA by the state.

Total Maximum Daily Load (TMDL) Information:

There were no TMDLs reported to EPA by the state.

Watershed Information:

Watershed Name	Watershed States
MANISTEE	MICHIGAN

(Attachment #28)

U.S. Environmental Protection Agency

Toxics Release Inventory (TRI)

TRI

Query Results

Report an Error

Consolidated facility information (from multiple EPA systems) was searched to select facilities

ZIP Code: 49660

Results are based on data extracted on JAN-30-2004

Note:
Click on the underlined TRI_FACILITY_ID value to view a detailed report on the facility.
Click on "View Facility Information" to view EPA Facility information for the facility.
Click on the underlined SUBMISSIONS value to view the list of DCN's for each of the TRI Reporting Year.

Go To Bottom Of The Page

List of EPA-Regulated Facilities in TRI

123 TOXIC RELEASES THROUGH 2001, SEE ATTACHED, FROM 7 INDUSTRIAL SITES IN 49660 EARLIEST WAS 1987

TRI FACILITY ID	FACILITY INFORMATION	FACILITY NAME	ADDRESS	COUNTY NAME	SUBMISSIONS
49660MNSTR1501M	View Facility Information	AKZO NOBEL SALT INCORPORATED	1501 MAIN STREET MANISTEE, MI 49660	MANISTEE	20
49660XCHMN317WA	View Facility Information	AXCHEM INCORPORATED	317 WASHINGTON STREET MANISTEE, MI 49660	MANISTEE	64
49660FBLTN330WA	View Facility Information	FABLITE INCORPORATED	330 WASHINGTON ST. MANISTEE, MI 49660	MANISTEE	4
49660MBRCH1501M	View Facility Information	GENERAL CHEMCIAL CORPORATION	1501 MAIN STREET MANISTEE, MI 49660	MANISTEE	2
49660MRTNM1800E	View Facility Information	MARTIN MARIETTA MAGNESIA SPECIALITES INCORPORATED	1800 EAST LAKE ROAD MANISTEE, MI 49660	MANISTEE	16
49660MRTNT1806T	View Facility Information	MORTON INTERNATIONAL INCORPORATED	180 SIXTH STREET MANISTEE, MI 49660	MANISTEE	15
49660SWTWT100SG	View Facility Information	SWEETWATER CRAFTS	100 S. GLOCHESKI DR. MANISTEE, MI 496603301	MANISTEE	2

Go To Top Of The Page

Total Number of Facilities Displayed: 7

(Attachment #28)

U.S. Environmental Protection Agency

Toxics Release Inventory (TRI)

TRI

Query Results

Report Error

TOXIC RELEASES FROM ONE INDUSTRIAL SITE

Facility Name:	AXCHEM SOLUTIONS INC.	**Mailing Name:**	AXCHEM SOLUTIONS INC.
Address:	317 WASHINGTON ST. MANISTEE, MI - 496600292	**Mailing Address:**	P.O. BOX 292 MANISTEE, MI - 49660-0292
County:	MANISTEE	**Region:**	5
TRI FACILITY ID:	49660XCHMN317WA	**DUNS Number:**	043652999

List of Document Control Numbers in ENVIROFACTS for the TRI Reporting Year: 2001

- To obtain a Form R Detailed Report for all the Document Control Numbers listed in the table below Click here: 49660XCHMN317WA
- Click on a Document Control Number from the table below to get the Form R Detailed Report.

DOCUMENT CONTROL NUMBER	CHEMICAL NAME
1301155010337	ACRYLAMIDE
1301155010349	FORMALDEHYDE
1301155010352	DIMETHYLAMINE

Total Number of DCN's retrieved for the Reporting Year 2001 is 3

List of Document Control Numbers in ENVIROFACTS for the TRI Reporting Year: 2000

- To obtain a Form R Detailed Report for all the Document Control Numbers listed in the table below Click here: 49660XCHMN317WA
- Click on a Document Control Number from the table below to get the Form R Detailed Report.

DOCUMENT CONTROL NUMBER	CHEMICAL NAME
1300145017745	DIMETHYLAMINE
1300145018899	ACRYLAMIDE
1300145019028	FORMALDEHYDE

Total Number of DCN's retrieved for the Reporting Year 2000 is 3

List of Document Control Numbers in ENVIROFACTS for the TRI Reporting Year: 1999

- To obtain a Form R Detailed Report for all the Document Control Numbers listed in the table below Click here: 49660XCHMN317WA
- Click on a Document Control Number from the table below to get the Form R Detailed Report.

DOCUMENT CONTROL NUMBER	CHEMICAL NAME
1399135008706	ACRYLAMIDE
1399135008720	DIMETHYLAMINE
1399135008757	FORMALDEHYDE

Total Number of DCN's retrieved for the Reporting Year 1999 is 3

List of Document Control Numbers in ENVIROFACTS for the TRI Reporting Year: 1998

- To obtain a Form R Detailed Report for all the Document Control Numbers listed in the table below Click here: 49660XCHMN317WA
- Click on a Document Control Number from the table below to get the Form R Detailed Report.

DOCUMENT CONTROL NUMBER	CHEMICAL NAME
1398125301200	FORMALDEHYDE
1398125301212	PHOSPHORIC ACID
1398125301224	DIMETHYLAMINE
1398125301236	ACRYLAMIDE

Total Number of DCN's retrieved for the Reporting Year 1998 is 4

List of Document Control Numbers in ENVIROFACTS for the TRI Reporting Year: 1997

- To obtain a Form R Detailed Report for all the Document Control Numbers listed in the table below Click here: 49660XCHMN317WA
- Click on a Document Control Number from the table below to get the Form R Detailed Report.

(Attachment #28)

DOCUMENT CONTROL NUMBER	CHEMICAL NAME
1397115081135	DIMETHYLAMINE
1397115081147	AMMONIA
1397115081150	ACRYLAMIDE
1397115081162	PHOSPHORIC ACID
1397115081174	FORMALDEHYDE

Total Number of DCN's retrieved for the Reporting Year 1997 is 5

List of Document Control Numbers in ENVIROFACTS for the TRI Reporting Year: 1996

- To obtain a Form R Detailed Report for all the Document Control Numbers listed in the table below Click here: 49660XCHMN317WA
- Click on a Document Control Number from the table below to get the Form R Detailed Report.

DOCUMENT CONTROL NUMBER	CHEMICAL NAME
1396105121178	PHOSPHORIC ACID
1396105121180	FORMALDEHYDE
1396105121192	DIMETHYLAMINE
1396105121204	AMMONIA
1396105121216	ACRYLAMIDE

Total Number of DCN's retrieved for the Reporting Year 1996 is 5

List of Document Control Numbers in ENVIROFACTS for the TRI Reporting Year: 1995

- To obtain a Form R Detailed Report for all the Document Control Numbers listed in the table below Click here: 49660XCHMN317WA
- Click on a Document Control Number from the table below to get the Form R Detailed Report.

DOCUMENT CONTROL NUMBER	CHEMICAL NAME
1395095112746	AMMONIA
1395095112759	FORMALDEHYDE
1395095112761	ACRYLAMIDE
1395095112785	DIMETHYLAMINE
1395095112797	HYDROCHLORIC ACID (1995 AND AFTER "ACID AEROSOLS" ONLY)
1395095112809	PHOSPHORIC ACID

Total Number of DCN's retrieved for the Reporting Year 1995 is 6

List of Document Control Numbers in ENVIROFACTS for the TRI Reporting Year: 1994

- To obtain a Form R Detailed Report for all the Document Control Numbers listed in the table below Click here: 49660XCHMN317WA
- Click on a Document Control Number from the table below to get the Form R Detailed Report.

DOCUMENT CONTROL NUMBER	CHEMICAL NAME
1394085052013	SULFURIC ACID (1994 AND AFTER "ACID AEROSOLS" ONLY)
1394085052025	PHOSPHORIC ACID
1394085052037	HYDROCHLORIC ACID (1995 AND AFTER "ACID AEROSOLS" ONLY)
1394085052049	FORMALDEHYDE
1394085052052	ACRYLAMIDE

Total Number of DCN's retrieved for the Reporting Year 1994 is 5

List of Document Control Numbers in ENVIROFACTS for the TRI Reporting Year: 1993

- To obtain a Form R Detailed Report for all the Document Control Numbers listed in the table below Click here: 49660XCHMN317WA
- Click on a Document Control Number from the table below to get the Form R Detailed Report.

DOCUMENT CONTROL NUMBER	CHEMICAL NAME
1393075514909	HYDROCHLORIC ACID (1995 AND AFTER "ACID AEROSOLS" ONLY)
1393075514911	FORMALDEHYDE
1393075514923	SULFURIC ACID (1994 AND AFTER "ACID AEROSOLS" ONLY)
1393075514935	PHOSPHORIC ACID
1393075514947	ACRYLAMIDE

Total Number of DCN's retrieved for the Reporting Year 1993 is 5

List of Document Control Numbers in ENVIROFACTS for the TRI Reporting Year: 1992

- To obtain a Form R Detailed Report for all the Document Control Numbers listed in the table below Click here: 49660XCHMN317WA
- Click on a Document Control Number from the table below to get the Form R Detailed Report.

(Attachment #28)

DOCUMENT CONTROL NUMBER	CHEMICAL NAME
1392065091389	ACRYLAMIDE
1392065091391	FORMALDEHYDE
1392065091403	HYDROCHLORIC ACID (1995 AND AFTER "ACID AEROSOLS" ONLY)
1392065091415	PHOSPHORIC ACID
1392065091427	SULFURIC ACID (1994 AND AFTER "ACID AEROSOLS" ONLY)

Total Number of DCN's retrieved for the Reporting Year 1992 is 5

List of Document Control Numbers in ENVIROFACTS for the TRI Reporting Year: 1991

- To obtain a Form R Detailed Report for all the Document Control Numbers listed in the table below Click here: 49660XCHMN317WA
- Click on a Document Control Number from the table below to get the Form R Detailed Report.

DOCUMENT CONTROL NUMBER	CHEMICAL NAME
1391055441152	SULFURIC ACID (1994 AND AFTER "ACID AEROSOLS" ONLY)
1391055441164	PHOSPHORIC ACID
1391055441176	HYDROCHLORIC ACID (1995 AND AFTER "ACID AEROSOLS" ONLY)
1391055441188	FORMALDEHYDE
1391055441190	ACRYLAMIDE

Total Number of DCN's retrieved for the Reporting Year 1991 is 5

List of Document Control Numbers in ENVIROFACTS for the TRI Reporting Year: 1990

- To obtain a Form R Detailed Report for all the Document Control Numbers listed in the table below Click here: 49660XCHMN317WA
- Click on a Document Control Number from the table below to get the Form R Detailed Report.

DOCUMENT CONTROL NUMBER	CHEMICAL NAME
1390045040704	ACRYLAMIDE
1390045040716	FORMALDEHYDE
1390045040728	PHOSPHORIC ACID
1390045040730	HYDROCHLORIC ACID (1995 AND AFTER "ACID AEROSOLS" ONLY)

Total Number of DCN's retrieved for the Reporting Year 1990 is 4

List of Document Control Numbers in ENVIROFACTS for the TRI Reporting Year: 1989

- To obtain a Form R Detailed Report for all the Document Control Numbers listed in the table below Click here: 49660XCHMN317WA
- Click on a Document Control Number from the table below to get the Form R Detailed Report.

DOCUMENT CONTROL NUMBER	CHEMICAL NAME
1389035251851	FORMALDEHYDE
1389035251863	HYDROCHLORIC ACID (1995 AND AFTER "ACID AEROSOLS" ONLY)
1389035251875	ACRYLAMIDE
1389035251887	PHOSPHORIC ACID

Total Number of DCN's retrieved for the Reporting Year 1989 is 4

List of Document Control Numbers in ENVIROFACTS for the TRI Reporting Year: 1988

- To obtain a Form R Detailed Report for all the Document Control Numbers listed in the table below Click here: 49660XCHMN317WA
- Click on a Document Control Number from the table below to get the Form R Detailed Report.

DOCUMENT CONTROL NUMBER	CHEMICAL NAME
1388025832748	FORMALDEHYDE
1388025832751	ACRYLAMIDE
1388025832763	HYDROCHLORIC ACID (1995 AND AFTER "ACID AEROSOLS" ONLY)
1388025832775	PHOSPHORIC ACID
1388025832787	SODIUM HYDROXIDE (SOLUTION)

Total Number of DCN's retrieved for the Reporting Year 1988 is 5

List of Document Control Numbers in ENVIROFACTS for the TRI Reporting Year: 1987

- To obtain a Form R Detailed Report for all the Document Control Numbers listed in the table below Click here: 49660XCHMN317WA
- Click on a Document Control Number from the table below to get the Form R Detailed Report.

DOCUMENT CONTROL NUMBER	CHEMICAL NAME
1387010665925	FORMALDEHYDE
1387010665937	ACRYLAMIDE

Total Number of DCN's retrieved for the Reporting Year 1987 is 2

(Attachment #28)

WHAT ELSE DOES MANISTEE GET?

IN THEIR APPLICATION TO THE DEQ FOR AIR QUALITY PERMIT, THE TONDU CORPORATION STATES THEIR PROPOSED POWER PLANT WILL EMIT THE FOLLOWING HAZARDOUS AIR POLLUTANTS INCLUDING THOSE KNOWN OR EXPECTED TO BE CARCINOGENS.

"Antimony, Arsenic, Beryllium, Cadmium, Chromium, Cobalt, Lead, Manganese, Mercury, Nickel and Selenium. The specific Vaporous forms of Hazardous Air Pollutants included: biphenyl, naphthalene, acetaldehyde, acetophenone, acrolein, benzene, benzyl chloride, bis(2-ethylhexyl)phthalate, bromoform, carbon disulfide, 1-chloracetophenone, chlorobenzene, chloroform, cumene, cyanide, 2,4 dinitrotoluene, dimethyl sulfate, ethylbenzene, ethylchloride, ethylene dichloride, ethylene dibromide, formaldehyde, hexane, isophorone, methyl bromide, methyl chloride, methyl ethyl ketone, methyl hydraxine, methyl methacrylate, methyl tert trichloroethane, butyl ether, methylene chloride, phenol, propionaldehyde, tetrachlorethylene, toluene, 1, 1, 1-trichlorethane, styrene, xylenes and vinyl acetate."

From application to DEQ dated September 10, 2003

WITH Power Point ON Chesshire, Ohio

The New York Times
nytimes.com

PRINTER-FRIENDLY FORMAT SPONSORED BY IN AMERICA NEW FOUNDATION SELECT THEATRES

February 8, 2004

Something in the Air

By ADAM GOODHEART

The town, in the end, proved as insubstantial as smoke. More so, really: the houses, the Methodist church and the playground seemed to drift away into the colorless Midwestern sky, while the twin columns of roiling vapor remained, sometimes gray, sometimes yellow, sometimes tinged with venomous blue.

It was the blue that doomed Cheshire, Ohio. That was the signature tint of sulfur trioxide and sulfuric acid, emissions from the massive coal-burning power plant whose smokestacks and cooling towers loomed over the town. On days when the smoke was blue, locals complained of sore throats, burning eyes and strange blisters. Sometimes the smog was so thick that cars drove through the streets at noon with their headlights on.

As for the rest of the story, it's easy to imagine how Hollywood would script it. One or two plucky souls stand up at a town meeting and vow to fight. The plant's owner, a ruthless multibillion-dollar corporation, strikes back with everything its high-priced attorneys can devise, or worse. Someone has to die. And finally, good (or just possibly evil) prevails.

But that's not what happened. Instead, it was something quite undramatic, or at least uncinematic: in a series of town meetings in the spring of 2002, lawyers presented an offer from American Electric Power to buy all of Cheshire for $20 million. The 200-odd residents would have to move, their houses would be razed and their community would cease to exist -- and in exchange they would each receive about three times the assessed value of their property. Though a few dissenters stood up and said they would rather fight than leave, they couldn't sway their neighbors. Nothing rallied the townspeople to resist, to tap the stubborn courage of the American heartland, to show the company that their hometown couldn't be bought. They deliberated for a short while and told American Electric Power that, yes, they would accept the offer. They would waive their right to sue. They would take the money, and they would lose Cheshire.

Today, less than two years later, nearly all the town's residents have left. First the moving vans came, and residents loaded them up with their belongings as well as anything desirable they could pry loose from the vacated houses: doors, windows, even floorboards and plumbing. Then American Electric Power's bulldozers and track hoes followed, tearing down homes and buildings; 18-wheeler trucks hauled the debris away, and the empty lots were smoothed over and seeded, left as if nothing had ever been there at all. Most of the remaining structures await the same fate. Fewer than two dozen people, most of them elderly, have stayed on; the power company has bought nearly all their homes and is allowing them to live there until they move out or die.

The photographer Mitch Epstein, whose work has often documented the inner lives of ordinary places, spent two weeks in Cheshire. He found it unlike anywhere he had been before, a town whose sadness and squalor were interrupted by odd flashes of beauty. "There were days when the sun would pass

behind the emissions plume at midday and spread a warm golden light over this broken landscape," he says. "It was like something out of a biblical painting."

No one made much of a fuss over Cheshire during the first two centuries of its existence. Even the famously thorough writers of the Works Projects Administration failed to find anything there worth noting when they traveled through the region in the 1930's. But ever since its imminent demise was announced, outsiders have found something disturbing in the town's fate -- the antithesis of a classic American fable, a small-town drama without heroes or villains, a story without a satisfactory ending.

It's hard not to paint a sentimental picture of Cheshire as it was before the power plant was built in the 1970's: a hamlet where children played ball in the streets and parents left the back doors unlocked. It's hard not to mourn the loss of this Frank Capra-esque town as a stand-in for all the others that have died more ordinary deaths; we know that close-knit Midwestern villages aren't the true American heartland any more.

But perhaps even more, to mourn for Cheshire is to mourn the loss of a Capra-esque myth: the idea of a square-shouldered native obstinacy in the face of corporate bullying. We all say we want to live in Bedford Falls, but when the chips are down, we'd really rather take the cash and buy a McMansion in Pottersville.

And so we look at the former citizens of Cheshire not just with pity but also with annoyance or even scorn -- feelings made all the sharper because we suspect that if we were in their shoes, we'd have done the same thing. The villagers' abject surrender was simply a larger-scale version of a thousand little capitulations and humiliations in all of our lives today, from employers' mandatory drug tests to numbing odysseys through automated toll-free help departments.

In truth, though, the vanishing of a town, bulldozed by the forces of history, is a story as old as the country itself. More than 80 years ago, the greatest novel ever written about the American Midwest began with a reminder of just such impermanence: "On a hill by the Mississippi where Chippewas camped two generations ago, a girl stood in relief against the cornflower blue of Northern sky. She saw no Indians now; she saw flour-mills and the blinking windows of skyscrapers in Minneapolis and St. Paul."

When Sinclair Lewis published "Main Street" in 1920, there were living, thriving settlements that are now no more than a few churned bricks and rusty nails somewhere out on the prairie. Those towns gave way to forces larger than themselves, just as Cheshire has. Where Cheshire now -- barely -- stands by the banks of the Ohio River, the Shawnees once camped. Later, in the 1790's, the area was settled by a colony of French emigres who were quickly defeated by the wilderness, leaving little trace behind except a fancy Latin name for the county, Gallia. Anglo farmers followed, and Germans, and then Slavic coal miners.

Now the smoke is all that seems permanent. It streams above the town and the river, above the moving vans and bulldozers, dissipating noiselessly in the upper air.

Mitch Epstein is a photographer based in New York. His most recent book is "Family Business." Adam Goodheart is a fellow at the C.V. Starr Center for the Study of the American Experience at Washington College in Chestertown, Md.

Copyright 2004 The New York Times Company | Home | Privacy Policy | Search | Corrections | Help | Back to Top

(Attachment #28)

February 19, 2004

To: Manistee City Planning Commission
Re: Special Use Permit for Coal-Fueled Plant Advanced by Tondu Corp of Houston, TX

My wife and I are opposed to the coal-fueled power plant being advanced by the Tondu Corporation of Houston, Texas. The Special Use Permit Standards for Manistee state, among other requirements, that the proposed use must be "reasonable and designed to protect the health, safety and welfare of the community." There are many issues I could raise under that requirement alone, but for tonight I would like to concentrate on the topic of "welfare." My version of Webster's dictionary defines "welfare" as "the state of doing well, especially in respect to good fortune, happiness, well-being, or prosperity." Therefore, Manistee's own Special Use Standards require a consideration of all of the economic impacts to the community as a whole – and that means giving serious weight to all of the negative economic impacts to this community.

In the City Council meeting this week, during a discussion of why Manistee hasn't had any new occupants of the Renaissance Zone, the City Manager stated that one of the big problems was that there are now so many Renaissance Zones in the state that it was hard to compete. He stated one primary advantage toward attracting companies to locate here – "quality of life issues." The dominance of a huge, polluting coal-fueled power plant in this city will hardly bolster the "quality of life issues" in this community. How many opportunities for new businesses, new jobs, and growth will be lost versus the handful being proposed by the power plant? The exact answer isn't known, since there has been no serious economic impact study, but we feel that the lost opportunities will far outweigh the gains.

A second major negative economic impact that will affect everyone in this community will be the drop in property values. Just within our friends and acquaintances, we have personally heard about a dozen members of this community say that they will move, or at least seriously re-evaluate whether they want to remain here, or not move here in the first place, if that plant gets built. Not only will this exodus lower property values, but the community will lose all of the disposable incomes that these people bring to Manistee -- even the retirees who are so often left out of the discussion of economic impacts.

These are just a few of the many negative economic impacts that could be discussed, but in the interest of time I will stop there. The issues raised above are more evidence that the Special Use Permit Standards of Manistee are not fulfilled, and we request that you deny the application.

William R. Kracht
403 First Street
Manistee, MI 49660

Mary L. Kracht
403 First Street
Manistee, MI 49660

(Attachment #30)

My name is Nancy Behring. I live at 3695 Lakeshore Drive, Manistee. That has been our principle residence for 11 years. I have been s substitute teacher in this area and have taught first grade here. We have 4 children and 5 grandchildren who love this area as well.

I am opposed to this coal-fueled energy plant being built because, among other things, I feel it does not protect the health, safety, and welfare of the people of Manistee.

First, I am submitting to you a statement from the National Wildlife Federation, a national conservation organization with over 4 million members and supporters around the country. This is from Nisha Kapadia, who couldn't return tonight to give this to you. I am quoting the highlights of this statement:

"Mercury contamination of the environment is a persistent problem that is drawing increasing attention from scientists, policy makers and the general public. Based on the most recent data from the Centers for Disease Control and Prevention, the US EPA recently estimated that up to 630,000 newborns a year in the US are at risk for neurodevelopmental problems due to mercury exposure they receive in the womb. This is double earlier estimates. With 1 in 6 women of childbearing age with blood mercury levels exceeding what EPA considers safe for fetuses, about 20,000 babies are born at risk every year in Michigan.

Mercury poisoning can permanently harm an unborn baby or young child. Mercury in pregnant women can disrupt brain development with harmful, possibly permanent health effect, including delays in walking, talking and developing fine motor skills, attention deficits, poor memory, an inability to process and recall information. Very high exposures to mercury can cause mental retardation.

Michigan already has a statewide mercury advisory in place, which recommends that both the general population and women of childbearing age and young children limit their consumption of 7 species of fish from all inland lakes. This includes any size largemouth and smallmouth bass, walleye, and northern pike, because of mercury contamination.

Coal-fired power plants account for 60% of the mercury emissions in Michigan.

This application comes at a time of increased activities at state, regional, and national levels to address mercury emissions from coal-fired power plants. A DEQ workgroup is developing recommendations to Governor Granholm on how to significantly reduce and ultimately phase out mercury emissions from Michigan's coal-fired utilities. A decision to build a new coal plant is not consistent with a longer-term goal of reducing and eliminating mercury emissions in the state.

The National Wildlife Federation believes that Michigan utilities should be taking steps now to move us to a cleaner energy future, and we encourage the Planning Commission to consider these important issues in making your decision."

Now to another area of personal concern that I haven't heard addressed: how the 13-18 large coal ships coming through the channel each month--roughly one every 38 hours--would affect the traffic flow in Manistee in regard to emergency services--fire and ambulance--because as we all realize, the hospital and fire department are on opposite sides of the bridges.

The ships will come through when they want and there is nothing the city can do to change that schedule, as the ships being under power and navigating a tributary connected to the Great Lakes have the right of passage. This is not only a long-standing navigation rule, it is enforced by the US Coast Guard. So trying to regulate when they can pass is not an option.

It won't matter if children are in a school bus on their way to school, you are on your way to work, your mother is having a heart attack, or your house is on fire. You are not going to be able to get to the other side of town--and the services are not going to get to you.

It is also not an option to leave one bridge down while the other is up. Vessels of this size (1250 feet) and with this much weight on board can't stop on a dime. Even at only a few knots per hour, it takes many times the ship's length to stop. If we did try to leave one bridge down, the boat was unable to stop, and the second bridge couldn't open before the ship got there (due to electrical, mechanical, or hydraulic problems or simply traffic on the bridge) the ship would almost certainly strike the bridge superstructure, taking it out. Not a very appealing scenario, especially as it would then

mean the shipping channel would be blocked and the bridge would be out of service until it could be replaced.

Can you imagine the chaos of only one bridge north and south--either on Maple St. or--worse--having the 31 bridge out?

Children trust us as adults to take care of them, to do what's right, to keep them healthy and safe. In much the same way, the adults of this community are trusting that you, as our representatives on the Planning Commission, will do what's right to keep us healthy and safe.

When you come to answer the question, "Is the proposed use of this land designed to protect the health, safety, and welfare of the community," the only answer can be "no." Thank you.

(Attachment #30)

as non-detect and concentrations less than the QL were reported as one-half the QL. The non-detect values were treated as zeroes in the calculations of means.

Of the 93 samples analyzed, 29 were from breeding areas in the 1999 basin year watersheds. Regionally, the analyzed samples were from 25 inland upper peninsula, 32 inland lower peninsula, 11 Lake Superior, 15 Lake Michigan, 1 Lake Erie, and 9 Lake Huron breeding areas.

4.31 DDT and Metabolites

Concentrations of 2,4'- and 4,4'-DDT and their metabolites, 2,4'- and 4,4'-DDE and 2,4'- and 4,4'-DDD, were measured in nestling bald eagle blood samples (Table 8). The most ubiquitous compound was 4,4'-DDE which was quantified in 80 (86%) of the samples. Statewide, concentrations of 4,4'-DDE ranged from < 0.61 – 198 ng/g. 2,4'-DDE and 4,4'-DDD were quantified in only 3 (3%) and 11 (12%) samples, respectively. Concentrations of 2,4'-DDE ranged from < 0.86 – 4.3 ng/g and concentrations of 4,4'-DDD ranged from < 1.18 - 9.5 ng/g. Neither 2,4'-DDD, 2,4'-DDT, nor 4,4'-DDT were measured in any sample.

Total DDT concentrations were calculated as the sum of 2,4'- and 4,4'-DDT, DDE, and DDD. Of the metabolites, 4,4'-DDE contributes the most to the Total DDT concentrations (Table 8). Statistically significant differences ($p<0.001$) in Total DDT concentrations were found between inland, Great Lakes, and anadromous breeding areas and also between inland lower and upper peninsulas, Lake Huron, Lake Michigan, Lake Erie, and Lake Superior breeding areas ($p<0.001$). Mean Total DDT concentrations were greatest in breeding areas associated with the Great Lakes. Mean Total DDT concentrations were ranked in the following order by location from highest to lowest: Great Lakes > anadromous > inland breeding areas and Lake Michigan > Lake Superior > Lake Huron > Lake Erie > inland upper peninsula > inland lower peninsula (Table 9, Figure 10).

At individual breeding areas, the greatest Total DDT concentration (203 ng/g) was measured in a nestling from Lake Superior's Huron Islands East breeding area (MQ-12) (Table 8, Figure 11). Only one other breeding area, Lake Michigan's Deer Count Creek in Schoolcraft County, had Total DDT concentrations greater than 100 ng/g. Of the anadromous breeding areas, the nestling at Horseshoe Bend in Manistee County (MN-02) had the greatest Total DDT concentration (52.6 ng/g). The greatest Total DDT concentration in inland breeding areas was found at the 10 Mile Creek breeding area in Menominee County (MM-15). The nestling sampled there had a Total DDT concentration of 91.7 ng/g, a concentration 5x greater than the next highest concentration measured in a nestling from Bradford Lake in Ontonagon County (OT-06), (Table 8, Figure 11).

In addition to the data available through this monitoring effort, other samples were collected in Michigan and VNP in Minnesota for concurrent studies. The 4,4'-DDE results for these samples were combined and compared to samples collected under the same protocol during the period of 1987-1992 (Bowerman et al. 1993). These comparisons (Figure 12) show that 4,4'-DDE concentrations measured in 1999 generally are less than those measured in 1987-1992. The notable exception to this trend is seen in Lake Michigan 4,4'-DDE concentrations. In 1987-1999 the geometric mean concentration was 35 ng/g, but in 1999 the geometric mean concentration was 42 ng/g. The maximum concentration measured in 1999 (128 ng/g), however, was approximately half that measured in 1987-1992 (235 ng/g). Similar declines in maximum 4,4'-DDE concentrations were observed at the other locations (Table 10).

4.32 PCBs

Twenty PCB congeners were quantified and summed to determine Total PCBs in nestling bald eagle plasma samples (Table 11). Of the 20 congeners, 4 congeners (118, 138, 153, and 180) were significant contributors to Total PCB concentrations (Figure 13). Congeners 138 and 153 accounted for over 46% of the Total PCB concentrations. Congeners 118 and 180 each accounted for 10%-11% of the Total PCB concentrations. Congeners 187 and 66 contributed 6.5% and 4.9%, respectively, to the Total PCB concentration. The 6 congeners discussed above contributed over 80% of the Total PCBs measured in the blood of the nestling bald eagles.

The relative percent contribution of congeners 138 and 153 to the Total PCB concentration was greater for inland breeding areas than either Great Lakes or anadromous breeding areas (Figure 14). They were, however, a significant percentage of the Total PCB concentration in every sample with detectable PCBs. In general, the relative contribution of PCB congeners follows an expected pattern. Congener patterns in Great Lakes and anadromous samples are more complete with a greater presence of both the lower chlorinated PCB congeners and the heavier congeners (i.e., 206 and 209). This reflects environmental mixing and weathering of the PCB mixture in these large receptor or sink waterbodies. The PCB congener pattern in inland breeding areas is less diverse, and the lower chlorinated PCB congeners are both less frequent and represent a lesser relative contribution. In many samples the lightest congener in the mixture is either PCB 138 or 153.

Statewide Total PCB concentrations ranged from non-detect to 369 ng/g (Table 11). At least one of the targeted PCB congeners was detected in 63 (67.7%) of the 93 nestlings sampled. The 30 nestlings in which no PCB congeners were detected were found in inland breeding areas. PCB congeners were detected in all nestlings in both Great Lakes and anadromous breeding areas (Table 12). Total PCB concentrations are statistically significantly different among the inland, Great Lakes, and anadromous breeding areas ($p < 0.001$), and among the inland lower peninsula, inland upper peninsula, Lake Huron, Lake Michigan, Lake Erie, and Lake Superior regions ($p < 0.001$).

Concentrations of Total PCBs were greatest in nestlings associated with Great Lakes breeding areas (Figure 15). The mean Total PCB concentration in all Great Lakes nestlings (94.8 ng/g) was more than 2x greater than concentrations in anadromous breeding areas (mean = 43.7 ng/g) (Table 12). Further, Total PCBs in Great Lakes' nestlings were 12.5x greater, and in anadromous nestlings were nearly 6x greater, than concentrations in inland nestlings (7.6 ng/g) (Table 12).

Greater differences were noted when the inland lower peninsula, inland upper peninsula, Lake Huron, Lake Michigan, Lake Erie, and Lake Superior locations were compared. Mean Total PCB concentrations differed by a factor of 57 between inland and Great Lakes breeding areas. The lowest mean Total PCB concentrations were measured in nestlings of inland lower and upper peninsula breeding areas. In these locations, nestlings had accumulated, on average, 3.8 and 12.5 ng/g Total PCBs, respectively. The greatest mean Total PCB concentration was measured in the Lake Erie basin (215.1 ng/g). However, only one Lake Erie nestling was sampled (Table 12). The Total PCB concentration in the Lake Erie nestling was greater than mean concentrations in Lake Michigan, Lake Superior, and Lake Huron nestlings by a factor of 1.9, 4.0, and 5.8, respectively.

(Attachment #53)

The greatest concentration of Total PCBs (369 ng/g) was found in a Lake Superior nestling in Marquette County (MQ-12) (Table 11, Figure 14). This breeding area, known as Huron Islands East, also had the greatest concentrations of dieldrin and Total DDT. The plasma sample was 1.20% lipid which was second only to the inland upper peninsula nestling in breeding area AG-10, Nawakwa Lake, which had a plasma lipid content of 1.21%. However, total PCBs were not detected in the AG-10 nestling. Therefore, plasma lipid content does not solely explain the high Total PCB content in MQ-12. Other nestlings in Marquette County had Total PCB concentrations ranging from non-detect to 54 ng/g. Nestlings associated with Lake Superior had Total PCB concentrations ranging from 3.1 – 105 ng/g. Therefore, the concentration of Total PCBs in MQ-12 was approximately 7x greater than Total PCB concentrations in any other Marquette County nestling, and 3.5x greater than Total PCB concentrations in any other Lake Superior nestling. There are no known point sources of PCBs in this area, either current or historical.

Two Lake Michigan nestlings from Schoolcraft County in the upper peninsula also had high concentrations of Total PCBs. These nestlings were both from the Deer Count Creek breeding area (SC-19). Total PCB concentrations were 223.6 and 297.4 ng/g. Again, no local source of PCBs is known. Two Lake Michigan nestlings near the Escanaba River also had relatively high concentrations of Total PCBs. Ranked 6th and 8th, Total PCBs were quantified at 182.2 and 113.9 ng/g, respectively. Similar to MQ-12, these Schoolcraft and Delta County nestlings also had high concentrations of dieldrin and Total DDT compounds.

The highest concentration of Total PCBs in the lower peninsula (215.1 ng/g) was found at a Lake Erie breeding area, MO-03 near the Raisin River at Monroe. With a concentration only slightly less, 1 nestling at Lake Michigan's Walloon Lake breeding area (ET-05) had 206.4 ng/g Total PCBs. The other 2 nestlings from the ET-05 breeding area had 85.5 and 135.6 ng/g Total PCBs.

The Saginaw and Kalamazoo Rivers are both sites of Natural Resources Damage Assessment actions for PCB contamination. Remedial actions are in progress on the Saginaw River, and settlement negotiations continue on the Kalamazoo River. Despite the known sources of contamination, nestlings in the Saginaw River system had moderate Total PCB concentrations (Figure 17). The two breeding areas, Skull/Stoney Island (BY-01, 86.0 ng/g), and Shiawassee National Wildlife Refuge (SG-02, 36.3 ng/g) are located upstream of the sources of contamination from Bay City and sufficiently downstream of Saginaw as to not be subject to the highest areas of local contamination. Further, these breeding areas are identified as anadromous and the prey base will include Saginaw Bay fishes as they pass up through the Saginaw River. The greatest Total PCB concentrations for anadromous rivers were found in the Kalamazoo River system. The one successful breeding area in the Kalamazoo River area was associated with Swan Creek/Highlands in Allegan County (AN-02). The 2 nestlings sampled there had Total PCB concentrations of 63.0 and 96.9 ng/g.

Data for samples collected in Minnesota's VNP were combined with data from the Michigan samples and compared to samples collected under the same protocol during the period of 1987-1992 (Bowerman et al. 1993). These comparisons (Figure 16) show that Total PCB concentrations measured in 1999 were generally less than those measured in 1987-1992. The exception to this trend was seen in Total PCB concentrations in the Lake Erie basin. In 1987-1992 the geometric mean Total PCB concentration was 199 ng/g, but in 1999, the one Lake Erie nestling sampled, had a Total PCB concentration of 215 ng/g. This increase may not be statistically significant and having only one data point limits any conclusions. The maximum concentration for the Lake Erie nestlings, however, was nearly 84% less in 1999

(maximum = 215 ng/g) than in 1987-1992 (maximum = 1325 ng/g) (Table 13). Similar declines in maximum concentrations were observed for every location except the inland upper peninsula breeding areas where a 6%-23% increase in maximum concentrations was observed. The frequency with which PCBs are detected in nestling bald eagle plasma samples has declined in four of the seven subpopulations (Table 13). In Michigan, PCBs were detected in approximately 95% of inland lower and upper peninsula breeding areas sampled from 1987-1992. In 1999, however, the frequency of detection was 41% for inland lower peninsula breeding areas and 24% for inland upper peninsula breeding areas. The frequency of detection was 100% or nearly so during both sampling periods for all of the Great Lakes and anadromous breeding areas (Table 13).

Nestling plasma samples were collected from 31 watersheds as delineated by the USGS HUC code. Total PCB concentrations, averaged for each watershed, ranged from non-detect to 260.5 ng/g (Table 14). Mean Total PCB concentrations were < 100 ng/g in 81% of the watersheds. Fourteen watersheds had < 10 ng/g Total PCBs, and 6 watersheds had Total PCBs > 100 ng/g. Of those, two watersheds, the Fishdam-Sturgeon and Raisin, had concentrations > 200 ng/g. Mean Total PCB concentrations do not follow a clear spatial pattern (Figure 17). Six of the highest concentrations were measured in non-adjacent watersheds in the upper peninsula. The second highest concentration was measured in the Raisin River watershed of extreme southeastern Michigan. Watersheds with the lowest Total PCB concentrations (i.e., < 2 ng/g) were found in the northern lower peninsula and western upper peninsula. Insufficient sample sizes were available for a rigorous statistical analysis of Total PCB concentrations by watershed, but an initial test for equality of median Total PCB concentration indicated statistical differences exist among the watersheds ($p = 0.001$).

4.33 Other Organics

In most samples, concentrations of hexachlorobenzene, *alpha*-hexachlorocyclohexane (*alpha*-HCH), *gamma*-HCH (lindane), heptachlor and heptachlor epoxide, *gamma*-chlordane (*gamma*-chlordane) and toxaphene were not quantifiable. The analytical results for hexachlorobenzene, *alpha*-hexachlorocyclohexane (HCH), *gamma*-HCH, heptachlor, heptachlor epoxide, *alpha*-chlordane, *gamma*-chlordane, dieldrin and toxaphene are shown in Table 15.
Hexachlorobenzene was not quantified in any sample, but was detected in four samples from Great Lakes' breeding areas and one sample from an inland breeding area. Four parameters, namely *alpha*-HCH, *gamma*-HCH, heptachlor and chlordane, were not detected in any sample. Heptachlor epoxide was quantified in one sample collected from the Huron Islands East in Marquette County (MQ-12), and was detected in 17 other samples associated largely with Great Lakes breeding areas. Toxaphene was not quantified in any sample, but was detected in three samples associated with Lake Michigan breeding areas, and one sample associated each with Lake Superior and Lake Erie breeding areas. The QL for toxaphene is too high at 125 ng/g to characterize this contaminant in nestling bald eagle plasma samples.

Quantifiable concentrations of *alpha*-chlordane and dieldrin were more common. Quantifiable concentrations of *alpha*-chlordane, ranging from < 2.01 – 8.4 ng/g, were measured in 15 blood samples (16%) and detectable concentrations were measured in an additional 18 samples (19%) (Table 15). The greatest concentration of *alpha*-chlordane was measured in a nestling from the Walloon Lake breeding area in Emmet County (ET-05). Mean concentrations of *alpha*-chlordane were greatest in Great Lakes breeding areas (mean = 2.26 ng/g) and least in inland breeding areas (mean = 0.19 ng/g) (Figure 18). Intermediate concentrations (mean = 1.18 ng/g) were measured in nests associated with anadromous rivers. Of the Great Lakes associated breeding areas, concentrations of *alpha*-chlordane were ranked in the following order by

(Attachment #53)

SECTION 6.0

ACKNOWLEDGMENTS

Special thanks and appreciation are extended to the following people for their assistance in conducting this study and/or completing this report: Melanie Audet, Dave Best, Teryl Grubb, Fran Harper, Jack Holt, Rachel Mitchell, Denise Page, Joe Papp, Sergej Postupalsky, Brad Richardson, Amy Roe, Dr. James Sikarskie, Carrie Tansy, Gensie Waldrop, Jennifer Wing, and John Wuycheck.

(Attachment #53)

SECTION 7.0

REFERENCES

Bortolotti, G.R. 1984a. Physical development of nestling bald eagles with emphasis on the timing of growth events. Wilson Bulletin 96:524-542.

Bortolotti, G.R. 1984b. Sexual size dimorphism and age-related variation in bald eagles. J. Wildl. Manage. 48:72-81.

Bortolotti, G.R. 1984c. Criteria for determining age and sex of nestling bald eagles. J. Field Ornithol. 55:467-481.

Bowerman, W.W. 1993. Regulation of Bald Eagle (*Haliaeetus leucocephalus*) Productivity in the Great Lakes Basin: An Ecological and Toxicological Approach. PhD thesis. Michigan State University, East Lansing, MI, USA.

Bowerman, W.W., E.D. Evans, J.P. Giesy, and S. Postulpalsky. 1994. Using feathers to assess risk of Hg and selenium to bald eagle reproduction in the Great Lakes region. Arch. Environ. Contam. Toxicol. 27:294-298.

Bowerman, W.W. 1995. SOP. Field Techniques: Bald Eagle Handling, Measuring, Blood, and Feather Collection. SOP No. EEI-BAEA-01. 6 pp.

CIET and Department of Environmental Toxicology (ENTOX). 1996. Quality Assurance Manual. Version Final 1.1. Clemson University, QA Manager, CIET, P.O. Box 709, Pendleton, SC 29670.

CIET. 1999. Quality Assurance Project Plan for CIET Project No. 9903: Bald Eagle Biosentinel Monitoring of Inland Watersheds, Connecting Channels, and Great Lakes Shorelines for Trends and Effects of Bioaccumulative Chemicals of Concern. October 21, 1999. 19 pp.

Day, R. 2000. Michigan Fish Contaminant Monitoring Program. 2000 Annual Report. Surface Water Quality Division. Michigan Department of Environmental Quality Staff Report MI/DEQ/SWQ-00/122.

Grier, J.W., J.B. Elder, F.J. Gramlich, N.F. Green, J.B. Kussman, J.E Mathisen, and J.P. Mattsson. 1983. Northern States Bald Eagle Recovery Plan. USFWS, Washington, DC. 105 pp.

Henny, C.J. and D.L. Meeker. 1981. An evaluation of blood plasma for monitoring DDE in birds of prey. Environ. Pollut. (Series A) 25:291-304.

Henny, C.J., C.R. Griffin, D.W. Stahlecker, A.R. Harmata, and E. Cromartie. 1981. Low DDT residues in plasma of bald eagles (*Haliaeetus leucocephalus*) wintering in Colorado and Missouri. Can. Field Naturalist 95:249-252.

MDEQ. 1997. A Strategic Environmental Quality Monitoring Program for Michigan's Surface Waters. Michigan Department of Environmental Quality. Staff Report MI/DEQ/SWQ-96/152. January 1997.

location from highest to lowest: Lake Erie > Lake Michigan > Lake Huron > Lake Superior (Figure 18). Kruskal-Wallace statistical tests of median concentrations indicate significant differences ($p<0.001$) exist between Great Lakes, inland, and anadromous breeding areas and also between inland lower peninsula, inland upper peninsula, Lake Huron, Lake Michigan, Lake Erie, and Lake Superior breeding areas ($p<0.001$).

Similarly, quantifiable concentrations of dieldrin, ranging from < 2.01 – 15.8 ng/g, were measured in 14 blood samples (15%) and detectable concentrations were measured in an additional 11 samples (12%) (Table 15). The greatest concentration of dieldrin was measured in a Huron Islands East nestling near Marquette County (MQ-12). Like *alpha*-chlordane, concentrations of dieldrin were greatest in nestlings located in Great Lakes' breeding areas (mean = 3.4 ng/g) and least in inland breeding areas (mean = 0.1 ng/g). Mean concentrations of dieldrin in nestlings from anadromous river breeding areas were 0.7 ng/g. Of the four Great Lakes, concentrations of dieldrin were ranked in the following order by location from highest to lowest: Lake Superior > Lake Michigan > Lake Erie > Lake Huron (Figure 19). Kruskal-Wallace statistical tests of median concentrations indicate significant differences ($p<0.001$) exist between Great Lakes, inland, and anadromous breeding areas and also between inland lower peninsula, inland upper peninsula, Lake Huron, Lake Michigan, Lake Erie, and Lake Superior breeding areas ($p<0.001$).

SECTION 5.0

FUTURE STUDIES

Several potential areas of future study were identified following the first year of this monitoring study:

- Determine if the sample sizes are large enough to allow spatial and temporal trends to be assessed on a watershed basis.
- Determine No Observable Adverse Effect Levels in blood of bald eagle nestlings for organic compounds measured in this study.
- Analyze some of the blood samples for new and emerging chemicals of concern (i.e., polybrominated diphenyl ethers).
- Determine if it is possible to locate key sources of Hg contamination in bald eagles by modeling air releases.
- Conduct further investigations to determine the source of PCBs found in hotspots such as the Huron Islands breeding area.
- Examine contaminant data to assess the partitioning of contaminants between various media and biota.
- Analyze archived eagle samples to enhance our ability to assess trends.

(Attachment #53)

Morizot, D.C., R.G. Anthony, T.G. Grubb, S.W. Hoffman, M.E. Schmidt, and R.E. Ferrell. 1985. Clinical genetic variation at enzyme loci in bald eagles (Haliaeetus leucocephalus) from the western United States. Biochem. Genet. 23(3-4):337-345.

Ostaszewski, A. and W. Creal. 1998. Results of Sediment Sampling in Deer Lake Marquette County, July 1998. Surface Water Quality Division. Michigan Department of Environmental Quality. Staff Report MI/DEQ/SWQ-98/084.

Postupalsky, S. 1974. Raptor reproductive success: Some problems with methods, criteria, and terminology. In: Hamerstrom Jr., F.N., Harrell, B.E., Ohlendorff, R.R. (eds). Management of Raptors. Proceedings of Conference on Raptor Conservation Techniques, Raptor Research Report No. 2, pp. 21-31.

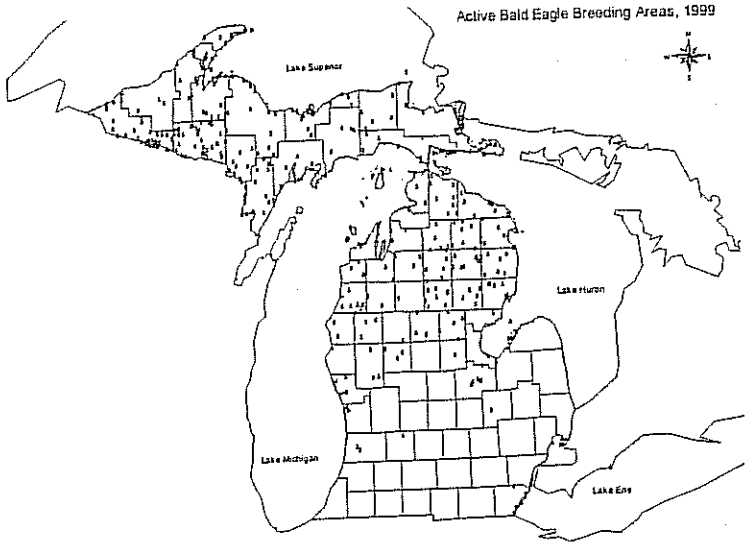


Figure 1. Active bald eagle breeding areas in Michigan in 1999.

(Attachment #53)

(Attachment #53)

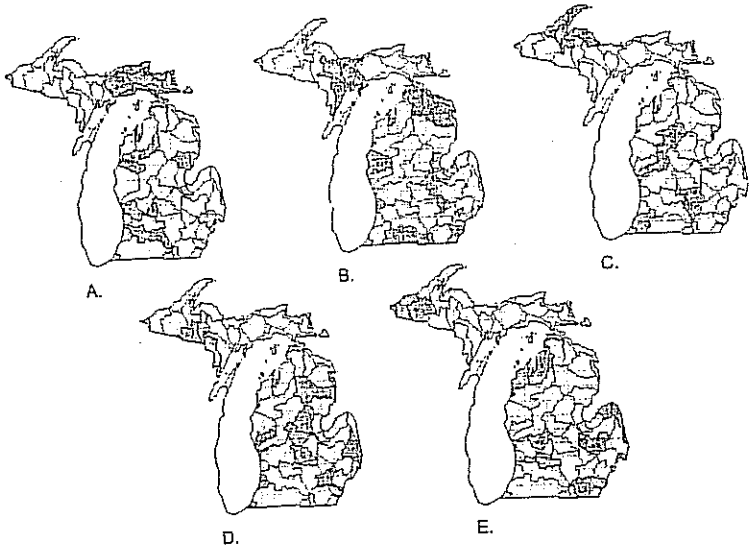


Figure 2. Michigan's watershed delineations and monitoring 'basin years'. A.) 1999 basin year watersheds (shaded), B.) 2000 basin year watersheds (shaded), C.) 2001 basin year watersheds (shaded), D.) 2002 basin year watersheds (shaded), and E.) 2003 basin year watersheds (shaded).

Figure 3. The 1999 basin-year watersheds.

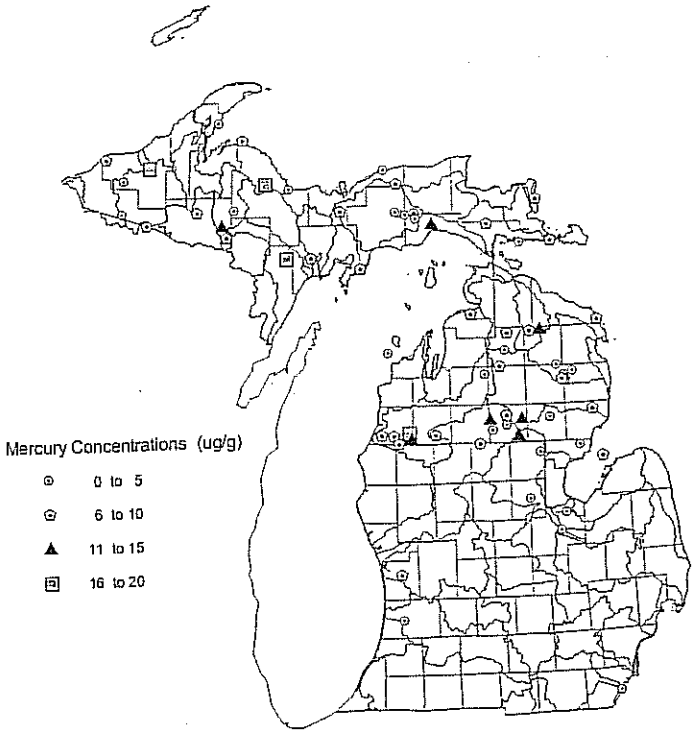


Figure 7. Mercury concentrations in nestling bald eagle feathers in Michigan, 1999.

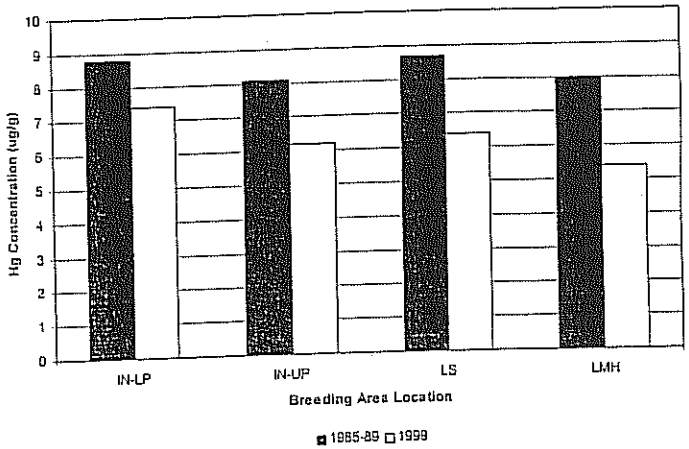


Figure 8. Mercury concentrations (geometric mean) in nestling bald eagle feathers collected in 1985-1989 (Bowerman et al., 1994) and in 1999 from Inland lower peninsula (IN-LP), inland upper peninsula (IN-UP), Lake Superior (LS), Lakes Michigan and Huron (LMH).

(Attachment #53)

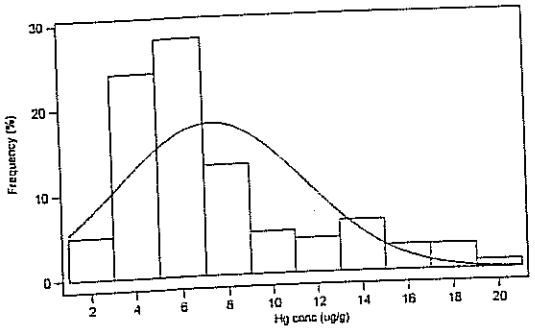


Figure 4. Frequency distribution of Hg concentrations in nestling bald eagle feathers in 1999.

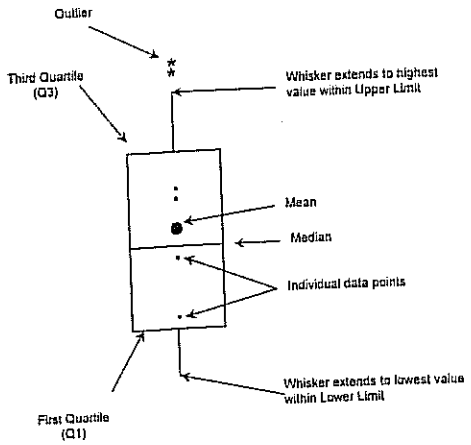


Figure 5. Elements of a boxplot.

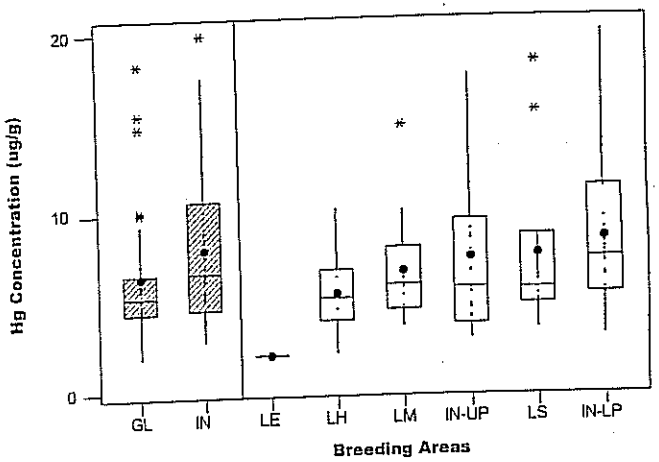


Figure 6. Hg concentrations in nestling bald eagle feathers within the Great Lakes and inland upper and lower peninsula breeding areas (1999). The shaded boxplots show Hg concentrations at the broadest organization of breeding area location – Great Lakes and inland. The clear boxplots show Hg concentrations in inland lower peninsula (IN-LP), inland upper peninsula (IN-UP), Lake Erie (LE), Lake Huron (LH), Lake Michigan (LM) and Lake Superior (LS) breeding areas.

(Attachment #53)

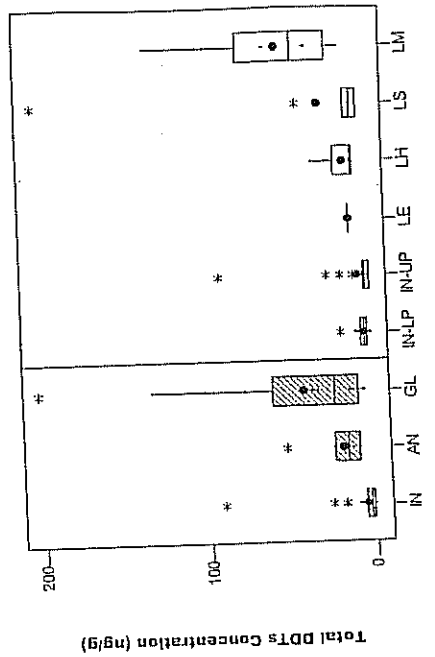


Figure 10. Concentrations of Total DDTs (sum of DDT, DDE and DDD compounds) in nestling bald eagle blood samples in 1999. The data are plotted from low-to-high mean Total DDTs concentration.

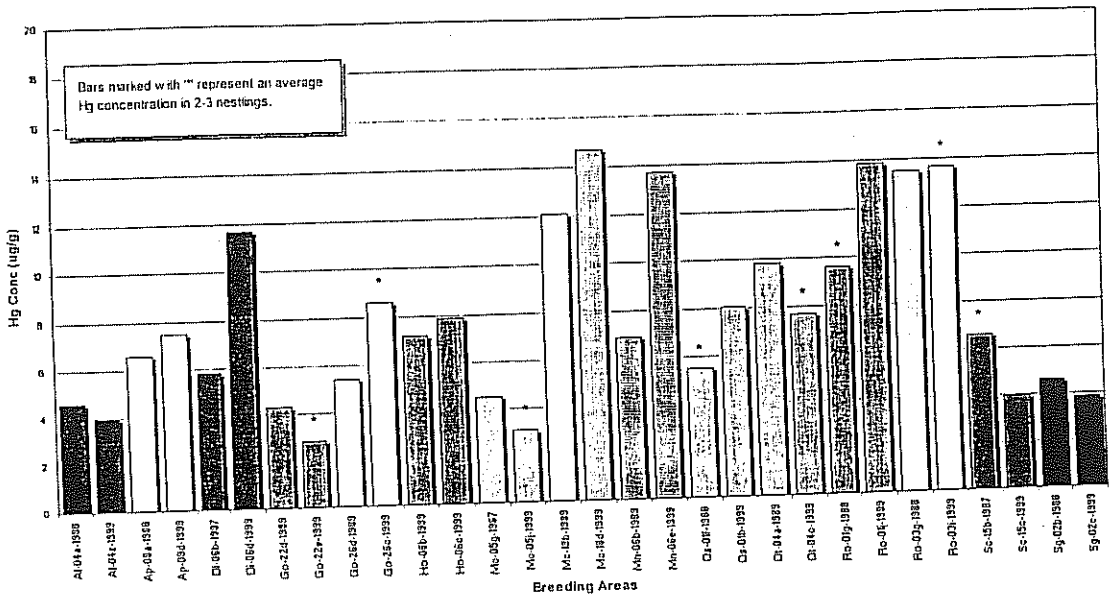


Figure 9. Mercury concentrations in nestling bald eagle feathers in the late 1980s (Bowerman et al. 1994) and in 1999. See Table 3 for more detailed information on the specific breeding areas shown above.

(Attachment #53)

(Attachment #54)

O'KEEFE'S REEF

comm. COPY

18811 Sand Lake Road
Dublin-Irons, Mi. 49644
231-859-4565 Ph.
231-859-4505 Fax.
okreef@kaltelnet.net
www.okeefesreef.com

2-26-04

Hello,

My name is Jim O'Keefe. I live in Dublin, Michigan / Manistee County. First and foremost I want to thank you the City of Manistee Planning Commissioners for letting me speak. I want to thank you for spending the countless hours that this very important public hearing has taken.

I have a couple of points I would like to make tonight and I have a written message from my brother in law and friend, Ted Nugent.

First Ted's message:

These are Ted's words: **And I quote;**

My fellow Michigan Winter, Water, Wonderland Americans, On behalf of the Nugent family and our Ted Nugent United Sportsmen of America family members, I implore the good people of Manistee and the beautiful NW coast of our Great Lakes State to remain vigilant in our moral obligation as stewards of our precious renewable resources, and "we the people" duty to the good mother earth as hands-on conservationists in this sacred land of Michigan. Our very quality of life must always be balanced between financial considerations and intelligent demand for quality of air, soil and water, which of course determines our overall quality of life. The two need not be exclusive. However, ***The evidence is clear as to the outcome of such coal operations, and it is equally clear what would happen to the primary attraction to this special outdoor lifestyle area.*** I stand with those who would safeguard these gifts and pray we do not throw it all away in the name of ***short term "progress"***.

Godbless and Godspeed, BloodBrothers of the Great Michigan Spirit of the Wild, Ted Nugent and family. **Unquote.**

My 2 points:

#1) A COMMON SENSE VISION

#2) LEGACY

#1. A Common Sense VISION of Manistee, is not more trucks, more trains, more industrial barges/ships, more polluted air all within a Northern tourist, sport fishing, boating, beaching community. Common Sense VISION implies that we are either going to be a heavy industry coal town or a town that appeals to tourists and outdoor recreation. WE CAN NOT BE BOTH.

Historically speaking, my family, the Nugent family, the Tondu family and most of us here tonight, came to Northern Michigan to vacation or have moved here to escape the chaos to the south. Is your VISION to create an area like the ones we left?

As Joe Tondu stated in his presentation, Southern Michigan is currently where heavy industry and all coal generated electric plants are. **That's where they need to stay.**

I understand the Tondu's reasoning for wanting to build it in Manistee, they know the right people here. The Tondu's and a few others stand to make a lot of money. That's good ole All-American business but a horrible VISION. Why, except for the **misguided personal financial benefit of a very FEW** would anyone want to turn the "new" Manistee into an industrial coal town? Common Sense VISION means that the planning commission must make their decision accordingly. All the cities of Northern Michigan must take a stand as Traverse City and others have, making heavy industry and coal aware they are not welcome.

#2. LEGACY, our legacy is what you the planning commission have been elected to create. After over a decade of cleaning up this beautiful Lake Michigan coastal, Victorian Port City, to now turn it back over to heavy industry, would not be wise nor responsible nor consistent with the city Master Plan.

Have you noticed the new motels and re-modeled restaurants being built along the west side of Manistee Lake, the million dollar homes on the beach, condo's, re-modeled homes, baseball fields, schools and a beautifully cleaned up downtown? That's the VISION WE WANT. Not a larger version of the Filer City nightmare?

Do we leave our children the legacy of coal piles throughout Northern Michigan or the continued Northern Michigan outdoor experience? Do we leave our children a legacy of coal barges and freighters in the port or do we leave them the ability to always be able to troll for Salmon & Steelhead within the port and channel?

There is no benefit to **Tondu's proposed industrial legacy**, only instant ***tax-free*** destruction of our infrastructure, waterways and property values, all at the expense of the county tax payer and our **Outdoor Legacy.**

You are intelligent, responsible, caring, **long-term** thinking, planning commissioners.

Please vote NO to the ruination of our new Manistee, currently one of Michigan's best property values and one of the best fishing, hunting, boating, beaching, vacation areas in America.

Keep Manistee on the path of clean-up.

Please do not bring us back to the Dark Ages.

Thank You,

Jim O'Keefe

(Attachment #54)

Public Hearing Statement
Mark Knee
Wildlife Biologist/GIS Specialist
LRBOI

3/4/04

My name is Mark Knee. I am currently employed as a Wildlife Biologist/GIS Specialist for the Little River Band of Ottawa Indians. I have a Bachelor's of Science degree in Environmental Conservation and Wildlife. My previous employers include the United States Forest Service, United States Fish and Wildlife Service, and the Michigan Department of Natural Resources.

I am opposed to the coal-fired power plant proposed by the Tondu Corporation of Houston, Texas.

Manistee County is home to 26 endangered, threatened, and special concern fish, wildlife, and plant species. A total of 9 of these species inhabit the Manistee Lake area and have withstood over 100 years of industrial prosecution.

- Bald Eagle
- Northern Harrier Hawk
- Loon
- Pitcher's Thistle
- Blanding's Turtle
- Wood Turtle
- Eastern Box Turtle
- Eastern Massasauga Rattle Snake
- Lake Sturgeon

These lists were compiled using data collected by the Michigan Natural Features Inventory and the Little River Band of Ottawa Indians Conservation Department.

Wildlife, unlike humans, cannot escape exposure to mercury-contaminated environments or regulate their consumption of mercury-laden foods. Studies have shown that mercury does have harmful effects on wildlife. Increased mercury levels have adverse effects including impaired reproduction, reduced adult survival, reduced body weights, decreased numbers of offspring, altered behavior, increased mortality, and embryo malformations *(Wren 1985, Francis and Bennett 1994, CF, et al. 1995, Osowski SL, et al.*

1995, Halbrook RS, et al. 1997, Wiemeyer SN, et al. 1993, Wood and others 1996, Burger and Gochfeld 1997, Nocera and Taylor 1998, Scheuhammer and others 1998, and Spalding MG, et al. 2000).

The abilities to detect, respond, and escape from predators is vital to the survival of individual animals *(Griffith and Denton, 1992).* A recent study on the effects of coal ash pertaining to swimming performance and predator avoidance in larval bullfrogs clearly indicated that coal ash adversely affected swimming rates and increased vulnerability to predation *(Raimondo, Rowe, and Congdon, 1998).*

Manistee Lake already is impaired due to pollution and current land use practices. Any additional pollution or negative change in land use practices will impair and could extirpate these species in the Manistee Lake area.

I urge you to deny the special use permit for the coal fired power plant.

I quote, " We shall require a substantially new manner of thinking if mankind is to survive." Albert Einstein

FOR PUBLIC COMMENT PORTION OF MANISTEE CITY PLANNING COMMISSION MEETING OF FEBRUARY 19, 2004/FEBRUARY 26, 2004

Northern Lights? **EASTERN LIGHTS** or **WESTERN LIGHTS** would perhaps be a better name! Since the power generated by this plant most likely will be sold to the highest bidder, other states will probably be using the power generated in Manistee.

Michigan has advertised for decades that we have an abundance of power for manufacturing purposes. TV ads even before Engler came to office, extolled the business climate of our state including available power. With the export of our manufacturing jobs to southern states, Mexico, China and now white and pink collar jobs going to India, Bangladesh and former Soviet nations, there must still be power available. In fact, **MICHIGAN IS AN EXPORTER OF POWER.** During weather quirks we may need to import power occasionally from other sources during peak usage.

Most experts explain that our country generally has enough power for the next ten to twenty years. It is the **TRANSMISSION** of it on archaic systems that causes the biggest problems.

Is it wise to give **PERMITS TO THE REAL ESTATE BROKER** instead of the Cities of Holland, Hillsdale, or whomever may own this coal fired power plant? There is nothing to prevent Mr. Tondu from selling his permits to any other buyer be they local or Chinese. How **CAN WE BE ASSURED THAT A FUTURE THIRD OR FIFTH PARTY WILL ABIDE BY AGREEMENTS** made today by the City of Manistee and Mr. Tondu? National and international corporate lawyers seem to win anything they desire in court and I don't believe these permits would set a good precedent for our town.

Mr. Tondu states that he is a local resident. However, he lives in Arcadia. With the millions of dollars this plant will cost ($700,000,000 was mentioned at the county planning commission) he could spend another one or two million and have his lake and shorter access canal dredged to accommodate the coal ships. They could have the wondrous coal fired power plant and it would be located nearer the contamination monitors.

The Manistee merchants and businessmen have been working to improve this city and make it attractive for more customers, foot traffic and sightseers. Our **BRIDGES** have nearly attained their useful lifespan. They will be opened another 18 or more times each month in addition to current usage for the coal ships if the proposed plant goes up. When the Michigan Department of Transportation decides to repair the bridges, will we get a Zilwaukee type ramp or **WILL THE DOT DECIDE TO ROUTE US31 THROUGH EASTLAKE** instead of downtown Manistee. Either way it would be more difficult to entice visitors to shops or the riverwalk along River Street.

We have heard that maybe as many as 50 jobs will be provided by this plant. Then we hear 10% of those jobs will be held by local residents. These jobs would likely be the lowest paying jobs that do not require the expertise to operate the plant.
Mr. Tondu had an environmental expert tell us all how clean the scrubbers would leave the emissions because of the fantastic new filters in the system. He did not tell us HOW **MANY YEARS OF THE LANDFILL'S USEFUL LIFE WOULD BE USED UP BY THE CONTAMINATED FILTERS.** AND TRUCKLOADS OF ASH,

We have also learned that the power company has investigated marching the **HIGH TENSION LINES RIGHT ACROSS MANISTEE LAKE** because of the expense involved in running them under it. Won't that be beautiful? Not to mention the damage they may cause to nature and the fish beneath with the electro-magnetic waves thought to cause health related problems in humans.

With little or no tax money coming in to the City of Manistee, is it wise to allow the plant to run several of their semi trucks (50,000 pound loads or larger of contaminated ash, according to what was stated at the County Board of Commissioners) up and down our city and county roads?

Most of the supplies required by a firm this large will be purchased at a discount in house through their parent corporation.

Because we have been kept in the dark about so many points for so many months by Mr. Tondu can we be sure he or his buyers have disclosed all of the liabilities posed by this plant for the City of Manistee?

Mr. Tondu may sell his 20% interest in the proposed plant to some other governmental agency and then how much tax benefit would Manistee derive?

Because of the potential health problems, small number of new jobs for Manistee residents, the drain on public services, the damage incurred by our roads, the depletion of our landfill, the wear on our bridges, the amount of time the bridges will stop emergency traffic, and the probability that a coal fired power plant will drive new companies and residential development away, and especially the fact that they will not be contributing tax dollars to compensate, I believe it would be unwise to issue permits for the power plant at this time. How can the city negotiate with a third party about any future fees? I don't believe we could guess what the fair market value of the electricity generated will be years in the future. Let a taxable entity develop this plant if it is such a good idea. There must be a reason the cities of Holland and Hillsdale have decided against the coal powered plant. For the millions of dollars going into the effort these cities could dredge Holland channel and Lake Macatawa and keep the coal fired plant closer to their control if the plant is such a good idea.

IS TONDU OF HUSTON A POWER AND ENERGY BROKER
JUST AS TRUST WORTHY AS ENRON ?

Madelyn Klusowski
21 Cottage Lane
Manistee 4966

(Attachment #56)

My name is Kurt Harvey. I live at 17136 4th street in Arcadia of Manistee County.
I am a parent, a home owner in Arcadia, a civil engineer by education, and have seven years experience working for an environmental engineering consultant. The environmental consultant I worked for prepared Superfund remedial investigations, feasibility studies, risk assessments, RCRA closure plans, etc. As an engineer for this corporation, I have had experience with all of these processes.

I am opposed to the coal fueled plant advanced by the Tondu Corporation of Houston Texas.

According to the special use permit standards, the proposed facility must be compatible with adjacent land use.

I missed last week's public hearing because I needed to travel to St. Louis on business. Upon driving into the city of Saint Louis, the most dominant image is not the Mississippi River, it is not the tall buildings that reach 20 stories high, but the 600 FOOT TALL arch. This arch is an icon that carries with it images in all our heads. This is a city of millions of people, with rich heritage, entertainment, business, industry, and athletics, but the thing that stands out the most is a 600 foot high arch. It is this tall arch that greets those who come into the city and serves as a symbol for all those who live adjacent to it.

NOW Manistee... the term 'adjacent' regarding this special use permit should be carefully considered. Because of the sheer size of this proposed coal-fueled plant, 'adjacent' takes on new meaning for us. This is not a small or simple facility. Bringing in, stockpiling, loading, burning, and disposing of coal products has huge implications. Nine years ago I lived in a city where there was a facility like this, Michigan City Indiana. I have toured the Michigan City coal burning power plant. As an engineer, I know that the proposed plant in Manistee would have enormous impact. The effects of a coal plant are noticed regionally and extend globally, we all know that. What is important to understand is that when we evaluate adjacent land use in this context, because this is a coal plant, 'adjacent' means more than just the neighborhood within a few blocks of the facility. Manistee city and county are going to become known for this coal plant. This 400 foot tall smoke stack will contribute to <u>our</u> image and become an icon that visually dominates <u>our</u> city. Such an icon is not consistant with the image that Manistee is about. It is a symbol for dirty air. Is this compatible with the type of development Manistee and Manistee County are planning for? Is it compatible with our long range plans? and the adjacent land uses in that long range plan? To accept this business is something that is consistant with adjacent land use, now and in the future, is going in the wrong direction.

for instance... The coal storage area of this facility encompasses about 1,000 feet by 600 feet. That's about 600,000 square feet. At 43,560 square feet per acre this converts to about 14 acres. A 14 acre 50-foot thick uncovered coal storage area is not consistant with adjacent land use. To put this in context, I think about a 14 acre coal pile next to my dining room. Would any of us consider this to be "consistant?" No. No, we wouldn't. Even with an air model prepared by Tondu's consultants that tells us that only ~~xxx~~ 448 pounds of dust will travel annually onto our property and our neighbor's property, we would say that this coal storage area is not consistant with adjacent land use. Coupled with the fact that we have young children who play in the yard, we live next to someone with emphasima, elderly neighbors. No, No this is not consistant with the adjacent land use.

Some may say that <u>here</u> is another "not in my back yard" voice in this crowd? Well, no. Fortunately, it is not my backyard that is at issue here. It is the backyard of someone who is not even born yet. If this plant is built, it will be inconsistant with adjacent land use for decades to come. Pleae don't take steps back in Manistee's development, reject this special use permit because it's not consistant with adjacent land use.

(Attachment #58)

Date: 3/4/04

City Planning Commissioners

Northern Lights Project

Commissioners - thank you for the time committed to the public on this permitting process.

Much has been said for and against the value of this project to our community. Many Organizations and people have spoken on potential impact on our communities, tourism, economic development, safety, and environment. The decision on the Northern Lights Project falls into one of two categories. One is an idealist approach to life measured with no allowable faults. Second is a realistic approach determined by education, experience, based on factual and measured knowledge.

It is apparent that many people are not open to except or realize any of the positive changes that have occurred in recent years in industry and in America. In years passed our lack of knowledge by people, business, and industry generated adverse affects on our water, land and air. Thirty years ago the U.S. Government challenged pollution issues and problems that were found through out private business and industry. Development of the National Environmental Protection Agency along with the Michigan Department of Environmental Quality, has over the years, changed the way business and private industry operates in today's world including Manistee. The enforcement of regulations for a safe, healthy long-term plan for our environment has improved the overall water, air, and land quality for the past ten years and is defined in our State of Michigan's Environment 2003 Biennial report. Today we know by experience that we cannot dump oil, chemicals, and particulate into our air and water systems with out questioning and monitoring the potential adverse affects on our environment and health. The environmental laws and rules for business and industry have been created and are monitored by skilled people trained to improve existing and future developments to meet a higher standard of living. While improving our quality of live for the people and our children.

Today business and industry face many new grass root and environmental organizations groups trying to place pressure on the local governments to enforce limits and rules above our present federal and State laws and regulations. This process for a special permit has become a prime example. Tactics used to delay and frustrate the developer in hope that they go away and give up on this project. If this is the future plan we hold for Manistee, to remove industry off the Manistee lakeshore, then we should change the language for the permit plan before we change the rules.

Impact of removing industry off Manistee Lake Shore – Who benefits The Little River Band of Ottawa Indians

- This allows future purchase of the Manistee lakeshore property considered lost treaty land.
- Land can be purchased at reduced value - depressed by contamination on site with reduced interest by developers.
- Grants can be request from tax dollars to clean up site
- Land becomes Tribal land – it becomes exempt from local – State – Federal taxes.
- Business and employment on this land will fall under 'Native American Preference' hire policy – considered by the State as discriminatory
- Future business and industry will avoid Manistee because of conflict of environment goals.

The people of the city of Manistee and the county of Manistee need to pay close attention to the future plans being made for this area. These changes will include the movements of people to public and government representation roles that will allow this area to be controlled by two governments operating under different standards. One government of people has duel citizenship, can vote, pays no taxes while living on their government land, has access to federal money and can only be monitored by the Federal government of the United States. They maintain their own commercial fishing and hunting laws that do not follow established state rules enforced on the tax paying people of this state. The Michigan taxpayer will continue to pay for fishing programs and animal management programs while supporting income and food for this government. Double rules with double standards for people that work and pay for these entitlements.

Living in an idealistic environmental world we would

- Operate no combustion engines
- Burn no – gasoline – natural gas – oil – coal – wood for heating (all mercury sources)
- We would place compliance laws for monitoring on all combustion and heat generating systems including homes.
- We would not make nor use plastic's or chemicals

Living in a realistic environmental world we would

- Improve our standards to leading us to a reduction and or elimination of harmful material we place on this earth.
- Technology would be developed to the point that we are capable of leaving behind fossil fuels, hazardous chemicals.
- Electricity would be made from renewable sources – but for tonight we will continue to drive home and most if not all, will enter a home using fossil energy electricity.
- This community would be better served if our energy were focused on improving standards, controls and focus on finding solutions to existing problems instead of building roadblocks.

I would like to ask everyone here tonight to look around your neighborhoods. Are the people and businesses in your community enjoying a quality and rewarding standard of living to meet their life goals? Having witness more than 300 jobs lost since 1995 I know many people who continue to seek employment for good wages to support their families,

including tribal members who work at plant. Some of these people are skilled in the operation and maintenance of coal-fired boilers at the proposed site.

I support economic development in this community including a safe and healthy standard of living. Manistee has always been a beautiful place to live even during our best manufacturing days. I would hope the commissioner's final decision would include the many folks who have struggled to keep their homes and life styles here in Manistee County. It is sad that many of our new friends and neighbors who have transferred or moved here never had the chance to meet some of our local folks, our children and friends who have left this area to earn a living. More than likely, they drove pass each other on their way to start a new life.

I support the Northern Lights Project for the following reasons.

- The Northern Lights project reduces present GCIP NPDES operating permit from 40,340 lbs. a day chlorides into Manistee lake to no chlorides into the lake
- The Northern Lights project reduces present GCIP NPDES operating permit from 14 million gallons a day to 1 million gallons of clean treated water
- The existing Site offers little economic support for the city and county. No future plan to reopen
- Technology available today for pollution controls far out weighs and offers an improvement over the permitted standards used for existing 1940 & 1960 coal fired boilers on site including out date utility coal fired boilers that exist.
- The Northern Lights Project offers the opportunity to clean up and remove an old plant while improving air/water quality with good paying jobs.

City planning commissioners I ask you to approve the special use permit to install Northern Lights power plant

Pete Landis
2085 Water St. Rt3
Manistee, Mich. 49660

(Attachment #58)

The Nation's Leading American Indian News Source
INDIAN COUNTRY TODAY
Click to Subscribe! Special Edition

Summer Program For Native American High School Students
NINAYI
Click here to find out where to buy your copy of INDIAN COUNTRY TODAY

Trade & Commerce March 01, 2004 - 12:23pm ES

Printer Friendly Page

Infrastructure woes may strangle Indian housing boom

Posted: September 02, 2003 - 9:30am EST
by: Mark Fogarty / Today Correspondent

WASHINGTON - The housing boom in Indian country is in danger of grinding to a halt because o lack of financing for the necessary infrastructure and bureaucratic obstacles when there is federa money available, a new report has found.

The National American Indian Housing Council has released a report, "Building the Framework: Housing Infrastructure Development in Indian Country," in conjunction with an infrastructure summit it has just held here.

The NAIHC study concludes "major sources of funding are 'insufficient to support infrastructure and housing.' Financial assistance is either in small amounts or has criteria that exclude most tribes from qualifying."

The housing group conducted four case studies, with the Little River Band of Ottawa Indians of Michigan, the Lumbee Tribe of North Carolina, the Pleasant Point Passamaquoddy Tribe of Maine and the Susanville Indian Rancheria of California (which consists of four tribes).

"For example," the group noted, "the Little River Band of Ottawa Indians could not pursue state funds through the Michigan State Housing Development Authority because applicants have to be non-discriminatory and the tribe has a 'Native American preference' policy."

Tribes not receiving infrastructure grants can apply for loans, the report notes. "However, with non existing, or limited economic bases, tribes such as the Point Pleasant Passamaquoddy Tribe hav nothing to use as collateral for loans and are unable to make loan payments."

NAIHC sought to study infrastructure specifically as it applies to the Native American Housing Assistance and Self Determination Act, which has allowed tribes to leverage their federal IHBG (Indian Housing Block Grant) housing dollars through outside sources. Housing construction on reservations has roughly doubled since NAHASDA was passed. But it found infrastructure regulation roadblocks, especially between the BIA and IHBG, and the Indian Health Service and IHBG.

Using other sources of funding, "such as the Indian Community Development Block Grant, Environmental Protection Agency and the U.S. Department of Agriculture, is difficult. For example only federally recognized tribes and Alaskan Native villages are eligible to participate in the ICDB program; the USDA grants give precedent to cities and towns, tribes are last. The EPA's 'environmental requirements' are a barrier."

Other barriers found are: "unavailability of land, non-uniform building codes, difficult geology, socio-economics (such as extreme poverty), historical prejudices, not being federally recognized and poor relationships with local towns and governments."

NAIHC reported responses from interviews it conducted during 22 technical assistance site visits to its members in January and February that infrastructure for roads was poor to fair; infrastructur for utilities was fair to good; sewer infrastructure was generally poor, but with a number of tribes reporting good, and "for the most part, land title/lease issues remain a major barrier."

And, it noted, "a small percent continue to have no infrastructure in place for roads, sewer systems, water, and utilities."

Also, the report found "it is only somewhat feasible to upgrade current infrastructure. There is a

strong need for additional infrastructure that coincides with the negative impact that existing infrastructure has on a tribe's ability to provide housing."

On a positive note, using partnerships and consultants on infrastructure proved to be beneficial fc tribes. Consultants especially can be useful on necessary needs assessments, environmental impact studies and geological surveys.

And, "for those tribes that have not established building codes, or follow local county and state codes, they will need to pass resolutions dealing with construction and the various aspects of infrastructure development, including procurement policies, zoning ordinances and easements. T prevent injury to construction workers, it may be necessary to pass resolutions preventing hunting fishing and trapping in and around construction sites."

While NAHASDA has given tribes more self-determination in housing their own people, infrastructure problems threaten that exercise of sovereignty.

"Having relinquished so much already, it's hard for tribes to accept giving up further self determination rights, especially since tribes desperately need the assistance."

↑ BACK TO THE TOP OF PAGE

(Attachment #58)

>Home >Press Releases >In Focus >Contact Me

PRESS RELEASE

MICHIGAN SENATORS

CARL LEVIN DEBBIE STABENOW

FOR IMMEDIATE RELEASE
Aug 16, 2002

Contact: Kathleen Long 202-224-2472 (Levin)
Dave Lemmon 202-224-4822 (Stabenow)

Levin and Stabenow Announce $791,626 Provided Under the COPS Tribal Resources Grant Program

WASHINGTON - Sen. Carl Levin, D-Mich., and Sen. Debbie Stabenow, D-Mich., announced today that the Department of Justice has awarded $791,626 to six Michigan tribes through the Community Oriented Policing Services (COPS) Tribal Resource Grant Program.

"The COPS program is a very important means of funding to support our law enforcement agencies," said Levin. "Investing in our police departments is investing in our safety. This funding will allow communities to hire new officers and to provide their officers with the proper equipment and training that is necessary to do a good job."

"The COPS program has proved itself to be an exceptionally valuable resource for local law enforcement throughout Michigan and the country," said Stabenow. "These grants will not only provide for the hiring of additional officers but will also enhance the technology and skills of local law enforcement agencies in northern Michigan."

The COPS Tribal Resources Grant Program was created under the Violent Crime Control and Law Enforcement Act of 1994. The program is designed to address the most pressing needs of law enforcement in Indian communities. The grants support the hiring of new officers, the purchase of new equipment, and/or training for new and existing officers.

Funding is provided to address the needs of a community or agency that is not funded with state, local, or Bureau of Indian Affairs money and must be used for the implementation or enhancement of community policing. The receiving agency must match at least 25 percent of the total project costs unless a waiver is granted based on fiscal hardship.

The following Michigan tribes have received funding from the COPS Tribal Resource Grant Program:

Name Program Award
Bay Mills Conservation Enforcement Equipment-Training $61,703
Bay Mills Indian Community Equipment-Training $23,606
Hannahville Indian Community Hiring $150,000
Hannahville Indian Community Equipment-Training $104,534
Lac Vieux Desert Band of Lake Superior Chippewa Equipment-Training $38,537
Lac Vieux Desert Band of Lake Superior Chippewa Hiring $150,000
Little River Band of Ottawa Indians Police Dept. Equipment-Training $88,826
Sault Ste. Marie Tribe of Chippewa Equipment-Training $174,420

SEARCH DETNEWS.COM GO

cars.com

1926 Smallamp

detnews.com

SITE INDEX
Homepage
Search
CyberSurveys
▸News Talk
▸Sports Talk
▸Lions Talk
▸Wings Talk
▸Car Talk
Horoscope
s

es
is
i
ists
uting
History
als

State
gston
mb
and
ne
Detroit
nWorld
aries
th Notices
s
Estate
ion
ols
ial Reports
nology

SPORTS
Sports Home
▸Lions/NFL
▸Pistons/NBA
▸Red Wings/NHL
▸Shock/WNBA
▸Tigers/Baseball
▸MSU
▸U-M
More Colleges
Golf
High Schools
Motor Sports
More Sports
Scoreboards

ENTERTAINMENT
Entertainment

Tribe wants to bring members back to home area

By Associated Press

MANISTEE -- With more than 2,600 tribal members spread out across the county, the Little River Band of Ottawa Indians is looking to bring some back to the area.

To that end, the tribe has been buying up property in Mason and Manistee counties, relocating tribal offices, and starting a new manufacturing business. It's also putting the finishes touches on a joint business venture with other Northern Michigan tribes.

"This is where the tribe was," Ogema Bob Guenthardt said. "We hope to attract tribal members back home."

About 200 tribal members are living in the Manistee area.

The Grand Traverse Band of Ottawa and Chippewa Indians, the Bay Mills Indian Community, and the Little Traverse Bay Band of Odawa Indians are set to join the Little River Band of Ottawa Indians to begin building modular homes in the Eastlake area, where the Little River Band owns the former Clark Equipment plant, a 42,000 square-foot facility.

Modular homes built by the four tribes will be sold as homes, or used as rental units throughout Northern Michigan. The tribes plan to meet next week to work out the final details of the business plan, the News Advocate reported Friday.

▸Comment on this story

▸Previous story ▸Back to Index ▸Next story

(Attachment #58)

U.S. Environmental Protection Agency

Brownfields Cleanup and Redevelopment

Recent Additions | Contact Us | Print Version Search: GO

EPA Home > Brownfields > Pilots > Little River Band of Ottawa Indians, MI

Brownfields Topics
Pilots/Grants
Liability & Cleanup
Partnerships & Outreach
Other Topics
Resources
News & Events
Laws & Regulations
Sitemap
Other Resources

Brownfields Assessment Pilots

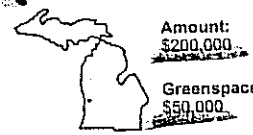
Little River Band of Ottawa Indians, Michigan

BACKGROUND

EPA has selected the Little River Band of Ottawa Indians for a Brownfields Assessment Pilot. The tribe also was selected to receive additional funding for assessments at brownfields properties to be used for greenspace purposes. The tribe's existing reservation consists of two settlements in Custer and Eden Townships, and roughly 70,000 acres located in southern Manistee County, Michigan. For this Pilot, the tribe has targeted the 32-acre Manistee Forge Corporation-East Lake plant site, which the tribe purchased in 1998 after conducting a partial environmental assessment. That assessment found soil contamination and indicated the potential presence of a mixture of metals, petroleum products, and lubricants as well as chemicals associated with the production of salt and bromide products. In the past century, the site has been used for a number of industrial purposes, including a lumber mill, salt and chemical operations, metal forging, hydraulic lift manufacturing, and fiberglass fabrication.

The economic base of the community eroded with closure and relocation of the lumbering and salt mining industries. About 1,200 of the 2,728 member Little River Band currently reside in the local area. Approximately 41 percent of local tribe members live in households with incomes below the poverty rate and about 60 percent of all tribe members are unemployed. In response to the economic decline of the area, the tribe has expanded local employment opportunities, but new housing and jobs that the redeveloped brownfields site would provide are needed as more tribal members return to the reservation.

PILOT SNAPSHOT



Date of Announcement: May 2002

Amount: $200,000

Greenspace: $50,000

Target Area: Little River Band of Ottawa Indians, Michigan

Profile: The Pilot targets a former industrial site for redevelopment into housing for tribal members, a marina, and a manufactured home construction business.

OBJECTIVES

The tribe's objective is to assess the Manistee Forge site so that it can be transformed into a site for housing constructed for tribal families and a marina. The large manufacturing building already on the site will be used to construct manufactured homes. The tribe will also assess an 85-acre parcel for use as a park and recreational land. As part of this objective, the Pilot will define the contamination at the larger sites and develop cleanup and reuse plans.

ACCOMPLISHMENTS AND ACTIVITIES

Activities planned as part of this Pilot include:

- ~~Conducting environmental site assessments of the two sites; and~~
- ~~Preparing cleanup and/or due care plans.~~

The cooperative agreement for this Pilot has not yet been negotiated; therefore, activities described in this fact sheet are subject to change.

CONTACTS

Little River Band of Ottawa Indians
(231) 398-6842

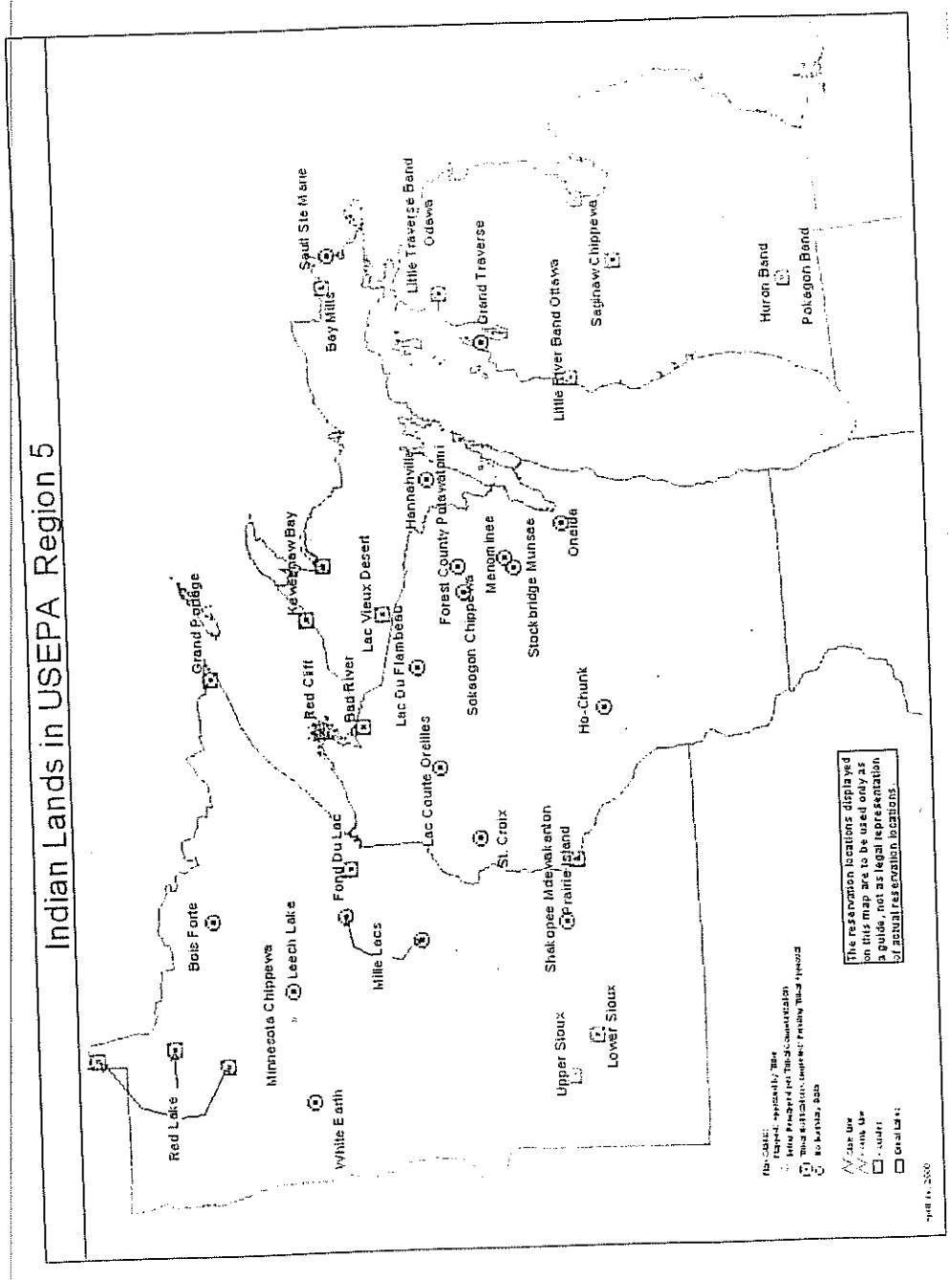
Regional Brownfields Team
U.S. EPA Region 5
(312) 353-0123

Visit the EPA Region 5 Brownfields web site at:
http://www.epa.gov/R5Brownfields/

For further information, including specific Pilot contacts, additional Pilot information, brownfields news and events, and publications and links, visit the EPA Brownfields web site at: www.epa.gov/brownfields

Solid Waste
and Emergency
Response (5105)

EPA 500-F-02-062
May 2002
www.epa.gov/brownfields/



(Attachment #58)

EPA Region 5 - For Immediate Release Tuesday, June 03, 2003

EPA Selects Little River Band of Ottawa to Receive $600,000 Grant

CHICAGO (U.S. Environmental Protection Agency Administrator Christie Whitman today presented the Little River Band of Ottawa Indians a $600,000 check for projects to restore the Manistee River watershed in northern Michigan.

"The Little River Band was chosen to receive this grant because they demonstrated the ability to achieve tangible environmental results in a short time," Whitman said. "By providing grants to locally based groups, we are helping them develop plans that best meet the unique needs their watersheds face from such hazards as nonpoint source pollution."

Whitman presented the check at Region 5's Tribal Operations Committee meeting at the Prairie Island Indian Community in Welch, Minn. There are 35 Indian tribes in Region 5, which includes Illinois, Indiana, Michigan, Minnesota, Ohio and Wisconsin.

The Little River Band was recently selected as one of 20 grant recipients in EPA's new Watershed Initiative. A total of $15 million will go to watershed organizations to fund restoration and protection projects.

The Little River Band includes 2,600 tribal members and the river provides important resources which are vital to its survival. It will use its grant for several projects, including:

- repairing road and stream crossings;
- stabilizing stream banks;
- extensive monitoring of water quality, habitat inventories and fish assessments;
- reclaiming a sturgeon spawning site.

####

CONTACT: Phillippa Cannon, (312) 353-6218

Provided as a service to the Subscribers of the DRR.

[DR Home] [DRR Info] [Releases TOC]

(Attachment #58)

Little River Band of Ottawa Indians
Natural Resources Conservation Department
375 River Street
Manistee, MI 49660
Phone: 1-231-723-1594

Date: October 26, 2001

PRESS RELEASE

COMMERCIAL FISHING BEGINS UNDER LITTLE RIVER BAND OF OTTAWA INDIANS' AUTHORITY

The Little River Band of Ottawa Indians announces the start of commercial fishing under permits issued by the Little River Band's Natural Resource Commission. Three (3) permits for commercial trap net fishing operations by Tribal fishers have been approved for fishing in treaty waters of Lake Michigan between Arcadia (at the north end of Manistee County) and Grand Haven, Michigan. One of the available permits was issued to a trap net boat that will be operated by two (2) Little River Band Tribal members who will be fishing out of Ludington. The remaining two (2) permits were issued to captains from other 1836 Treaty tribes, whose fishing operations will be based in Frankfort and Muskegon. None of the three (3) available permits for small mesh gill fishing operations targeting bloater chubs was issued during 2001.

The three (3) permits issued are the first Tribally-licensed commercial fishing operations in these portions of Lake Michigan treaty waters since 1985 and the first commercial fishing permits issued for these waters under the terms of the settlement (Consent Decree) signed by the State of Michigan and five (5) 1836 Treaty Tribes resolving disputes regarding treaty-reserved, Tribally-regulated fishing in the Great Lakes.

Under the terms of the Consent Decree signed in August 2000, the Little River Band of Ottawa Indians has the exclusive right to issue permits for commercial fishing by licensed fishers from each of the five (5) federally-recognized 1836 Treaty Tribes – the Little River Band of Ottawa Indians, Bay Mills Indian Community, Grand Traverse Band of Ottawa/Chippewa Indians, Little Traverse Bay Band of Odawa and Sault Ste. Marie Tribe of Chippewa Indians. The Little River Band of Ottawa Indians agreed not to authorize the use of large mesh gill nets, which are opposed by sport fishing groups, by Tribally-licensed commercial fishers in the waters under the permit authority of the Tribe. Tribal negotiators agreed to restrict commercial fishing to the use of trap nets and small mesh gill nets, in large part, as an accommodation to sport fishing interests in these areas. State law currently authorizes commercial fishing with both trap nets and small mesh gill nets in Lake Michigan south of Leland.

The 2000 Consent Decree allows the Little River Band to issue a total of three (3) commercial trap net permits for whitefish and three (3) commercial small mesh gill net permits for bloater chubs within this portion of Lake Michigan during the first three (3) years commercial fishing takes place. This portion of the 1836 Ceded Waters of Lake Michigan is divided into two sections where permits may be issued. This includes Whitefish Management Zones (WFM) 07 and 08 (see map). Within WFM-07 there can be two commercial trap net operations and two commercial small mesh gill net operations permitted, and within WFM-08 there can be one commercial trap net operation and one commercial small mesh gill net operation permitted for the first three years.

The trap net operations are limited to 12 nets per operation and the small mesh gill net operations are limited to 24,000 feet of net per operation under the agreement. Regulations adopted by the Little River Band's Natural Resource Commission for the 2001 fishing season limit permit holders to 6 trap nets per operation. Tribal trap net fishers are only allowed to target and retain whitefish (19 inches and larger) and menominee. Small mesh gill net fishers may only target and retain bloater chubs. The fishers are required to release all other species back to the lake. The tribal commercial trap net fishers are required to observe a spawning closure from noon November 6 through noon November 29 of each year to protect the fish stocks. All trap nets must be either removed from the water or tied closed during the spawning closure.

Harvest guidelines for both whitefish and chubs are developed by a Technical Fisheries Committee comprised of Tribal, State and Federal biologists for each Whitefish Management Unit. Harvest limits are established for WFM-8, where state-licensed commercial fishing is allowed. The limits on the number of permits and nets in WFM-07 for the first 3 years of fishing will protect fish stocks until the Technical Fisheries Committee obtains data from biological assessment and commercial catch reports to recommend harvest guidelines for implementation by the Chippewa-Ottawa Resource Authority (CORA), which regulates Tribal fishing on the Great Lakes.

All Tribal parties in the 2000 Decree will mark all Trap nets and small mesh gill nets under net-marking regulations

pot anchors, and with floats at the wings. Wind, waves, fog or darkness may make it difficult to observe the markings. Boaters and fishermen are urged to exercise extreme caution in the vicinity of the nets. The nets are constructed of very heavy netting and may reach from the bottom to near the surface. If your gear becomes entangled in the net, you are urged to cut it off and contact the fishers to recover it. Should your boat become entangled in the net, please radio the Coast Guard immediately.

For additional information regarding trap nets pick up a copy of the brochure "Don't Get Trapped" at the Chamber Office, or visit the website: www.miseagrant.org/nets or call: 616/846-8250.

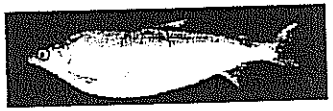
Frequently asked Questions about the netting operations in the Ludington Mason county area.
This information is only for this area and may not be true in other waters.

Which species of fish are being taken?
Whitefish and Chubs.

What type of nets are used?
Trap nets are used for Whitefish and "fine mesh" gill nets are used for chubs.

Where can the nets be placed?
They can be set anywhere in the area. However, The gill nets have to be in over 240 feet of water.

Can incidental catch be kept?
NO. All non-target species must be returned to the Lake.



Whitefish

- **Length:** 17 to 22 inches
- **Weight:** 1.5 to 4 pounds
- **Coloring:** silvery with pale greenish-brown back, fins clear or lightly pigmented

Lake whitefish usually feed along the bottom and are generally safe from the sportsman's fishing tackle. Whitefish school in cold, deep waters.

Bloater Chubs

- **Length:**
- **Weight:** 8 ounces
- **Coloring:**

ese small, soft-fleshed, oily fish will probably never be sought as game fish. They dwell far from shore and have mouths too small for ordinary bait. Also they feed mostly on zooplankton and other organisms near the

Little River Band of Ottawa Indians Natural Resource Commission
Fishing Regulations

Lawful Fishing Methods

Seines: May be used in INLAND waters up to thirty feet (30') by four feet (4')

Hand Nets: Hand nets may be used to help land lawfully hooked fish. During April, May and June, hand nets larger than 5.5 feet in circumference or having a handle exceeding 14 inches in length **may not** be used on trout streams except as provided.

Hooks and Line Fishing: Fish so taken must be hooked in the mouth. Fish not hooked in the mouth must be returned to the water. No more than four (4) lines per person with a maximum of two (2) hooks per line are allowed. All hooks attached to an artificial bait or "night crawler harness" are counted as one hook. Hooks must be baited or attached to an artificial bait. No more than eight (8) tip-ups or similar devices used or ice fishing and one (1) hand lines are allowed for ice fishing. All tip-ups and similar devices must show the angler's name, address, and Tribal Identification number. All lines must be under the immediate control of the angler.

Extended Season Trout Streams: The designated trout stream sections listed below are OPEN ALL YEAR to Tribal hook and line fishing. Listed streams are open from their mouth to the designated upstream limit (Tributaries are NOT OPEN). See Table 1, page 12 Trout and Salmon Regulations for size and bag limits.

River	County	Upstream Limit
Bear Creek	Manistee	Co. Road 600
Betsie River	Manistee	Kurick Rd. (T24N, R14W)
Lincoln River	Mason	Forks on (T19N, R17W)
Little Manistee River	Manistee, Lake	Johnson Bridge (T20N, R14W, See 24)

EXCEPT: (Downstream Closure from Weir to Mouth - Sept 1 - Nov. 14)

Manistee River	Manistee	Tippy Dam
Pere Marquette	Mason, Lake	M-37
Sable River	Mason	Freesoil Rd.

(Attachment #58)

developed by CORA. All trap nets will be marked with a staff buoy with at least four (4) feet exposed above the surface of the water with a red or orange flag no less than twelve (12) inches by twelve (12) inches bearing the license number of the fisher and affixed to the top of the staff. In addition, the king anchor and inside end of the lead shall be marked with a red or orange float not less than one (1) gallon in size (see diagram). All small mesh gill nets will be marked with a staff buoy at each end with at least four (4) feet exposed above the surface of the water with a red or orange flag no less than twelve (12) inches by twelve (12) inches bearing the license number of the fisher and affixed to the top of the staff (see diagram).
Tribal fishers and Natural Resource Department staff hope to work with the sport and charter fishing community to provide sport fishers with information regarding net locations, net marking, and how to avoid fishing nets so that commercial and sport fishers can safely co-exist. Tampering with Tribal fishing nets is a federal offense. Persons with questions, who want additional information regarding Tribally-licensed fishing activities, or who observe others tampering with nets or equipment, are encouraged to contact the Little River Band of Ottawa Indians' Natural Resource Department at 231-723-1594 or the Little River Band Department of Public Safety at 1-888-692-0220.

PLEASE USE CAUTION when navigating around the orange marker buoys.
Gill Net Gear
NET TAMPERING IS ILLEGAL AND DANGEROUS!
Tampering with any net is a violation of State and Federal Law. If you see a net you think is illegally set, or see someone attempting to tamper with a net, call your local law enforcement agency.

For Further Information Please Contact:
Little River Band of Ottawa Indians
Natural Resources Conservation Department
375 River Street
Manistee, MI 49660
Phone: 1-231-723-1594

Sincerely,

Archie Martell
LRB Fisheries Biologist

(Attachment #58)

Little River Band Ottawa Indians Commercial fish netting operations in the Ludington Mason area

NOTE: This information is provided to aid anglers in avoiding netting areas. It is only meant as a guide. Caution and good judgment should always be exercised. There is no implied assurance that the information presented is accurate Neither this WEB site nor The Little River Band of Ottawa Indians shall be held liable for any discrepancies or inaccuracies.

More information about Netting can be found at Sea Grant

Trap Net Marking || Whitefish fishing Zones || Sea Grant site

Trap net alert

Trap net locations as of June 26, 2003 The Little River Band of Ottawa Indians has placed several nets in the vicinity of Ludington. The locations are:

1) N430 54.10', W0860 30.44', Depth 90 feet

2) N430 53.74', W0860 30.74', Depth 100 feet

3) N430 50.55', W0860 30.87', Depth 130 feet

4) N430 51.30', W0860 30.30', Depth 108 feet

5) N430 50.82', W0860 30.02', Depth 101 feet

6) N430 50.30', W0860 29.05', Depth 95 feet

7) N430 49.44', W0860 29.05', Depth 90 feet

8) N430 49.63', W0860 30.15', Depth 130 feet

9) N430 53.01', W0860 28.57', Depth 54 feet

Additional Warning nets and lines can come loose. If you are anywhere near these areas keep a sharp eye out. The line is bright yellow but floats just below the surface.

These coordinates would place the nets in the area from approximately one miles south of Ludington and to approximately two miles south of the project. The trap nets are marked with staff buoys at the lead and

(Attachment #58)

TROUT AND SALMON REGULATIONS

Brook Trout	Lake Trout	Chinook Salmon
Brown Trout	Splake	Cobo Salmon
Rainbow Trout (Steelhead)	Atlantic Salmon	Pink Salmon

SEASONS By water type	MINIMUM SIZE LIMIT	DAILY BAG LIMIT
Open all year Inland Lakes	10 inches	10 in any combination
April 29 - Sept. 30 Inland Trout Streams	8 inches	10 in any combination except: No more than 6 trout or salmon 15 inches or larger.
Open all year Extended Season Streams All-Non Trout Streams	8 inches	10 in any combination except: No more than 6 trout or salmon 15 inches or larger.

BOW AND SPEAR FISHING REGULATIONS

SEASON	WATERS	SPECIES
January - February	(Through The Ice) All Inland Lakes, and all non-trout streams (see: Note 1)	Northern Pike Muskellunge

Trout Streams open to use of spears of bows:
(April 15 - May 31)

Manistee County:
Little Bear Creek, down from Bear Lake to Trunkline Highway US-31

Mason County:
Sauble River, from Freesoil Road down to Custer Road.

U.S. Fish & Wildlife Service

Little River Band of Ottawa Indians
Tribal Partnership Projects

Contacting the Office:

John Leonard, Native American Specialist
e-mail: John_Leonard@fws.gov

BHW Federal Building
One Federal Drive
Fort Snelling, MN 55111
Phone: 612-713-5108
Fax: 612-713-5280

Return to Michigan Page
Return to Tribal Grants Main Page

2003 Tribal Wildlife Grant

$133,500
Assessment of Riparian Habitat Restoration in the Manistee River Corridor
Stephanie Orgen, 231-723-1594 Ext 21

2003 Tribal Landowner Incentive Award

$137,644
Study the Status and Habitat Use of Bobcat, Lynx rufus, in the Northern Counties of Michigan
Nate Svoboda, 231-723-1594

Lake Michigan Lake Sturgeon Status Assessment Project Begins

Participants in the Lake Michigan lake sturgeon status assessment project being funded by the Great Lakes Fishery Trust and the Giovanni Auletta Armenise Harvard Foundation (see September issue of Inside Region 3) met December 18 to share expertise, coordinate and standardize activities, and discuss a number of issues relating to implementation of the project's first field season that begins this spring. The meeting was convened by Rob Elliott of the Service's Green Bay Fisheries Resources Office who serves as project manager. Seventeen people attended including principal investigators and researchers from eight cooperating agencies and institutions involved in this project. During the meeting, agencies reported on the status of each sub-project. The pros and cons of various sampling strategies for each river system were discussed at length relative to the project objectives. The methods and level of sampling appropriate for each river system were discussed, plans for issuing individual and project-wide collector"s permits were shared, and plans for needed gear acquisitions were made. Additional progress to date includes the advertisement for and selection of five graduate students and initiation of their graduate projects, the hiring of technicians, submission of an announcement for a Term position with the Service, the ordering of gear and materials for field collections, study site visitation and preliminary gear testing in some rivers, and initiation of assessments in 2001 for data and sample collection in a few rivers. The first years funding from the Great Lakes Fishery Trust was received by the Service in December and is being distributed through cooperative agreements established between the cooperators and the Service. The first years' funding from the Giovanni Auletta Armenise Harvard Foundation was also received by the Wisconsin DNR who is

administering and distributing these funds. This three year study will provide the first comprehensive assessment of the status of lake sturgeon throughout Lake Michigan and is an important first step in progressing with rehabilitation efforts in these waters. Partners in the project include the Wisconsin and Michigan Departments of Natural Resources, Michigan State University, Purdue University, Michigan Technological University, University of Georgia and Little River Band of Ottawa Indians.

Offices Involved: R3-Green Bay FRO, R3-Marquette Biological Station

Partners: Wisconsin Department of Natural Resources, Michigan Department of Natural Resources, Michigan State University, Purdue University, Michigan Technological University, University of Georgia, Little River Band of Ottawa Indians

Service Biologist Attends North American Lake Trout Symposium

Fishery biologist Aaron Woldt of the Alpena Fisheries Resource Office attended the Symposium on the Ecology, Habitat, and Management of Lake Trout in North America from August 14th to 17th in Whitehorse, Yukon. The symposium brought state and federal management agencies and researchers together to share jurisdictional management approaches, problems, and recent developments regarding lake trout stocks in North America. As co-chair of the Modeling Subcommittee (MSC) of the Technical Fisheries Committee (TFC), biologist Woldt gave two oral presentations and was a co-author of another. The TFC is a committee of representatives of the seven parties to the 2000 Consent Decree that oversees Decree implementation. The 2000 Consent Decree is a 20-year negotiated agreement that allocates fish stocks in 1836 Treaty waters of the upper Great Lakes among parties. The MSC annually updates lake trout and whitefish population models and calculates yearly harvest limits. Woldt's first talk was a plenary address describing the current status and management of lake trout stocks in Michigan waters of the Great Lakes. Special emphasis was placed on the interjurisdictional nature of Great Lakes lake trout management. Woldt provided Lake Huron data, and data from lakes Superior and Michigan were provided by Jory Jonas and Shawn Sitar of the Michigan Department of Natural Resources. The talk highlighted contributions from all resource agencies conducting lake trout research in Michigan waters of the Great Lakes. These agencies include the Service, Michigan Department of Natural Resources, Chippewa/Ottawa Resource Authority, Unites States Geological Survey-Great Lakes Science Center, Bay Mills Indian Community, Grand Traverse Band of Ottawa and Chippewa Indians, Little Traverse Bay Bands of Odawa Indians, Little River Band of Ottawa Indians, and Sault Ste. Marie Tribe of Chippewa Indians. Woldt's second talk focused on the current status and management of lake trout in northern Lake Huron. The talk highlighted the workings of the MSC and TFC and described how the MSC uses statistical-catch-at-age models to monitor progress towards rehabilitation for lake trout stocks in 1836 Treaty waters. Conference attendees provided constructive feedback that should aid our stock assessment and modeling efforts. Valued discussion topics included the following: how to better estimate natural mortality, the affects of hooking mortality in live release fisheries, and the importance of incorporating all stake-holder input into resource management decisions.

Resource Outputs: The symposium was a great opportunity to present the modeling approaches of the MSC and the status of lake trout stocks in 1836 Treaty waters to a wide audience with experience in lake trout management. Conference attendees provided constructive input on lake trout management and rehabilitation that should aid our rehabilitation efforts in the Great Lakes.

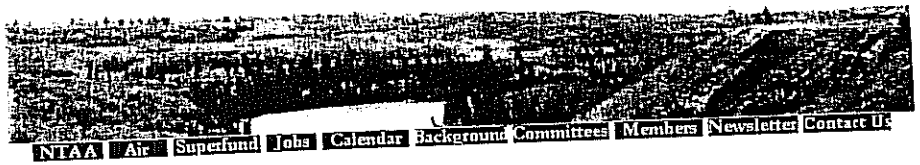
Partners: Michigan Department of Natural Resources, Chippewa/Ottawa Resource Authority, United States Geological Survey-Great Lakes Science Center, Bay Mills Indian Community, Grand Traverse Band of Ottawa and Chippewa Indians, Little Traverse Bay Bands of Odawa Indians, Little River Band of Ottawa Indians, Sault Ste. Marie Tribe of Chippewa Indians

---

Region 3, U.S. Fish and Wildlife Service
1 Federal Drive
BHW Federal Building
Fort Snelling, MN 55111
E-Mail Us! R3 External Affairs
Disclaimer

(Attachment #58)

National Tribal Environmental Council



2004 - What's News

2003 - The Year in Summary || 2002 - The Year in Summary || 2001 - The Year in Summary ||

Tribal Pesticide Program Council Meeting
On February 11, the Environmental Protection Agency published in the ***Federal Register*** a notice that the Tribal Pesticide Program Council will hold a meeting from March 10-March 12 in Arlinton, VA.

Guidelines for Section 319 Nonpoint Source Grants to Tribes
On February 11, the Environmental Protection Agency also published in the ***Federal Register*** a notice that the EPA has developed guidelines for awarding Clean Water Act section 319 nonpoint source grants to Indian tribes in FY2004. The guidelines became effective on February 11, 2004.

National Brownsfields Assessment, Revolving Loan Fund and Cleanup Grants
On February 10, the Environmental Protection Agency also published in the ***Federal Register*** a notice reopening the competition for FY2004 funding under the National Brownsfields Assessment Revolving Loan Fund and Cleanup Grants program, which addresses sites contaminated by petroleum and hazardous substances, pollutants, or contaminants. Recently-enacted FY2004 Appropriations Act expands the number of sites that are eligible for funding. The application deadline is March 9, 2004.

Office of Pesticide Programs' 2004 request for proposals
EPA's Office of Pesticide Programs (OPP), in coordination with the EPA regional offices, is soliciting pesticide and special project proposals from eligible tribes, Alaska native villages, and intertribal consortia for fiscal year (FY) 2004 funding. Under this program, cooperative agreement awards will provide financial assistance to eligible tribal governments, Alaska native village governments, or intertribal consortia to carry out projects that assess or reduce risks to human health and the environment from pesticide exposure. The total amount of funding available for award in FY 2004 is expected to be approximately $445,000, with a maximum funding level of $50,000 per project.

Proposals are due in EPA regional office by 5 p.m., March 29, 2004. The maximum award amount is $50,000. Specific guidelines as set in the ***Federal Register*** are available on the NTEC web site. A copy of the brochure is available onsite in pdf format. Use the Back button to return to this page.

Guidelines Out for Tribal Nonpoint Source Funds
Guidelines for awarding grant money to Native American tribes to pay for nonpoint source pollution control efforts under Section 319 of Clean Water Act are available, the Environmental Protection Agency said in a notice to be published in the Feb. 11 Federal Register . The agency expects that Congress for the fifth year in a row will authorize EPA to award the grants in amounts higher than the statutory one-third of 1 percent of the total $238 million appropriated for fiscal year 2004. EPA set aside $7 million in FY 2004 for tribal nonpoint source grants. To date, the agency has approved 84 nonpoint source management programs for tribes covering more than 40 million acres of land, with more expected in the current fiscal year. The agency will award $30,000 in base funding to support eligible tribes with less than 1,000 square miles of land area and $50,000 for those with more than 1,000 square miles. The remaining funds will be awarded through a competitive process to support implementation of priority watershed projects. The guidelines are effective upon publication, and more information is available from EPA's Ed Drabkowski at (202) 566-1198.

Environmental Quality - Policy for Implementation and Integrated Application of the U.S. Army Corps of Engineers (USACE) Environmental Operating Principles (EOP) and Doctrine.
The Chief signed Policy Memorandum #12 to all MSCs and field operations directing the implementation of the Environmental Operating Principles (EOPs) and announcing the publication of ER 200-1-5, entitled "Environmental Quality - Policy for Implementation and Integrated Application of the U.S. Army Corps of Engineers (USACE) Environmental Operating Principles (EOP) and Doctrine." The EOPs as well as the implementation and integration of the EOPs and the associated doctrine apply to all elements of the Corps of Engineers, across the full spectrum of USACE's program management initiatives and business processes, all military programs and all civil programs.

This is the entire document in Adobe Acrobat pdf format at www.usace.army.mil/inet/usace-docs/eng-regs/er200-1-5/toc.htm. A copy of the memorandum signed by the Chief can be found at this web location:. Use the back button to return to this page. For more information contact Beverley B. Getzen, Chief Environmental Policy Advisor, Office of Environmental Policyfor US Army Corps of Engineers at (202) 761-0673.

The National Wildlife Federation's Species Recovery Fund Grants
The National Wildlife Federation's Species Recovery Fund seeks to encourage habitat restorations, species reintroductions, private land conservation activities, and other creative endeavors that directly improve conditions for species listed under the U.S. Endangered Species Act. During the past four years, The National Wildlife Federation has awarded over forty grants to support innovative species conservation efforts. The species Recovery Fund invites applications from any organization, agency, tribe, university, or individual working to improve on-the-ground conditions for imperiled species. Preference will be given to local grassroots organizations. Grant awards will range from $3,000 to $7,000. Key criteria are the degree to which the project will improve on-the-ground conditions of listed species and the degree to which the project will involve people that have not previously been involved with species and habitat conservation.

The deadline for submission of grant applications is **February 16, 2004**. For more information about SRF, including complete guidelines, please visit www/nwf.org/keepthewildalive/speciesrecoveryfund.cfm or contact Colleen Fahey at (202) 797-6621, or Ron Ohrel at (202) 797-6639.

OPPTS Tribal Strategy
This Tribal Strategic Plan was developed by EPA's Office of Prevention, Pesticides and Toxic Substances (OPPTS) as part of the Agency's larger strategic planning process. The Plan was developed to guide OPPTS and its regional partners as they implement programs and forward initiatives to support successful pesticide and toxics management and pollution prevention in Indian country.

The first section of the Plan summarizes the roles and responsibilities of the various offices within OPPTS, including its Tribal Program. The second part of the Plan is intended to guide the activities of the Tribal Program by establishing its long-term goals and objectives. On an annual basis, OPPTS intends to develop a program specific plan for the following twelve-month period. This yearly plan will identify actions that OPPTS expects to take to achieve the goals and objectives set forth in the long-term strategy. **Comments are extended to February 17, 2004.** If you have any questions, contact Barbara Cunningham, Director, Environmental Assistance Division, Office of Pollution Prevention and Toxics at 202-564-8198.

Advance Notice of Proposed Rulemaking: Federal Water Quality Standards for Waters in Indian Country - comment period extended to Feb 13th.
EPA continues to review detailed input recently received from Tribes, States and other stakeholders, and awaits additional comments. Region 9 ROC proposal is to delay work on the ANPRM by 3-4 months to allow full government-to-government consultation on the text of the ANPRM. The consultation would be modeled on the air program's consultation, in which each Tribe was asked its preference for how it wished to be consulted. This could result in publishing the ANPRM in winter-spring 2005 at the earliest. HQs EPA staff proposal is to continue on course to develop the ANPRM. Conducting full consultation as described in EO 13175, but doing it AFTER the ANPRM is published so that tribes can participate as EPA makes decisions on any proposed rule. This is the approach contained in phases 2 and 3 of our Interim Draft Outreach and Consultation Plan at www.epa.gov/ost/standards/tribal/#docs. Additional background on the overall process and other related information can be found on EPA's website for Federal water quality standards for waters in Indian country, at: www.epa.gov/ost/standards/tribal/.

Utility Mercury Reductions Rule (proposed)
The EPA seeks comment on the Utility Mercury Reduction Rule (published in the Federal Register on January 30, 2004) which is expected to reduce mercury emissions from coal-burning power plants. One approach would require coal-fired power plants to install currently available pollution controls known as "maximum achievable control technologies" (MACT) under section 112 of the Clean Air Act. A second approach would set a mandatory, declining

cap on the total mercury emissions allowed from coal-burning power plants nationwide.

Interstate Air Quality Rule (proposed)
The EPA also seeks comment on the Interstate Air Quality Rule (published in the Federal Register on January 30, 2004) which expected to reduce SO2 and NOx emissions in the eastern U.S. and is a component of the EPA's efforts to implement the new national air quality standards for fine particle pollution and 8-hour ozone. To achieve the required reductions in the most cost effective way, the proposal suggests that states (and tribes) regulate power plants under a cap and trade program similar to the EPA's Acid Rain Program.

NTEC's Executive Committee meets with the new US EPA Administrator, Michael O. Leavitt
The National Tribal Environmental Council's Executive Committee recently met with the new US EPA Administrator, Michael O. Leavitt. In this meeting the Administrator stated unequivocally that he understood the nature of the tribal federal relationship to be one between governments, that he fully accepted his Agency's trust responsibility, and in regard to reaffirming the Indian Policy, he stated he was fairly confident that if every Administrator had re-affirmed it he would also, but that he needed to read it before he could commit to a reaffirmation of the policy.

Administrator Leavitt and the NTEC Executive Committee agreed to follow-up meetings throughout the year, and agreed to work jointly on the rulemaking process regarding the proposed options to reduce mercury emissions.

- **Tribal Delegation Meets with the new EPA Administrator Leavitt**
  NCAI Broadcast - text only
  NCAI Broadcast - pdf format

- RTOC Letter to the Administrator in pdf format

Partial Distribution of FY2004 Indian Reservation Roads Funds
The Bureau of Indian Affairs published in the *Federal Register* a final rule requiring the distribution of $25 million of FY2004 Indian Reservatopm Roads funds to projects on or near Indian reservations suing the relative need formula (25 CFR Part 170). This partial allocation is based on funding approrpiated under a continuing appropriations resolution, and is in effect until February 29, 2004.

ICWA Designated Tribal Agents
On December 8, the Bureau of Indian Affairs published in the *Federal Register* the current list of Designated Tribal Agents for service of notice proceedings under the Indian Child Welfare Act, including the listings of designated tribal agents received by the Secretary of the Interior prior to the December 8 publication.

International Children's Conference on the Environment
The United Nations with the Mashantucket Pequot Tribal Nation are sponsoring an International Children's Conference on the Environment and are seeking children to register between the ages of 10 to 13. The conference is to take place at Connecticut College between July 19 to 23 of 2004. The honorary chairperson is Dr. Jane Goodall whose foundation is also associated with the event. They are particularly interested in recruiting Native Americans, women and other underrepresented minorities to participate. Further information may be obtained by writing: ICCE, 305 State Street, New London, CT 06320 USA, or contacting Ms. Barbara Morgan, her e-mail is icce@icc04.org .

Indian Tribal Energy Development and Self-Determination Act of 2003
The national energy bill contains a number of provisions concerning Indian energy deveopment, including a separate Indian energy title (Title V). Included under Title V section provisions are an Indian energy program at the Department of Energy (DOE) to assist tribes, and the establishment of an Office of Indian Energy Policy and Programs within DOE. A complete copy of the 2003 Indian Energy Policy is now available in two formats.

- Microsoft Word document download

- HTML and web format (use the back button to return)

Executive Quarterly Meeting of the National Tribal Air Association
The National Tribal Air Association will have its first Executive Committee quarterly meeting for 2004 in Seattle, Washington from January13-15. Hotel accommodations are reserved at the W Seattle and the phone is (877)946-8357 or (206)264-6000. The meeting site is EPA's Region 10 office located .3 miles from the hotel, in downtown Seattle. The meeting is open to all interested persons. Contact: J. Stephen Hartsfield, NTAA Operations Coordinator at (505) 242-2175 for more information, or Email him at shartfield@ntec.org

(Attachment #58)

Grants to Supplement State and Tribal CERCLA Section 128(a) Response Programs
The Environmental Protection Agency ("EPA") published a notice in the December 9 *Federal Register* guidance on grants to supplement Comprehensive Environmental Response and Liability Act (CERCLA) or Superfund section 128 (a) State and Tribal Response Program. Guidance provides eligibility for funding, use of funds, grant mechanisms and process for awarding funds, the allocation system for distribution of funding, and terms and reporting under these grants. In FY2004, EPA will target at least $3 million for tribal response programs.

EPA funding for Tribal Open Dump Cleanup Project
The Environmental Protection Agency ("EPA") has funding available under its Tribal Open Dump Cleanup Project. The purpose of the Cleanup Project is to assist with closing or upgrading tribal high-threat waste disposal sites and providing alternative disposal and integrated solid waste management. The deadline for proposals is ***January 30, 2004***. Copies of the Request for Proposals package may be obtained on-line at http://www.epa.gov/tribalmsw by clicking on "Funding." For further information, contact Christopher Dege, EPA, at (703) 308-2392; Steve Aoyama, Indian Health Service, at (301) 443-1046; or Debbie McBride, Bureau of Indian Affairs, at (202) 208-3606.
See 68 Fed. Reg. 69684 (December 15, 2003).

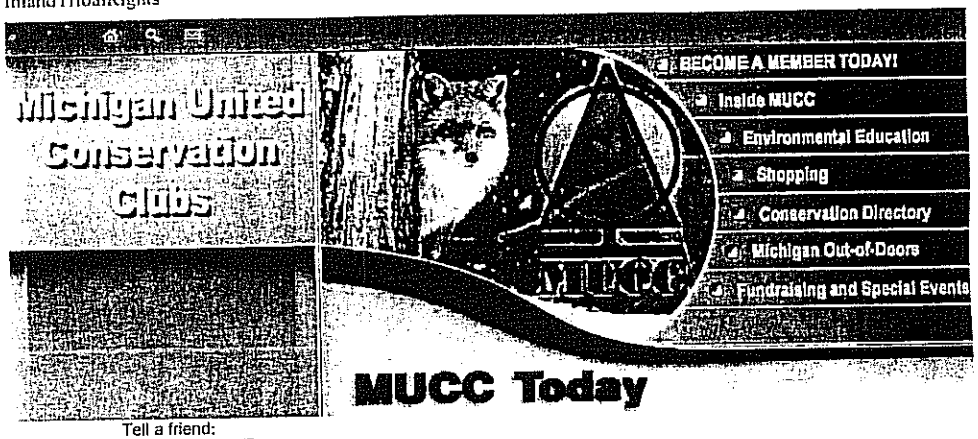
Master's Degree Program in Water Resources
Applications for the 2003 academic year are currently being accepted for the "Hire-Train-Retain" initiative with the Universities Council on Water Resources (UCOWR) to develop a masters degree program in water resources planning and management. The degree program enables planners and other technical professionals to complete requirements for a masters degree at government expense in a relatively compressed time frame. For more information visit the web site at: www.usace.army.mil/mastersdegree

Angostura Irrigation Project
Senator Daschle (D-SD) introduced S 1996, legislation to authorize improvements proposed by the Bureau of Reclamation to the Angostura Irrigation District (created under the Pick-Sloan Missouri River basin program) and authorize the creation of a trust fund for economic development, infrastructure improvement and general welfare to compensate the Oglala Sioux tribe for econpmic impacts and lost natural resources.

Environmental Tribal Groups | Related Links | What's New | Legislation | NTEC home

For more information email NTEC or call us at (505) 242-2175

(Attachment #58)



Tell a friend:
Enter Address Here
Send this URL

For Immediate Release:
September 17, 2003

Contact : Sage Eastman
517-373-8060

State Seeks Court Decision on Tribal Inland Hunting and Fishing Rights Dispute

Lansing , MI – Attorney General Mike Cox announced today that his office has filed pleadings in federal court asking for judicial resolution of an inland hunting and fishing rights dispute between the state and five Michigan tribes over whether the tribes' legal rights to hunt and fish on nearly 40 percent of Michigan 's land acreage have expired.

The dispute revolves around language in the 1836 Treaty of Washington giving the tribes rights until "the land is required for settlement." The state is asserting that hunting, fishing and other rights retained by the tribes in the inland areas covered by the Treaty have expired in virtually all non-reservation areas. The land mass in question includes much of the Lower Peninsula north of the Grand River and the eastern half of the Upper Peninsula and totals approximately 13,837,207 acres, or roughly 37 percent of the acreage in the state.

The tribes are expected to claim that they retain all of those rights wherever land is open to the public for hunting and fishing today. This would include all public lands in the Treaty area, as well as private lands, that are open to the public for hunting and fishing.

In recent years, the five Treaty tribes have implemented the licensing and regulation of tribal hunting and inland fishing seasons for public and private lands without a court decision affirming their right to do so. The tribal laws allow greater opportunities to tribal members than state law in terms of season species, and regulations. These greater opportunities are extremely controversial among the public and needlessly expose tribal members to the risk of prosecution under state law.

"The current confusion over inland tribal hunting and fishing rights benefits no one and casts doubt over Michigan's ability to appropriately manage its natural resources," said Cox. "For the sake of all parties involved, and so we can ensure proper protection of our natural resources, this legal question must

be solved."
The Attorney General has taken this action at the request of Michigan Department of Natural Resources Director K.L Cool and is supported by the Governor's office.

"Legal uncertainty is bad public policy," Cool said. " Michigan 's natural resources need and deserve clear, concise management. Our state needs to understand its legal management jurisdiction. We look forward to achieving legal resolution to this long-standing uncertainty."

Litigation over the meaning and effect of the Treaty began in state courts ir 1971 and in federal courts in 1973 in connection with disputes over tribal member use of large mesh gill nets on the Great Lakes . Both the Michigan courts and the federal courts addressed the issue of whether the tribes' Great Lakes rights had been extinguished because the Treaty area had been "require for settlement." Both court systems found that the Great Lakes would never be "settled" within the meaning of the Treaty and, therefore, that these tribes' rig to fish in those waters would always exist. The courts, however, did not addre the question of inland hunting and fishing rights.

There are currently five federally recognized Indian tribes that are political successors to the signatories to the Treaty: the Bay Mills Indian Community ir Brimley, the Grand Traverse Band of Ottawa and Chippewa Indians in Peshawbestown, the Little River Band of Ottawa Indians in Manistee, the Littl Traverse Bay Bands of Odawa Indians in Petoskey, and the Sault Ste. Marie Tribe of Chippewa Indians in Sault Ste. Marie.

###

Copyright (c) 2003
Michigan United Conservation Club
All rights reserved.

(Attachment #58)

Attorney General Mike Cox

For further information contact:
Sage Eastman 517-373-0060 (Office)

FOR IMMEDIATE RELEASE

September 17, 2003

Lansing, MI – Attorney General Mike Cox announced today that his office has filed pleadings in federal court asking for judicial resolution of an inland hunting and fishing rights dispute between the state and five Michigan tribes over whether the tribes' legal rights to hunt and fish on nearly 40 percent of Michigan's land acreage have expired.

The dispute revolves around language in the 1836 Treaty of Washington giving the tribes rights until "the land is required for settlement." The state is asserting that hunting, fishing and other rights retained by the tribes in the inland areas covered by the Treaty have expired in virtually all non-reservation areas. The land mass in question includes much of the Lower Peninsula north of the Grand River and the eastern half of the Upper Peninsula and totals approximately 13,837,207 acres, or roughly 37 percent of the acreage in the state.

The tribes are expected to claim that they retain all of those rights wherever land is open to the public for hunting and fishing today. This would include all public lands in the Treaty area, as well as private lands, that are open to the public for hunting and fishing.

In recent years, the five Treaty tribes have implemented the licensing and regulation of tribal hunting and inland fishing seasons for public and private lands without a court decision affirming their right to do so. The tribal laws allow greater opportunities to tribal members than state law in terms of season, species, and regulations. These greater opportunities are extremely controversial among the public and needlessly expose tribal members to the risk of prosecution under state law.

"The current confusion over inland tribal hunting and fishing rights benefits no one and casts doubt over Michigan's ability to appropriately manage its natural resources," said Cox. "For the sake of all parties involved, and so we can ensure proper protection of our natural resources, this legal question must be solved."

The Attorney General has taken this action at the request of Michigan Department of Natural Resources Director K.L Cool and is supported by the Governor's office.

"Legal uncertainty is bad public policy," Cool said. "Michigan's natural resources need and deserve clear, concise management. Our state needs to understand its legal management jurisdiction. We look forward to achieving legal resolution to this long-standing uncertainty."

Litigation over the meaning and effect of the Treaty began in state courts in 1971 and in federal courts in 1973 in connection with disputes over tribal member use of large mesh gill nets on the Great Lakes. Both the Michigan courts and the federal courts addressed the issue of whether the tribes' Great Lakes rights had been extinguished because the Treaty area had been "required for settlement." Both court systems found that the Great Lakes would never be "settled" within the meaning of the Treaty and, therefore, that these tribes' right to fish in

those waters would always exist. The courts, however, did not address the question of inland hunting and fishing rights.

There are currently five federally recognized Indian tribes that are political successors to the signatories to the Treaty: the Bay Mills Indian Community in Brimley, the Grand Traverse Band of Ottawa and Chippewa Indians in Peshawbestown, the Little River Band of Ottawa Indians in Manistee, the Little Traverse Bay Bands of Odawa Indians in Petoskey, and the Sault Ste. Marie Tribe of Chippewa Indians in Sault Ste. Marie.

- 30 -

http://press_release/pr10436.htm
State of Michigan, Department of Attorney General
Last Updated 03/01/2004 12:07:59

(Attachment #58)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Rick Anderson	6027 Pine Creek Rd Manistee, MI	231-[illegible]	[illegible]18
Ken Galaird	262 E Scottsdale Freesoil Mi	231-[illegible]	[illegible]
Willa Heath Jr	3130 PIAZA DR Grand Rapids Mi	[illegible]	[illegible]
Ronald Baker	18 CABERFAE Hwy MANISTEE Mi	[illegible]	[illegible]
Mark Adamczak	252 West Fox Farm Rd Manistee Mi	231-723-6[illegible]	
Rick Smith	4305 Pine Creek Rd Manistee M	231 723[illegible]	
Paul Hollie	1335 E. Brittain Benton Harbor MI	269-9[illegible]	[illegible]02
Smi Tetzlaff	P.O. Box 59 Filer City	723-21[illegible]	
Scott Tetzlaff	630 Hilty St. Filer City	723-[illegible]	
Beth Baerenbrie	319 1/2 4th St Manistee		
Jesse R Vickers	135 Washington Manistee	723-[illegible]	
Bob Sundberg	701 Maple St Apt 3a Manistee	723-[illegible]	
Dalpey Lindemeier	2222 AVE A Filer City, MI	723-[illegible]	
Jinala Van Dekkle	1313 Vine St Manistee	723	8

1

14

Dec 09 03 10:44a Jim Tondu 616-866-5321 p.1

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Debra Hanson	7919 E. Navajo Trail Branch, MI 49431	231-75[illegible]	[illegible]48@1010[illegible]
Donna Smith	809 N. Rath Ave. Ludington, M	231-2[illegible]	
Kenneth Smith	809 N. Rath Ave Ludington, Mi	231-84[illegible]	
Cindy L. Syrek	1838 W Madison Rd. Hart MI	231-869[illegible]	
Susan Chadwick	Branch Mi 49402 10569 W 64th	231 898	
Denise L Mechenick	4466 N. Rech Rd Fountain Mi 49410	231-462[illegible]	

6

3

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
[illegible] ?	Freesine Mi	464[illegible]	
[illegible] ?	3563 1-33 [illegible]	1-2	
[illegible]	481 First St Manistee MI	(231)723[illegible]	
Pam Dumas	481 First Street Manistee MI 49660	(231)723[illegible]	
Mr Mike Northrup	481½ First Street MI 49660 Manistee		
[illegible] ?	481½ First St. Manistee		
[illegible] ?	411 McKee St Manistee MI 49660		
[illegible]	605 Fairview Ave. Manistee, MI 49660		
Robert Andree	480 1st Manistee Mich 49660		
Frances Barrow	480 1st Manistee Mich 49660		
Jaymi Barrow	480 1st. Manistee MI 49660		
Donald J. Howe ?	510 2nd. St. Manistee, MI 49660	723[illegible]	

12

2

(Attachment #58)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
FRED K DeWYS	8099 Millerton RD	231-[illegible]	f[illegible]YAHOO.COM
MARY B. DeWYS	8099 Millerton RD	(231) 462-[illegible]	f[illegible]
Stacee L. DeWYS	" " "	(231) [illegible]	" " " "
Krista L DeWYS	" " "	231 4[illegible]	" " " "

4

5

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
[illegible] Edmondson Sr	10 Bridge St	Manistee	723-[illegible]3
Dora Edmondson	10 Bridge St.	Manistee	723-
[illegible] Nelson	935 11 mile	Bear Lake, Mi	
[illegible] Gillespie	588 E Kott Rd.	Manistee Mi.	723-[illegible]
[illegible]	228 6th Ave.	Manistee MI	49660
[illegible] Yoder	734 Hilty St	Filer City Mi	49634
Jean M. Hafer	11148 Pine Creek Rd.	Manistee, MI	49860
Lynn E. Edmondson	4757 Schoedel Rd.	49660	889-96.3
Mary Esther Edmondson	4757 Schoedel Rd	Manistee 49660	

(Attachment #58)

9

4

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Allen Grossnickle	P.O. Box 258 Kalwa	231-36:	Same
[illegible]			
Corinne Grossnickle	Kalwa MI	231-	[illegible].com

3

(7)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Raymond A. Stafford	6907 N. 192nd Ave Walkerville Mi 49459	[illegible]	[illegible]

(Attachment #58)

(6)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
John L. Green	Manistee, Mi.	723-	
Donna S. Green	Manistee, Mi	723	
Patrick J. Gielenk	MANISTEE	231-723-	
[illegible]	MANISTEE	723-	
[illegible]	[illegible] MI	889-	
Robert A. Contest	Manistee Mich	39	
Hilary Kliber	Manistee Mi		
Walter L. Grant	MANISTEE, Mi	6	
Ron Grant	Manistee, MI	723	
Philip Seldman	Manistee Mi	723-	
Steve Fredericks	Manistee Mi	723-	
Mary Grant	Manistee, Mi	723-	
Jim Rimmick	East Lake, MI	723-	
Shirley Fredericks	Manistee Mi	723-	
Joshua Sagala	Manistee, MI	723-	
Ronald Westberg	Manistee MI	723	

16

9

Dec 09 03 10:44a Jim Tondu 616-866-5321 P.1

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Brett Hamilton	12096 B166 Rd Kaleva	362	
Debbie McCURDY	6315 FARNSWORTH RD. BRETHREN MI 49619		
Pam Regula	14911 Nine mile Rd. Kaleva MI	[illegible]	
Richard Regula	Po Box 425 Kaleva MI		
Sandra Widgren	9169 Jouppi Rd Kaleva, MI		
Constance M. McCumber	Brethren, Mich 49619		
Country Rest Motel	~~[illegible]~~ Manistee Mich. 49660		
[illegible]	17125 [illegible] Wellston MI 49683		
Sandra Harris	14351 9 Mile Rd Kaleva 49645		
Dee Jones	6444 maidens Rd Bear Lake Mi 49614		
Noreen Ward	3227 Keith Rd Brethren, Mich 49619		
Lewis Shedd	13247 Brower Rd Brethren Mi 49619		

(Attachment #58)

8

12

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Laurie L Williams	638 N. Darr Rd Scottville 23		
James M Makowski Jr	386 4th street	3[illegible]	
Robert Heck	1891 Cherry Rd	Manistee	
Jim Clark	P.O. Box 75 Filer City		3
Jim Fett	3781 Chippewa Hwy.	Manistee	N/A
Richard Jans	628 Davis St	Manistee MI	49660
David [illegible]	216 - 12-th ST.	Manistee Mi	49660
John Rozga	162 Quincy	Manistee MI	49660
Clarence Sullivan	1956 E [illegible]	Manistee Mi	49660
[illegible]	3866 Maple Rd	Manistee MI	
Clarence Adamczak	10660 N. US 31	Free Soil, MI.	
Mel Kruse	2519 Lakeshore Rd.	Manistee Mich	49660
Steven Johnson	8021 Schroeder St.	Onekama Mi.	49675
Mike Cone	16199 Dickson Rd	Brethren Mi.	49619
Mike [illegible]	264 3RD AVE.	Manistee MI.	49660
[illegible]	246 12th ST	Manistee MI	49660

16

(11)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Dan M Burns	5638 W 11 Mile Dafter, Mi		
E Marlene Burns	5638 W 11 mi RD. Dafter Mi		

Dec 09 03 10:44a Jim Tondu 616-866-5321 p.1

2

(Attachment #58)

(10)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Doug Richley	2170 Wildwood Rd.	723-[illegible]	
Dave Russell	3226 W. Foxfarm Rd	723-7845	
Don Cosmelli	1724 Cherry Rd.	723-[illegible]	
RICHARD ROBKE	4900 SCHOENHERR FOUNTAIN 49410	[illegible]	
Jim Hilliard	23 Mazill St Manistee		
Vern Robinson	1700 FRUIT RIDGE MANISTEE 49660	723-4597	
Rod Richmond	7432 Alkire Rd Bear Lake Mi 49614	864-2605	
Scott Smejkal	334 8th St. Manistee, MI	398-0934	
[illegible]	275 10TH ST MANISTEE MI	723 5823	
[illegible]	1405 Yoder Rd. Manistee	723-7236	
Rod [illegible]	12159 Linderman Rd. Bear Lake	864-3443	
Thomas S. Williams	2809 Linwood Rd. Manistee	723-4306	
Andrew Bruyne	12164 Linderman Bear Lake	864-2632	
DALE Edmondson SR	10 BRIDGE ST MANISTEE	723-7513	
DORA Edmondson	10 BRIDGE ST MANISTEE	723-7513	

15

(13)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Dale Edmondson JR	763 E. Kott MANISTEE	723-	
Bruce Hager	321 Cherry-Twin Lake	894-[illegible]	
James M Wing	213 E 2nd. Scottville	757-[illegible]	
Dyllon Hager	2364 Elm St. Twin Lake	(231) 557-[illegible]	
Clay Bladzik	P.O. Box 273 Eastlake, Mi.	231-723-[illegible]	
Earl A Wave	12136 2nd ST Bear Lake Mi	231-864-[illegible]	
Everett Snyder	472 Ave A Eastlake	231-723-[illegible]	
Ed Livingston	561 Mec St Filer	231-727-[illegible]	
Kurt Edenburn	2857 OLD MAPLE Rd. MAN.	231-723-[illegible]	
Ron Gugowski	[illegible] St	231-723-[illegible]	
Joy Edmondson	4417 Pine Creek Rd.	231 723-[illegible]	
Rita Edmondson	763 E Kott Rd.	231 723-[illegible]	
George A Edmondson	4417 Pine Creek	231-723-4[illegible]	
[illegible]	608 [illegible] St	Manistee	
Victor A Adamczyk	487 E Hoague Rd.	Free Soil	

(Attachment #58)

15

(12)

Dec 09 03 10:44a Jim Tondu 616-866-5321 p.1

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Sharon R. Nelson	P.O. Box 173 12160 Eleventh street Bear Lake	(231) 864-5246	
Jody L Nelson	PO Box 173 Bear Lake, MI 49614	231) 864-5246	
Harlan R. Nelson	6284 South Shore Rd Bear Lake, Mi 49614		

3

15

Dec 09 03 10:44a Jim Tondu 616-866-5321 p.1

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Harlan E. Nelson	12171 Second St Bear Lake, MI 49614		
Betty J. Nelson	12171 2nd St. Bear Lake Mi		
C. Anderson	12273 2nd Bear Lake		
Diane Keiller	12136 1st St. Bear Lake, MI		
Jon L. Keiller	12136 1st St Bear Lake Mi		
Betty Joyce Ware	12136 2nd St. Bear Lake Mi	8643053	
Margaret L. Treadwell	12158 First St Bear Lake MI 49614		
[illegible] Millimer	12065 8th St Bear Lake, MI 49614		

8

14

(Attachment #58)

Dec 09 03 10:44a Jim Tondu 616-866-5321 p.1

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name [illegible] Address 607 DAVIS Phone 1-231 7232058 Email
MANISTEE MICH 49660

Jim Kissinger 824 3149
Edward G. Brandt 7477 Coates Hwy Manistee, Mi 889-3508
[illegible] 476 4th Street Manistee, Mi.
Bruce Slaughter 1512 Merkey
Jim McCarthy 843-4140
Sean [illegible] 9441 210TH AVE REED CITY MI 832-8270
Lynn Miller 930 Merkey Rd Manistee, Mi. 723-2646

8

(17)

Dec 09 03 10:44a Jim Tondu 616-866-5321 p.1

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Roger Larson	3670 Sass Rd Man.	723-5276	
Marc Guzikowski	8359 Second Ave. Onekama	889-4995	

(Attachment #58)

2

(16)

Dec 09 03 10:44a Jim Tondu 616-866-5321 p.1

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Greg Jones	P.O. Box 583 Manistee	398-0699	
Robert Buck	7 Bowerman Rd Manistee	723-2561 X 4249	

2

18

Dec 09 03 10:44a Jim Tondu 616-866-5321 p.1

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name [illegible] Address 471 [illegible] RD Phone 723-[illegible] Email

(Attachment #58)

19

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Don Pelabst	411 Gloria LN	Manistee	
RAE TAYLOR	412 Elm St	Manistee	
Ruben Guillen JR	6455 Lakeshore Rd	Manistee	
Brenda Fowler	2894 3rd Street	Eastlake	
	1498 Fox Farm Rd	Manistee	

5

(21)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Steve Hamilton	6219 Miller Rd Manistee		
BRUCE-PERRY	5720 RIVER Rd. MANISTEE		
Rod Fraim	4884 River Rd Manistee		
JOHN BROOKS	24 CABERFAE HWY Lot 40 Manistee		
John M. DONTZ	1451 DONTZ Rd Manistee	723-	

5

(20)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Billy Taylor	24 Cabarfield Hwy #49	7 [illegible]	
Reuben Herrmann	3406 Maplewood	[illegible]	
Edmund Gutowski	812 Davis St.	[illegible]	
[illegible]	211 Sycamore St	200 [illegible]	
[illegible]	507 Davis		
Phillip J Miller	930 Merkey Rd Manistee	72 [illegible]	
[illegible]	1579 ~~[illegible]~~ Maple Rd Manistee	230 [illegible]	
[illegible]	5883 River Road Manistee, MI 231-[illegible]		
[illegible]	8473 Portage St Onekama MI 49675		
[illegible]	5020 Potter Rd Bear Lake MI 49614		
Roberto Rosales	5118 Tompke Rd Manistee MI 49660		
Matthew City	11593 U.S. 31 HWY. MANISTEE, MI 49660		
Jim Rylicki	2317 Steinberg Rd Manistee	[illegible]	

13

23

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
[illegible]	448 Kott Rd	7[illegible]	
[illegible]	448 E Kott Rd	[illegible]	
[illegible]	8785 N. Stephen Rd	[illegible]	
Ed Mallison	3253 River Rd	[illegible]	
Dan Bladyka	1552 Fruitridge	7[illegible]	
Mike Urban	4401 River Rd.	[illegible]	
Dennis [illegible]	233 tenth St.	[illegible]	
[illegible]	1579 Maple RD	[illegible]	
Robert Rakowski	7582 Quarter Line RD	2[illegible]	
[illegible]	1100 Chuy Road	[illegible]	
[illegible]	1611 W White Road	[illegible]	
[illegible]	6794 Asp Rd Manistee	[illegible]	

12

(Attachment #58)

22

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Jennifer Janicki	381 7th St. Manistee	7239108	
[illegible]	1995 Dante Rd Manistee	[illegible]	
Bruce Brandt	6196 Farr Rd, Onekama	[illegible]	
[illegible]	4485 W. Fisher Rd Ludington MI.	[illegible]	
Martin Nelson	855 E. Parkdale, Manistee	[illegible]	MNE1SN7@Earthlink.Net
Dr Ian Grafton	320 River St.	[illegible]	
John [illegible]	1912 Lake Shore Rd	[illegible]	
[illegible]	7712 Anderson Rd.	[illegible]	
[illegible]	351 Gloria Lane	[illegible]	
Kim Malster	1669 Snowtrails Manistee	[illegible]	
Vickey Kennedy	1460 Greenwich St Manistee	[illegible]	
[illegible]	411 Gloria Lane, Manistee MI	[illegible]	

12

25

Dec 09 03 10:44a Jim Tondu 616-866-5321 P.1

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
[illegible]	8359 2nd Ave	[illegible]	
[illegible]	968 17th St	[illegible]	
James Willard	1540 2nd Ave	[illegible]	
Wayne Weigel	555 Wall St. Eastlake	[illegible]	
Bob Kott	11 West Kott Rd	[illegible]	
Harvey Good	273 Sixth Ave	[illegible]	
Shirley Olen	1795 Guthrie Rd	[illegible]	
[illegible]	956 Birchwood	[illegible]	
Debra Matheson	339 River	[illegible]	
Joseph Matheson	339 River	[illegible]	
James Cabot	387 End St Eastlake	[illegible]	
Genevieve Cabot	1401 Manistee Street	[illegible]	

12

(Attachment #58)

24

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Anita Mlopek	9017 Johnson Rd, Kaleva		
Randall J. [illegible]	311 Birchwood Dr. Manistee Mi		
David A. Jenz	3031 JEBAVY Rd MANISTEE		
Ronald Jenz	3031 JEBAVY RD MANISTEE		
Jane Shively	273 16th St	7[illegible]	
Gina Nicholas	456 Birchwood	723 [illegible]	
Mike Moore	365 1/2	231 7[illegible]	
Phil Fortin	297 4th Ave	7[illegible]	
Chester Gauthier	6013 miller Rd	889-[illegible]	
Ronald Kwiebocki	PO Box 344 Onekama, 8[illegible]		
Kevin Peterson	942 E Hoague RD Freeroll		
Scott Madoy	17345 2nd ST Wellston 8[illegible]		

12

(27)

23rd

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Bradley L. Kolb	486 4th St.	[illegible]	[illegible]
Michael Holcik	17475 Spring St		
Ruth Dillette	2605 Manistee ST		
Clark Johnson	184 Quincy St.		
Robert Hartwig	1411 Brown RD MANISTEE		
Michael Kaminski	706 Ramsdell St Man.		
Gary Branyan Sr.			
Donald Cand	12745 Moore Rd	86[illegible]	
Joe Newcomb	703 BAKER Rd.	[illegible]	
Marvin Lewis	741 Ave C EASTLAKE Mi.	398-2[illegible]	
[illegible]	480 Fourth St. Manistee, Mi	723-	
Bradley L. Kolb	486 4th St.		

12

(26)

(Attachment #58)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
[illegible]	1906 RAMONA D.R.		
Lillian Bladzik	1515 Vine St		
Carol Dutkowski	1507 Vine St. Mstee		
Ron Hathaway	1009 Vine St. Manistee		

4

(29)

Dec 09 03 10:44a Jim Tondu 616-866-5321

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Kelly Kelley	513 2nd St Mstee		
[illegible]	1516 Hill Rd	72	
[illegible]	20214 Husiak Rd	84	
[illegible]	20214 Husiak Rd.	8	
[illegible]	9 Cottage Ave	722	
Barry E Seymour II	1344 Meadowwood		
Geraldine Gage	82 Grant St	7	
Robert Humphries	13676 ERDMAN	5	

8

(Attachment #58)

(28)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
STEVEN SAMS	P.O. Box 215		
Jim V. Magmer	451 E Prevost Rd.		
[illegible]	E 34 RD CAD		
PAT Skimin	P.O. Box 291 ONEKAMA		
Scott Stearns	3988 N. Stiles Rd Scottville		
[illegible]	245 Washington St Manistee		
Warren Michaelson	3795 Susan St Wellston Mi		
D. [illegible] A McIntyre	2300 Maple Rd Manistee MI 49660		
Mike Magmer	4873 Cleveland St Fountain MI		
Kein Roberts	8162 N. Nelson Rd Lake City Mi		
David Molitor	510 175th Ave Morley Mi		
Tim Colyer	1368 W. 1st St. Scottville		
Gary Wolfe	14237 Brewer Rd Brethren Mi		
Darren Stone	453 Third Manistee MI		
LEONARD PLANNES	453 THIRD ST MANISTEE		
Jody Hill	5939 Sanborn Rd		

(31)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Elmond Hamilton III	17290 Lindrees Rd		
Mark Hamilton	23373 Taylor Copemish MI 49625		
[illegible] J. Skimin	8345 3rd St. Onekama 49675	889-4809	
Michael Skimin	7411 9 mile Rd Bear Lake Mi		
Lureda Skimin	7411 9 Mile Rd. Bear Lake, Mi. 49614	(231)	
Sidney Sams	8881 N Custer Rd Freesoil		

(30)

(Attachment #58)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Cindy Day	2227 Water St Rt 3	723	
[illegible]	5804 Ridge Rd	398	
David M. Youngle	524 Spruce St.	723	[illegible]
Chris Rapalez	298 Gloria Ln	398	
Ron Price	283 4th Ave.	723	
RYAN SYTEK	162 MONROE	510	
[illegible]	69 Sixth Str Eastlake	723	
[illegible]	290-8th St.	723	
Patrick J. Ohanna	1673 E Parkdale	TES	[illegible]
Patrick M Ohanna	1673 E Parkdale	723	
[illegible]	6038 Bryant Rd.	590	
[illegible]	451 Ave A Eastlake Mi	[illegible]	E [illegible] .com

12

33

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Ruth Niemirowicz	1510 Vine St Manistee Mi	[illegible]	
Cheryl Hathaway	1009 Vine St Manistee	723	
Jane Foster	1506 Vine Street Manistee	72[illegible]	
Percy Foster	1506 Vine St Manistee	[illegible]	
Lori Foster	1003 Countyline Manistee	[illegible]	
Donald R Foster	1003 Countyline Manistee		
Rosemary R. Fitch	264 1st Ave Manistee	[illegible]	
John Fitch	2547 Grant Hwy Manistee	[illegible]	
Debra Thomas	296 6th Street Manistee	[illegible]	
[illegible]	335 1st Manistee	[illegible]	
Roger R. Schrader	1205 23rd St Manistee		
Jean Schrader	1205-23rd St Manistee Mi.	723-[illegible]	
Harriet Sielski	1117-23rd Manistee Mi.	[illegible]	
Gregory Sielski	1117-23rd St. Manistee Mi.		
Kenneth Sielski	1117-23rd St Manistee 723-		

(Attachment #58)

15

32

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Christine L. Polenciewicz	716 Pine St Manistee MI 49660		
Marie Lytle	714 Pine St Manistee MI 49660		
Lawrence Lytle	714 Pine St Manistee Mi	"	"
Priscilla Stoffel	106 Jefferson St Manistee MI 49660		
Jack Stoffel	106 Jefferson St Manistee, MI 49660		
Kathy Maier	2804 Bradford Manistee, Mi 49660		
Larry Welch	10913 Lasalle RD Manistee Mi 49660		
Robert Sielski	248 Hughes St. Manistee, Mi. 49660		
Marvis Denamore	2600 Nelson St #3 Manistee Mi. 49660		
[illegible]	9900 Chippewa Hwy Bear Lake MI 49614		
Phillip Wierzbicki	103 holly ct. MANISTEE MI 49660		
Carol Hanson	40 E. Piney Rd Manistee MI 49660		

12

35

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Peter R Landis	2085 WATER ST MANISTEE MI 49660		
[illegible]	663 S. Baldwin [illegible] MI 49349 231-[illegible]		
Cathy Landis	2085 Water St Manistee MI		
[illegible]	2210 Stronach rd Manistee MI		
[illegible]	2210 Stronach rd Manistee Mi		
[illegible]	2020 Stronach Manistee Mi		
Jenny Auenthardt	2445 Main St Rt 3 Stronach 723		
Tom Auenthardt	" " " "		
Melanie Schultz	2125 Water St. Stronach		
Bob Schultz	"		
[illegible]	190 Harrison St		
Corinne [illegible]	15 Poplar Rd		

12

34

(Attachment #58)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Teresa Link	2352 Water St Manistee	[illegible]	
Brenda Sedelmaier	385 E Piney Rd. Manistee	[illegible]	
[illegible]	290 third St Eastlake	[illegible]	
Jenny Skipski	701 Ramsdell St Manistee Mi	[illegible]	
Diane Mimnal	893 W. Hardy Rd Scottville	[illegible]	
Tere Morsh	571 Piney Rd Manistee	[illegible]	
Julie Gomez	705 Maple St.	[illegible]	
Todd Frenzel	809 Engleman St.	[illegible]	
Jessica Bussa	8883 N. Lasalle Rd	464 [illegible]	
Mary Hubert	107 Hancock St	[illegible]	
Kathy Kott	131026th St	[illegible]	
Cindy Jaskulski	11845 Anderson Rd	[illegible]	

12

37

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
[illegible]	9520 So Pinity Lno Rd	[illegible]	
Sandra Rybick	2833 Haagen, Free Soil		
Margee Heuck	11154 N. LaSalle Rd. Manistee		
Sandra Ware	1395 Greenwich		
Bonny LaBosh	11758 Linderman, Bear Lake	[illegible]	
[illegible]	8600 Portage Pt Dr Parkema	[illegible]	
Renee Leach	248 8th Street, Manistee	[illegible]	
Terri Albright	1840 Blossom Trail Manistee	[illegible]	
Dave Carlson	100 Oak St. Manistee	[illegible]	
Charles D Smith	12380 Jacobson Rd, Wellston	723-7993	Chuck@C21
Coby Lange	2904 Grant Hwy, Manistee	[illegible]	
Mike Cruikle	4204 University Place Manistee,		

12

36

(Attachment #58)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
KELVIN MALSTROM	1669 SNOWTRAILS DR.	(231) 723	
Thomas A. Greve	6290 Milarch Rd	(231) 889-	
EDWARD G PETERSEN	6073 W DAVIS	(231) 843	
John K. Johnsen	12073 LYNN	(231) 864-	
Robert Gutowski	1048 Brickyard Rd.	231-7	
Bruce Argetsinger	7132 N. US-31	231-4	
Randy Hanan	235 7th. St.	231 7	
[illegible]	1745 CHURRY RD	231 3	
Timothy G Strahan	903 St Paul	231 8	
Mike Clugley	1137 W CAMPBELL	231 7	
Jim Kowalski	1240 W. Fox Farm	231 7	
Chris Polcyn	175 Harrison St.	231 3	
David Gimen	17594 Pleasanton Hwy	231	
David A. Majkrzak	1431 BROWN ROAD	231-	
Randy G. Baker	7953 1st. St. Onekama	231-	

15

39

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
GEORGE GILLEZYK	13 BOWERMAN ROAD	723-[redacted]	
CARL CORNELL	575 CORNING FRANKFORT	352 [redacted]	
Bruce Patulski	2330 Main Stronach	723 [redacted]	
Steve Johnson	1579 Fruitridge Rd Manistee	723-[redacted]	
Lora Patulski	2330 Main St. Stronach	723-[redacted]	
Cynai Schlenker	96 W. Free Soil		
Bruce Hardy	867 Brickyard Rd	723-[redacted]	
[illegible]	2605 MANISTEE ST	723-[redacted]	
Bruce Johnson	266 8TH ST. MANISTEE		
Shelly Thayer	82 Greenbush Manistee	723-[redacted]	
Lisa McDougall	261 4th St. Manistee	398-[redacted]	
[illegible]	614 1/2 Hopkins St Manistee	398[redacted]	

12

38

(Attachment #58)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
DANIEL DUCHON	939 W 14th ST	MANISTEE MI	[illegible]
MICHELLE KOTT	1551 FRUITRIDGE	MANISTEE MI	Michelle Kott
Karen Sterbers	925 Tamarack St	Manistee MI	[illegible]
Laura R. Bartosz	613 Bryant Ave.	Manistee, MI	Laura R. Bartosz
MARK W ANDERSEN	27 CROSS ST.	Manistee, MI	M. Andersen
Laurie Sandstedt	252 Washington	Manistee Mi	
Rachel P Marcantus	4735 Crescent Beach Rd	Onekama	
Dena Schumke	326 5th Ave	Manistee, Mi 49660	Dena Schumke
Jodie Shack	9300 N. LaSalle Rd	Freesoil MI. 49411	
Trista Wood	575 Ramsdell Rd Apt 45	Manistee	
Caleb Fisk	8972 N. LaSalle Rd.	Freesoil, MI	www.Fisk[illegible]
Amy L. Schrader	1906 Ramona Ct.	Manistee MI 49660	

12

(41)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
JOHN FELCAR	1205 24TH STREET	(231) 723-	
Ron Gurvin	17923 Bitwell Rd. Bear Lake Mi	(231) 864-	
Rob Perez	4674 Meadow Lk DR	616 6[illegible]	
Ronald Gruntz	3808 Cuberfoo Hwy	231-	
James J. Kittlaus	751 CANFIELD	231-723-	
Charles W. Quiros	8579 8 mile	231-794-	
Debra Kaminski	3472 Old Stronach Rd	231-723-	
[illegible]	1339 Meadow Wood	231-398-	
Jeanny Dunbar	814 Tamarack St.	231-723-	
Chris Larsen	7105 McName Rd	231-499-	
[illegible]	2863 Grant Hwy	231-723-	
Ken Peppers	2992 River Rd.	231-723-	
Lord Brush	417 N. ROBERT St	231-843-	
Robert Skeira	295 7th ST.	231-723-	
Larry Squirrel	562 E. Pine Rd	231-723-	

15

(40)

(Attachment #58)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Louis A. Snay	3405 Maplewood		Manistee
Tom L [illegible]	1087 Countyline Rd		Manistee
Scott Fortier	2302 Nelson St Manistee	723-[redacted]	[illegible]
Keith Partridge	2820 Tolerie Mt		[illegible]
Danielle [illegible]	1087 W. Countyline Rd.		
Paul Adamski	74 Arthur St	[redacted]	[illegible]
Terry Riley	4750 Little River Rd	[redacted]	Terry Riley
Tom Schultz	1210 24th St	72[illegible]	Tom Schultz
Charles Perkins	1761 Olson rd Manistee	[illegible]	Charles Perkins
Carole Gustad	1761 Olson Rd Manistee	72[illegible]	Carole M Gustad
Chet Shook	2744 Old Stronach Rd Manistee	7[illegible]	Chet Shook
Dennis Mikula	1310 Greenwich Manistee	72[illegible] [redacted]	Dennis Mikula

12

(43)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Gerald K Mills	P.O Box 283 East Lake 49626 444 2nd St	231-631-[redacted]	
Terry Hollister	444 2nd East Lake	none	
[illegible]	157 Ford St.	723-7[redacted]	
Nelson Bernie	2609 Bentoski rd Manistee	3[illegible] [redacted]	N/A
[illegible]	273 6th Ave #209 Manistee	[illegible] [redacted]	
James A Bradner	317 5th Ave #9 Manistee	7[illegible] [redacted]	
[illegible]	148 13th St Manistee	[illegible] [redacted]	
[illegible]	300 Park Dale Manistee	723-[redacted]	
Dale Banderieks	58 Lake St. Manistee	723-[redacted]	
[illegible]	1050 Oak St. Manistee	[illegible] [redacted]	
Dan [illegible]	800 Warren Filer	723-[redacted]	
[illegible]	P.O. Box 87 Filer City	574-536-[redacted]	

12

(42)

(Attachment #58)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
DALE WISSNER	1948 E. HOAGUE RD	231-[illegible] [redacted]	Dale E Wissner
Daniel J Krolewicz	80 Birch Rd	[illegible]	Daniel J Krolewicz
Dale [illegible]	262 Washington St. [illegible]		
Charles S Wittkamp	189 Quincy ST Manistee MI	723-[illegible] 49660	
Raymond W Cart	3308 Maple Rd	Raymond Cart	
Richard A. Morehouse	577 Ramsdell Rd	Richard A Morehouse	
DAVID M. BOLEK	11207 N. DARR Rd	FREESOIL MI	
Michael J. Bolek	" " " "	"	
Joseph B. Bolek	" " " "	"	
John Stra	1877 E Hoague [illegible]	"	
Hadrie DeWent	6038 E St.	Free Soil MI	
[illegible]	5975 FALK Rd	Manistee Mich	72[redacted]

12

(45)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Robert MATTICE	11317 N Custer	Freesoil	R Mattice
ROBERT A. MIKULA	11168 N. DARR RD	FREESOIL [redacted]	[illegible]
MICHAEL J. CABOT	612 MEE ST.	FILER CITY 3[illegible] [redacted]	Michael J. Cabot
Deborah F Cromwell	714 Ramsdell St	Manistee [illegible] [redacted]	Deborah Cromwell
Jerome F Lijewski	10633 N. Lasalle Rd	Manistee [illegible] [redacted]	Jerome Lijewski
JON M HANSEN	40 Piney Rd	MANISTEE [illegible]	Jon M Hansen
GRAYS O Woodruff JR	PO Box 133	Manistee [illegible]	[illegible]
Charles Pueuss JR	451 Pueuss	Manistee [illegible]	[illegible]
Marilyn Schweitzer	[illegible] Park Ave	Manistee [illegible]	
[illegible]	1305 27 St	[illegible] [redacted]	
[illegible]	294 Fourth St		
Richard Morehouse	577 Ramsdell Rd	[illegible] [redacted]	

12

(44)

(Attachment #58)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
[illegible]	15608 St. Pierre	715	
Susan Comer	14944 Iverson Rd		
John R Shaw	17170 2nd St	88	
Martha M. Shaw	17120 2nd St	[illegible]	
Pat Jones	5340 Division St - 88	[redacted]	
Louise Schlief	17155 First, Arcadia - 889-		
Davina Schneider	17350 Fourth St Arcadia	8	
Ruth Bell	3041 Grebe Ct. Arcadia 49613		
Wayne M Lovell	17368 4th Arcadia Mich 88		
Robert Mondre	16923 Northwood Arcadia	8	
[illegible]	16923 Northwood Hwy, Arcadia, Mi. 23		
[illegible]	15 Webster CT. Manistee, Mich		

12

(47)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Verla Hull	3269 Lake St Arcadia Mi 49613		[illegible] @yahoo.com
Betty Hull	3269 Lake St Arcadia, Mi 49613	23	shetty@yahoo.com
Esther Loosemore	8464 Brandt St. Onekama, MI	8	
Ronald [illegible]	17226 3rd St. Arcadia		
[illegible]	18783 Burnham Dr Arcadia	9	
Carla [illegible]	3539 Oak St. Arcadia	8	
[illegible]	Box 46 Arcadia	8	
DeWayne Marks	PO Box 28 Arcadia	879	
Edna McArthur	P.O Box 84 Arcadia	8	
[redacted]			
William G. Atkins	3341 MARINERS ARCADIA	8	
Andy Burlam	3027 Grebe Ct. Arcadia		

11

(Attachment #58)

(46)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
David Gunia	84 Maple St	[illegible]	
[illegible]	84 Maple St	[illegible]	
[illegible]	2111 Gurney Rd	[illegible]	
Alex Paper	3069 E. Michigan St.	[illegible]	
[illegible]	58 Lake St.	7[illegible]	
Richard [illegible]	265 3rd St	[illegible]	
Dennis Staffeld	5224 River Rd	[illegible]	
Johanna Summers	P.O. Box 181 Brethren, Mi	[illegible]	
Pattee Murphy	14237 Brewer Rd. Brethren MI. 231	[illegible]	
Tamara Turgerson	86 Hancock Str		
[illegible] Garland	407 Lansing St Manistee		
[illegible]	58 Lake St.		

12

(49)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
[illegible]	Onekama	8[illegible]	
[illegible]	Onekama	[illegible]	
[illegible]	Manistee	[illegible]	
Mike Kocela	Manistee	70[illegible]	
Rita Racine	Manistee	[illegible]	
Patrick J Elmendorf	Manistee	[illegible]	
James Elmendorf	Manistee	[illegible]	
Stuart [illegible]	East Lake	70[illegible]	
[illegible]	Stronach	398-[illegible]	
Denny [illegible]	Brethren	231 477 [illegible]	
[illegible]	Manistee	231-723-[illegible]	
[illegible]	Filer township	231-39[illegible]	

12

(Attachment #58)

(48)

2317233762

Dec 04 03 04:43p yates

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Robert Yates	6834 South Shore Dr Bear Lake	231-[illegible]	
James Modrzynski	1641 Snow Trails Drive Manistee	[illegible]	
Bruce Keeler	10645 [illegible]	464 [illegible]	
Hazel Kraus	2099 Vine Manistee	231-723	
[illegible]	6708 W 11½ Mile Rd Ironwood	[illegible]	
[illegible]	463 1st Street Manistee	[illegible]	
Ronald O Reese	10751 Quartzline	[illegible]	
[illegible]	5570 Archer Rd [illegible]	231 [illegible]	
[illegible]	574 [illegible]	[illegible]	
David R Adams	13353 W. Forest Lane Bear Lake	231-86	
Gerald W. White	4437 Evergreen St. Beethoven		
[illegible]	1731 So Maple Rd	231- [illegible]	
[illegible]	26 Cottage Ln., Manistee	23 [illegible]	
Barbara E. Batory	" " " "	" " "	

14

(5)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Dennis L. Kuenzer	11532 Coates Hwy	23 [illegible]	
Roland [illegible]	5285 Pine	[illegible]	
Leland [illegible]	792 Wall Eastlake	[illegible]	
[illegible]	6329 Pine Creek Rd.	[illegible]	
Pam Vorkema	345 6th St	723 [illegible]	
Mike Kuenzer	1480B 4th Ave. Vt3	[illegible]	
Steve D [illegible]	815½ Kosciusko St.	[illegible]	
[illegible]	1340 Perry St.	[illegible]	
[illegible]	909 West Rd	[illegible]	
[illegible]	365 4th Street Manistee	[illegible]	
Kathy Wyczynski	700 Mar Lawn Dr Manistee	723-4[illegible]	
[illegible]	245½ Arthur St Manistee MI	690 [illegible]	
[illegible]	291 1st Street Manistee MI	59660 72[illegible]	
Gary S Rank	9551 Peterson Dr Cadillac MI	496 [illegible]	
[illegible]	Manistee MI	7[illegible]	

15

(50)

(Attachment #58)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Jerome Wiesmith	700 Marlawn	723-4[illegible]	
Brian A Stevenson	1546 Stanach	570-[illegible]	
Keith M Bishop	280 4th	723-[illegible]	
E.J. Baranek	945 17th ST.	723-[illegible]	
JC Fuller	11660 Morton Rd	723-[illegible]	
Karen Grady	6708 Duncanst	845-[illegible]	
[illegible]	Onskama	231 889-[illegible]	
[illegible]	938 19th ST	72[illegible]	
[illegible]	1605 Snow Trails Dr	[illegible]	
Roger Kruschek	450 Locust		
Roger Reckow	296 Rose Lane	[illegible]	
Charles Reckow	11936 Johnson Rd. Kalkaska	[illegible]	
Dennis Boyle	644 Division St, Eastlake	[illegible]	

13

53

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Gina Hughes	1313 Merkey Rd. Manistee		
Melissa Vrazay	290 21st St Eastlake	[illegible]	
[illegible] Palmer	981 W. Hoagus Rd	3[illegible]	
[illegible]	385 6th St - Manistee	[illegible]	
Vicki Mackey	8189 Lake St. Bear Lake	[illegible]	

5

52

(Attachment #58)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Thomas Gari	85K CIDAR RUN RD	231-941-[illegible]	
[illegible]	538 E Kat Rd	231-723-[illegible]	
[illegible]	538 E Kat Rd	231-723-[illegible]	

3

5

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Connie Grenn	Big Boy 1525 US 31	723-[illegible]	

54

(Attachment #58)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Toni Crumble	4204 UNIVERSITY PC MANISTEE	723-40[illegible]	
[illegible]	461 3rd St, Manistee	723-[illegible]	—
[illegible]	3556 E. Freesoil Rd.	468-[illegible]	
Larry Vukasanovic	6834 High Bridge Rd.	382-[illegible]	
[illegible]	981 W. Hague Rd	398-[illegible]	
Allan Damron	8600 Portage Pt. Dr	570-[illegible]	
Dave Pitter	Brethren, MI	590-[illegible]	
Douglas D. Milnick	8268 Chippewa Bay Bear Lake	8[illegible]	

51

8

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Lawn Brown	21 Clay St. Manistee	MI 8[illegible]	[illegible]ine.com
Brooke Sorenson	9593 Coe Rd.	8[illegible]	

56

2

(Attachment #58)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Linda Finout	3600 Pine Creek Rd. Manistee Mi	231	[illegible]
Matt [illegible]	6112 W. Dewey Rd Ludington MI	[illegible]	[illegible]
Lillian Orton	325½ 3rd. St. Manistee, Mi.	[illegible]	Lillian Orton@yahoo.com
M. E. Finout	3600 Pine Creek Rd. Manistee, MCM		
[illegible]	2419 S. Stephens Rd	Custer Mi 49405	[illegible] @T-One.net
[illegible]	526 2nd St	[illegible] Manistee Mich	

59

6

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Sorraine Carlson	101 Sibben St. Manistee	[illegible]	
Kelly Williams	2741 Michigan Ave Freesoil	[illegible]	
Doris Kruse	1036 Oak St.	[illegible]	
Karen Krolczyk	11003 LaSalle Road	[illegible]	
Jim Morang	9824 Stephens Rd.	[illegible]	
[illegible]	6428 Three Pines Rd Bear Lake	[illegible]	
[illegible]	P.O. Box 852 Manistee Mi 49660	unlisted	
Ron Zawacki	513 Third St Manistee Mi. 49660		
Vesta O'Shea	237 6th ave. Manistee, Mich. 49660		
Tim Day	2220 Water St	[illegible]	

58

10

(Attachment #58)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
LARRY LINDROTH	PO BOX 69 EASTLAKE MI. 49626 72		ACKPINE.COM
Joe Rozga	814 DAVIS ST, MANISTEE		
RAY FINK	512 RAMSDELL ST		RAYSTING@CHARTER.NET
Al Forth	319 1/2 4th St Manistee		
Kim Herbert	106 Holly Ct.		
GERALD TYCZKOWSKI	2761 GRANT HWY MANISTEE		
Dennis F. Sadoi	1546 5th Ave. Rt. 3 Manistee 72		
Chad LaFave	121 Sibben St Manistee		
Edward G Brandt	7477 Coates Hwy Manistee		
[illegible] Sutherland	155 Ford Manistee 72	31 M	[illegible]S@CHARTER.NET
Heidi L. Hosler	9459 Coates Hwy. Manistee MI 49660		
Bob Penne	1461 28 Th Manistee MI		

(6)

12

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Bill Smith	4305 Pine Creek Rd		
Kristen Smith	4305 Pine Creek Rd.		
[illegible] Modrski	1641 Snow Trails Dr.		
Connie Smith	4305 Pine Creek Rd		
Clarence Sajewski	7587 QUARTERLINE Rd. 46		

(6)

5

(Attachment #58)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name JEFF HANSON Address 369 9th ST Phone 231-39[illegible] Email

GENE GIESTRUM 534 CYPRESS 510 [illegible]

Lynne Gestrum 534 CYPRESS 510 [illegible]

Donald Hayes 265 FIRST ST, 723 [illegible] MANISTEE, MI 49660 [illegible] mi. Net

Tom & Kathy Warner 607 Kosciusko St 723 [illegible]

Kathleen Wieczorek 700 Maryfarm Dr 723 [illegible]

Roger Vadney 124 Sibben ST 398 MANISTEE

Joe [illegible] 272 6TH AVE. 398 MANISTEE

Carolyn Bodingham 272 6th Ave 398 [illegible] MANISTEE

David Jelanti 65 Greenbush Street MANISTEE

Amber Flippen 3184 13 Mile Rd 231-889 0148 MANISTEE

SANDRA MADSEN 372 3RD ST MANISTEE MANISTEE

[illegible] 2872 [illegible] Manistee MANISTEE

13

(63)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Charles Carey	5623 E. Deer Rd Fountain	231 [illegible]	
Jeannine Kemp	5623 E. Deer Rd Fountain, MI 2	[illegible]	[illegible]
David Vadin	5603 E Deer rd. Fountain Mi	231 [illegible]	
Sharon Verdin	5603 E. Deer Rd Fountain Mich 23	[illegible]	

4

(62)

(Attachment #58)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
[illegible]	333 7th St	723-0[illegible]	
Jennifer Sollee	1313 Manistee St	690-[illegible]	
Kenneth Stewart	211 E Dewey	757-[illegible]	
[illegible]	301 5th Ave	690-[illegible]	
Robert Gallen	297 5th Ave #14 - 85[illegible]	[illegible]	
Thomas Ray Owens	222 12th St		
Penny Gerber	10320 Big Buck Dr	723-[illegible]	
Max Lytle	2374 Sunda Rd		
Sue Wolkens	804 High St Manistee MI 49660	510-[illegible]	
Raymond S Janowski Jr	351 9th St Manistee		
Gerald W Evens	810 Ramsdell St. Manistee, Michigan 49660	231-398-[illegible]	
Barbara Evens	810 Ramsdell Manistee Mi 49660	2313[illegible]	

12

(5)

12/11/2003 10:28 AM Page 1

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Scott Babin	PO Box 973 Manistee MI 49660		
Denny Dalton	285 4th St Manistee Mi		[redacted]
[illegible]	179 8th St Manistee 49660		
[illegible]	512 Ramsdell St 49[redacted]		
[illegible]	297 Tempke Rd Manistee, Mi 7[illegible]		
Victoria Boss	1707 Frost Rd		
[illegible]	1707 Frost Rd		
Jay Rhodes	1000 Engelman 3-6120		
Jane Miller	1305 Park St		
[illegible]	449 6th St Manistee		
[illegible]	449 6th St Manistee		
Mary	322 2nd Manistee, Mi		

12

(4)

(Attachment #58)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Robert G Feinstein	238 5TH AVE	723-[illegible]	
Charles C Deniczak	1440 Princeton	723-[illegible]	[illegible]
Harry Foster	55 W PREUSS RD	723-[illegible]	
William Wandrych	810 CONCORD ST	723-[illegible]	
Robert Pifley	273 6th Ave	723-[illegible]	
Robert L. Sorenson	216 2nd Ave	723-[illegible]	
Cynthia A. Sorenson	216 2nd Ave	723-[illegible]	
Nancy Yatarga	235 10th St	723-[illegible]	
[illegible]	300 PARKDALE AVE		
[illegible]	235 10th Street	723-[illegible]	
[illegible]	9 Bridge St	723-[illegible]	
Julie Cronk	9 Bridge	723-[illegible]	

(67)

12

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Debi Greenacre	297 6th St Manistee	398-[illegible]	
Geri Walker	319 4th St. Manistee		
Hans Madsen	220 First Ave Manistee	398-[illegible]	
April L Krus	2345 Wildwood Manistee	398-[illegible]	
Holley Nathan	517 Cypress Manistee, Mi.	7234	
Daniel L [illegible]	604 SPRUCE MANITSTEE		
Saul Carlin	234 3RD AVE	723-2287 Manistee	
George M Stapleton	1005 Engleman Manistee	723-[illegible]	
Al Kubak	Darr Rd	464-[illegible]	

(66)

9

09 03 10:44a Jim Tom 616-866-5321 p.1
12/11/2003 10:28 AM Page 1
FROM 231 744 6669 TO
12/11/2003 10:23 231-744-6669 C UYLER BM LOCAL 103

(Attachment #58)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
[illegible]	1806 Pine Wood Ave T.C. MI 49684	23	
Brian Noreen	4050 NORTH MACK TRAIL	23	
[illegible]	19278 LeRoy Rd LeRoy MI	231	
[illegible]	725 Brakel Pt. Dr. Traverse City MI 49684		
[illegible]	4190 Hamlin Rd. Grawn MI 49637		
Benjamin Edward Stevenson	2034 Benzie Hwy Benzonia MI 49616		
[illegible]	689 S. Airport Rd E Traverse City, MI 49686		
Scotty Shafer	4532 S. Manorwood Dr. Traverse City MI 49684		
Patrick Knight	826 Shugardrush rd Kewadin MI 46648		
Pavel Silkovskiy	4384 N. Curry Dr. Traverse City, MI 49684		
Matthew [illegible]	3283 Wemple Traverse City 49686		
BERNIE MAILLOUX	510 DIVISION CHARLEVOIX MI 49720	23	

12

(69)

P.1

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
[illegible]	477 Roman Dr Traverse City	231	
GREG HELMER	605 S LAKESHORE DR LAKE CITY	231	
ED WARE	9022 STEPHANBR RD ROSCOMMON, MI 48653, 989		
GARY DAVIS	9517 Tenor Dr. Interlochen MI 49643		
Robert F. Schmidt	2212 HAALAND RD. TRAVERSE CITY MI 496[redacted]		
Bret Belanger	10755 S. Timberlee Dr Traverse City MI 49684		
John R. Robinson	2922 Hakala Hills Dr. Traverse City MI 49686		
MICHAEL J. BRAUN	3017 GREENWOOD DR. TRAVERSE CITY, MI 49686		
Mack W. Miller	2031 Timber Trail N.E., Kalkaska, MI 49646	231	
[illegible]	701 HARBOR DRIVE MANISTEE MI	2	
Roy Hamley Jr.	4292 N 5 mile Williamsburg MI	23	
[illegible]	1290 Carlisle Rd Traverse City MI	231	

12

(68)

P.1

(Attachment #58)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Donald W. Wilson	4690 BEELER LAKE CIR,	231-	

(71)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Brian MacArthur	4120 W Blair town hall	Traverse city	9
RICHARD S. ~~MACK~~ HEMCZ	518 WEBSTER	TRAVERSE CITY	7
JEFF BUSH	19841 KAILIN Rd.	Thompsonville MI. 49683	3
John Troyer	10141 N. Manistee County Ln	Bear Lake MI 49614	
Ed Levandoski	1175 Merkey Rd,	Manistee 723-3068	
JUSTIN T. RUSSELL	PO BOX 613	MESICK MI 49668	2

(70)

12/08/03 TUE 14:28 FAX 989 799 5206 HEAT & FROST INS # 47 → BILL BEEBE 002
Dec 08 03 12:40p Sheetmetal Local 7 Sheetm 616 458 2319 p.1
Dec 08 03 10:44a Jim Tondu 616-866-5321 p.1

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Robert D Ruell	240 Fox Rd. Manton	824-[redacted]	
Janis A Beckelic	P.O. Box 951 Lake City, MI 49651	(231) 839-[redacted]	
Geraldine L Ruell	Po Box 473 Manton MI 49663.		
Thomas G. Royce	11834 15 mile Rd. LeRoy, MI 49655		

4

B

12/08/03 TUE 14:28 FAX 989 799 5206 HEAT & FROST INS # 47 → BILL BEEBE 002
Dec 08 03 12:40p Sheetmetal Local 7 Sheetm 616 458 2319 p.1
Dec 08 03 10:44a Jim Tondu 616-866-5321 p.1

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Mark O. Anderson	Keystone Rd. N.	231 947-[redacted]	markon@charter.net
Tom Pixlet	8763 Horizon Dr	231-746-[redacted]	
David Campbell	10230 M66 SW	231 879-[redacted]	
Bill Beebe	8924 Afton Rd	231-525-[redacted]	
John Mattson	5606 - 8 mile Rd, Onekama	231-889-[redacted]	travelers@jackpine.com
Ben Miller	Po Box 473	984 860-[redacted]	
J. Geldo	8662 McMartin Rd Kaleva	362-[redacted]	
J. Austin	12218 7th St. Pt Lake	631-[redacted]	
B. Walrecker	8127 US 31, Onekama	889-[redacted]	alpine@manistee.com
Lisa Machiela	250 5th Ave Manistee	1103-[redacted]	
Gerald Gilbert	~~3082~~ 8127 US 31 Onekama	889-[redacted]	

72

11

(Attachment #58)

Bill Beebe

Dec 08 03 09:39a

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Jeff Drawe	6446 41½ Rd Manton, MI	(231)824-[redacted]	
Thos Perkins	4561 45½ Rd Manton MI	(23)824-[redacted]	
GERALD H. KING	6201 E M-42 MANTON MI	231-824-[redacted]	
Jenny Lutke	5636 N. 45 Rd. Manton, MI	231-824-[redacted]	
J R Thick	6411 W-M42 Manton MI	231-824-[redacted]	j-thick@yahoo
Dennis Powell	8674 E12 M. Rd. Manton, MI	231-824-[redacted]	
Ranetta Monaco	6990 E 34 Rd Cadillac, Mi	231-775-[redacted]	
Jamie Kimbel	4703 E. 12½ Rd. Manton, mi	231-824-[redacted]	
Deanna Williams	2288 S 39 Rd cadillac mi 49601	231 779[redacted]	
Carol Wish	5334 28 Rd Cadillac M 49601	231 876[redacted]	
Janet Thick	6411 W. M-42	2318249205	

11

75

12/08/03 TUE 14:28 FAX 988 790 5266 HEAT & FROST INS # 47 → BILL BEEBE 002

Dec 08 03 12:40p Sheetmetal Local 7 Sheetm 616 458 2319 p.1

Dec 09 03 10:44a Jim Tondu 616-866-5321 p.1

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Norma Johnson	7925 Lenz Kaleva	231-362-[redacted]	dnjohnson@kaltelnet.net
Robert Machiela	8330 1st St Onekama	864-3[redacted]	
Linda Aikin	709 Engleman street Manistee	723-[redacted]	
Bethia Hutson	1703 Vine street Manistee	398-[redacted]	

74

4

(Attachment #58)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Kelly & Donna	798 Benrike Rd Manistee Mich 49660	231-723-[redacted]	KellyHawke@Jackpine.com
Melissa Lenaye	798 Beckwith Rd Manistee Mi 49660	231 723-[redacted]	KellyHawke@jackpine.com
Judith L. Schimke	4888 Milarch Rd. Manistee, Mi	231-889-[redacted]	JJSchimke@JackPine.com
Jennifer Schimke	4800 Milarch Rd Manistee Mich		" "
TANJA LAITINEN	11666 S. Stiles Rd Manistee mi.	231-723-[redacted]	laitanjaine msn.com
Jo Schimke	11666 S Stiles Rd	723-[redacted]	
Wallace Fennell	2380 water St #7 Manistee, MI	723-[redacted]	WFennell@manistee.net
Ben Dale	222 River St.	231-723-[redacted]	
Holly Schimke	2057 Water St	398-[redacted]	
Donna Fennell	2380 Waterfront Manistee	723-[redacted]	
Jon Hauck	4989 S. Lakeshore Dr.	[redacted]	

Dec 09 03 10:44a Jim Tondu 616-868-5321 p.1

77

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
James K Wright	17423 Fowler Rd. Lake Ann.		
Randy Renius	19846 OAK ST. LAKE ANN		
Barbara Hammond	103 Pine St Lake Leelanau MI	231-[redacted]	
Donald S Master	316 Lake Leelanau Drive Lake Leelanau Mi	[redacted]	
Bob Proust	1500 N. Lk. Leelanau Mi 49653	(231)-256-[redacted]	
Sue Mikowski	390 Hill Road, Lake Lee Lanau Mi 49653	(231) 256-[redacted]	
Jim Stanbaugh	114 St. Joseph Lake Leelanau, Mi. 49653		
Gerald F. Patterson	9758 E Duck Lk Rd S.B. 49682		
Maggie Nungester	2038 S Pine Rd S.B. 49682		
Steve Pierce	5603 Gordon Lk Rd 49684 T.C.		
David L. Mumma	1625 S. Lake Leelanau Dr. Lake Leelanau, MI, 49653		
Michael J. Brolund	3643 Sunrise Ln Lakeleelanau Mi.		
Dixon Belanger	212 W. Louisa St. Lake Leelanau Mi. 49653		
Sarah Bardeau	3643 Lake Leelanau, mi. 49653		
Robert Bedford	19365 Long Lake Rd mi. 49684		
Richard Rusby	110 S. Maple T.C.		

Dec 09 03 12:40p Sheetmetal Local 7 Sheetm 616 458 2319 p.1

Dec 09 03 10:44a Jim Tondu 616-868-5321 p.1

10

Bill Beebe

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Matt SHIVELY	203 6th St.	723-[redacted]	
HARRY CONWAY	294-6th S	723-[redacted]	
Dick W JACOBI	278 2nd Ave	723-[redacted]	
DAVE Richards	127 Hancock St	723-[redacted]	
Melanie Keyes	127 Hancock	723-1[redacted]	
~~[illegible]~~	~~[illegible]~~		
Richard Slawinski		723-[redacted]	
Carole Slawinski			
Joe Pienta	500 5th Ave	723-[redacted]	
R. D. Nansen	294 6TH Ave.	723-[redacted]	
Janice Barton	519 Davis	723-[redacted]	
Josh Wis[illegible]	948 E Hughes	464-[redacted]	

11

(29)

Bill Beebe

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Nancy Malukonis	24 Caberfae #50 Manistee	723-[redacted]	
John A. Sievert	3539 OAK ST ALCADIA	889-[redacted]	
Dennis Pieczynski Sr	6145 Pine Creek Rd	723-6[redacted]	
Jeanne Pieczynski	6145 Pine Creek Rd	723-[redacted]	
Theodore Kerajes	6839 ADAMSON RD.		
Mary Swidorski	5513 Caberfae Hwy.	398-[redacted]	
Dana Woolman	406 Spruce St.	723-6[redacted]	
James L. Sievert	8681 Erdman Rd.	889-[redacted]	
Ralph Schubert	1201-24th St. Manistee	723-[redacted]	

9

(8)

(Attachment #58)

STAFFON 03

Bill Beebe

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Rosemary A Lamski	979 Canfield Rd Manistee	72[redacted]	
Lisa Clements	885 Canfield Manistee	3836	
Sandra Brown	1010 Ramsdell Manistee	723-[redacted]	
Lyle Eric Crawford	375 Second St Manistee	920-[redacted]	
Robert Kruestrup	346 Third St Manistee	723-[redacted]	
Sharon Cepperd	362 2nd St	Eastlake	723[redacted]
Thomas F. Poppin	362 2nd St	EASTLAKE, MI	723-[redacted]
David A Smalin	385 6th St	MANISTEE, MI.	723[redacted]
Janice Smalin	385 6th St	Manistee MI	723[redacted]
Richard Eastway	Rich Eastway 215 Indiana	Cadillac MI	779-[redacted]

10

31

FASTENALL

Bill Beebe

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Mark Lavender	1742 Vine	723-[redacted]	
Josh Breitner	5544 Thomas Brothers	510-[redacted]	
Mary Z	11590 US-31 South	723-[redacted]	
Sharon Zimmerman	11590 US-31 South	723-[redacted]	
Mike Zimmerman	11477 US-31 South	398-[redacted]	

5

80

(Attachment #58)

4

Bill Beebe

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Chris Rybinski	2371 Red School Rd. Brutus Mi 49716	231-529-[redacted]	skis5@tir.com
Gary Brausa	88 Deercrun BLV Pinconning MI 48650	989-966-[redacted]	
Josh Miller	11806 S. Bringold AVE. Lake MI 48632	(989) 588-[redacted]	
[redacted]			
DAVE CHARTIER	5681 HOWARD RD PETOSKEY MI, 49770	231-347-[redacted]	
Lacmar Lantis	Box 281 Cadillac	231-544-[redacted]	
Casey Meissen	21566 Twin School Hwy	989-733-[redacted]	Twin School@yahoo.com
BRUCE FABEL	152 W. REMUS RD MT PLEASANT MI	989-7[redacted]	
Jerry LaBarge	849 Almond Rd Lake City MI.	231-857-[redacted]	labarge@[redacted]
Greg. Bassette	19528 Hutchinson Hwy ONAWAY MICH	231-733-[redacted]	
Andre' Galovics	11460 old Dixie Hwy Clarkston MI.	231-599-[redacted]	
James Potter	17358 PHELPS RD CHARLEVOIX MICH. 49720	231-547-[redacted]	

(83)

P.1

JUG + PLUG

Bill Beebe

Dec 08 03 09:39a

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Jeffrey A. Humphrey	194 Holly Rd	723-[redacted]	
Dave Reed	909 High ST	398-[redacted]	
Dawn Shfanski	24HE Kott Rd.		
Gary Loper II	287 10th St	723-[redacted]	
Janet Brown	9866 Erdman Rd	889-[redacted]	
[redacted]	6285 Mahaney Rd	885-[redacted]	
Kreig Petoskey	14 Fowler		
[redacted]	1374 Tubbs Rd.	723-[redacted]	
Pete Kamalooth	3643 Fisk Rd	723-[redacted]	

(82)

P.1

Bill Beebe

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Jess Taylor	7463 010 US 31 Lot 24	231-439-6830	
Ken Ford	2443 E. Levering RD	231-537-2292.	

2

(65)

Bill Beebe

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Hal Longstreet	Manton 9211 E 12 3/4 Rd	231-824-[redacted]	
Dona Longstreet	9211 E. 12 3/4 Rd Manton	231-824-3[redacted]	
Lynne Anderson	5264 S. 45 1/2 Rd, Cadillac, Mi	49601	231 779-[redacted]
Donald H. DeRoche	7674 Black River Ave. Onaway Mi.	49765	989-733[redacted]
Ron Steele	7300 Maple Cinn Hwy Lake Ann Mi	49650	(231)[redacted]
William Schumann	1500 Pine Mine Traverse City, MI	49686	231[redacted]
Kip [illegible]	12690 Millersburg MI	49759	
[illegible]	2556 [illegible] Levering MI	49755	
[illegible]	3350 Oslund RD Bellaire MI	49615	231 533 [redacted]
Jay Salisbury	290 W Cadillac Rd. Falmouth MI	49632	(231) 826-[redacted]
[illegible]	16455 Stuart Copmish Mi	49625	3784524
Bob Baxter	8878 Townline RD Cheboygan Mich	49721	231-627-[redacted]
Randy [illegible]	3601 N. 11 1/2 Mile Rd. Mesick, MI	49668	231 885[redacted]
Matt Patterson	17779 Bailey Rd. Bailey, MI	49303	231-834[redacted]
Tom Longstreet	PO Box 348 Cadillac Mi	49601	231 779[redacted]

(84)

(Attachment #58)

Bill Beebe

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Duane Kenner	11820 Campbell Manistee	395-[redacted]	
Mike Graham	3298 E County Line Rd.	231-263-[redacted]	
Steven J. Smalla	116 Walcott St Allegan Mi 49010	269-673-[redacted]	
Sam J Hartz Jr	5292 W. Millbrook Rd Remus MI 49340	866-[redacted] 959	
Chris Leary	1899 Steinberg Rd	616 318-[redacted]	
Glenn Johnson	5924 N. Orchard Lane	231-845-[redacted]	
Joe J Lenore	7102 Mich Ave Thompsonville Mich	231-378-[redacted]	
Steven C Kennedy	8835 Elm rd	(231) 362-[redacted]	
Jeff Sandberg	701 Wall Manistee	231-723-[redacted]	
Robert M Heidel	7335 Riverside	(231) 398-[redacted]	
Debra Rennen	11820 Campbell	398-[redacted]	
Ted Thorton	441 2nd St	398-[redacted]	

12

(88)

Bill Beebe

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Dan Pinkerton	307 Hancock	723-[redacted]	
Dorothy Sievert	902 W. Pieters Rd	723-[redacted]	
Cindy Rybicki	205 9th St.		
Betty Townsend	907 Englemann Manistee	723-[redacted]	
Dale Rybicki	205 9th St	723-[redacted]	
Kevin Zemmer	913 Vine #1 Manistee	[redacted]	
Linda Zamek-Chex	345 4th A		
Donna Day	298 Third St Manistee Mi	231-570-[redacted] 49660	
Julie Edenburn	2857 Old Maple Manistee	723-[redacted]	
John Gould Jr	3013 Chiffewa Hwy Manistee		

(90)

(Attachment #58)

Bill Beebe

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
[illegible]	7473 N US 71	757-[redacted]	
Maribeth Lindeman	301 Third St	723-[redacted]	
Jack Hanson	Merkey Rd.	723-[redacted]	
[illegible]	983 Wall St	723-[redacted]	
Rosanne Smejkal	344 4th Ave.	723-[redacted]	
[illegible]	1077 Englemann	783-[redacted]	
Bruce Slaughter	1512 Merkey		
[illegible]	1210 Vine		
[illegible]	1112-23 rd. St.	723-[redacted]	
Keith Malows	984 18th St Manistee	723-[redacted]	
William [illegible]	512 Pine St. Manistee	723-[redacted]	
[illegible]	16 ST W Merkey rd	723-[redacted]	

12

90

Hospital

Bill Beebe

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Denny [illegible]			
Lisa Daugherty	606 Kosciusko St		
Lama Janicki	122 Hancock #1 Manistee, Mi		
Karen Baird	1441 E. Decker Rd, Scottville	757-[redacted]	
Linda J. Sharman	268 Claybank Rd Manistee, Mi	49660	
Lawrence A. Fort	Box 351 Eastlake, MI 49626		
Richard L. Page	82 Grant St Manistee, MI	(231) 723-[redacted]	
Glenda Danko	2282 Indian Ville Rd Brethren Mi		
Larry Danko	2282 Indian Ville Rd Brethren Mi.		
Ben Yarnell	5 Bridge St.	MANISTEE MI 49660	
[illegible] (BUTTRELL)	600 CHAPMAN	MANISTEE	
[illegible]	Box 206 Onekama, Mi.		

89

12

(Attachment #58)

Dec 08 03 09:39a

P.1

Bill Beebe

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Allen L Young	222 Parkdale Ave	723-[redacted]	
Joyce M Melecki	175 Lake Dr	882-[redacted]	
Dan Jacobs	759 Hilly	723-[redacted]	
Phil Reidenbach	10205 Freeman Rd.	889-[redacted]	
Frank Bell	8985 S. Snyder Rd Wellston	845-[redacted]	
Richard Hutcomb	1411 Manistee St Manistee MI	723-[redacted]	
Cindy Spencer	1209 25th Manistee	723-[redacted]	
Mary Jane Eyke	69 Maguire St Manistee	723-[redacted]	
Paul Mantz	2850 N Stocking Rd MANISTEE	355-[redacted]	
Wayne Zell	3900 US 31 South	398-[redacted]	
Lisa Lane	822 Ramsdell St.	398-[redacted]	
Robert Shaffer (Edwin Eq)	11615 N. LaSalle	510-[redacted]	

12

(92)

Bill Beebe

The following signatures are joining together In support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Jane Johnson	823 High St	72-[redacted]	janne6a@hotmail
M. Mc[illegible]	436 3rd St	398-[redacted]	
G. Brooks	410 Kohlhan St	723-[redacted]	
Nicole Mikhail	15 6th St. Eastlake	510-[redacted]	nickel013@hotmail.com
Linda Shook	Filer City	723-[redacted]	
Rick Tomaszewski	1785 Maple	399-[redacted]	
Brenda Bishop	10656 Caberfae Hwy.	723-[redacted]	
Darlene Carlock	120188th St. Brethren Mich	[redacted]	
R Bishop	10656 Caberfae Hwy	723-[redacted]	NightFlyer2@Yahoo.com
Ryan Jacobson	4849 Crescent Beach Rd Onekama	889-[redacted]	jachayan@pilot.msu.edu
Elsie Kott	1110 Kohler Manistee Mi	723-[redacted]	
Debbie Kott	2600 Acorn	723-[redacted]	

12

(91)

Bill Beske

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
LOREN BLADZIK	2873 GRANT HWY	723-[redacted]	
James Buckingham		723-[redacted]	
Rose Jennings	6682 River Rd	723-[redacted]	rdjenn@triton.net
[illegible]	3045 County Rd	248-701-[redacted]	SAXMANS@EARTHLINK.NET
[illegible]	319 4th St.	398-[redacted]	Numa 196@[illegible]
Dan Rapp	318th High St	398-[redacted]	
[illegible]	1330 E 28th ST	723-[redacted]	
Bail Kubicek	152 E. Fox Farm Rd.		
James E. Van Tassel	17733 Old House Rd.	848-[redacted]	
Peggy Van Tassel	17733 Old House Rd.	848-[redacted]	
Bill Van [illegible]	17733 Old House Rd.	24[redacted]	
Stacey Garcia	3rd St.		

12

94

Bill Beske

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
CLAY BLADZIK	P.O. BOX 273 EASTLAKE MI.	(231) 723-[redacted]	
Jesse Sill	3900 US 31 South	(231) 398-[redacted]	
Kurt Edenburn	2013 Moulton Ave N Muskegon MI 49445	(231) 719-[redacted]	
Monica Edenburn	1104 Cherry Rd #7 Manistee MI 49660	(231) 510-[redacted]	
Mark Kett	3781 Chippewa Hwy Manistee Mich. 49660	(231) 7[redacted]	
Bill Tonis	Merrayville Nat'l Grand Rapids MI [redacted]		
Rick Ross	2258 Norman Ave Musk, Mi.	231 75[redacted]	
J. Tomas	234 Ninth St Manistee MI 4[redacted]		
S. Slaughter	8551 Manistee St Manistee MI [redacted]		
T. BOETTCHER	921 PEQUOT Hope MI 48628	(989 689-[redacted]	
Jeff David	3423 Goetz Ct. Bay City MI 48706	(989) 667-[redacted]	
Steve Rivard	537 Nebobish Rd Essexville 48732	989 893-[redacted]	

12

93

(Attachment #58)

Bill Beebe

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
James W. Price Jr	5681 W. Brady Rd. Onaway MI	989-733-[redacted]	
Chance E. Bond	4754 Shattuck Rd Saj. Mi.	989 249-[redacted]	
Tim French	6916 Deerfield Rd Mt. Plsnt Mi. 48858	989 772[redacted]	
Larry Thomason	00632 Addis Rd. Boyne City Mi. 49712	582-2[redacted]	
Bernie Gravez	7227 Trudeau Rd Cheboygan MI 49721	231 625[redacted]	
MYRON GROBASKI	5505 DENISE RD BOYNE FALLS, MI 49713	231-549[redacted]	
Joe Paczesny	8661 Moore Rd. Alanson Mi	231-347[redacted]	
Michale Beesley	10887 Boardwalk, Waters MI	989 705[redacted]	
Gary Vroman	4855 Brubaker Rd Petoskey	(231) 347-[redacted]	
RANDY TATROW	352 First St. St. Ignace, Mi.	906 643[redacted]	
Dick W Jacobi JR	278 2nd Ave Manistee Mich	231-723[redacted]	
STEVE FOSTER	3363 US 31 N CONWAY mich	231-347[redacted]	

12

96

Bill Beebe

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Tom Vernon	8624 Caberfae Hwy	723[redacted]	
Shanda Sedelmaier	12150 Lynn B. Lake	510[redacted]	
Shar Hellman	Po Box 301 East Lake	723[redacted]	
Michael Feliczak	3075 Wildwood Rd	723[redacted]	
Gary Johnson	411 McKee St.	398[redacted]	
Dean Horaszewski	280 Goff Ave	723[redacted]	
Bob Edens	PO Box 103 East Lake	723[redacted]	
Kristine Kula	P.O. Box 916 Manistee	723[redacted]	
Nikole Kula	" "	"	
[illegible] (Bruce Janovick)	386 11th St	39[redacted]	
Jason Black	2742 Old Maple	723[redacted]	
Paul Tler	1308 26th	723-[redacted]	

12

95

(Attachment #58)

Bill Beske

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Robert Morong	3900 S. 4531	398-[redacted]	
Edward Goodrich	180 7th	723-6526	
JACK E GARBER	305 McNitt Rd	1-231-852-[redacted]	
JOHN W. DUNLAP	607 E PARKDALE AVE		
Thomas Bennett	265 3rd St	EAST LAKE	
Jeff Bennett	265 3rd St	East Lake	
Martan Adamczyk	2222 Ave A	Filer City MI.	
Richard Golembiewski	1100 S La Galle Rd	Manistee	
Shirley Felczak (Feliczak)	1115 24th St	Manistee	
Carl [illegible]	1307 E25 ST		
Reinhold [illegible]	1760	Vine St Manistee	
Sally Chechenski	1463 8th AVE		

12

98

Bill Beske

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Mary Golden	10656 Caberfae Hwy Manistee MI 49660	231-723-6[redacted]	
Rita Carlson	923 Englener St	723-[redacted]	
Julie [illegible]	279 6th St.	723-[redacted]	
Bruce Shannon	268 Claybank Rd		
Tim Frain	923 Englenman St	723-[redacted]	
Gregory Thomas	529 Maple St	723-[redacted]	
FRANCIS R SIEVERT		723-[redacted]	
Dan Duchon	DAN DUCHON	510-[redacted]	
[illegible]		723-[redacted]	
[illegible]	354 5TH ST	723-[redacted]	
Joan Adamski		723-[redacted]	
Anne M Pinkerton	307 Hancock St Manistee	723-[redacted]	

12

97

(Attachment #58)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Arden Bradford	11659 Northwood Hwy	889-[redacted]	
Arden L. Bradford	11659 Northwood Hwy	(231) 9[illegible] [redacted]	
Lynn Bradford	11659 Northwood Hwy	231-[illegible]	
April Bradford	11659 Northwood Hwy	231-88[illegible] [redacted]	
Nathan Bradford	11659 Northwood Hwy	231-392-[illegible] [redacted]	

all Onekama

100

5

Bill Beebe

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Carol Atkins	1870 Pine Ridge Dr	398-[redacted]	hoofes523@aol.com
Elizabeth McGuffey	27890 Bunnys Ck Rd.	448-[redacted]	
Ray Lyewski	947 14th St. Beaver Island, MI.	723-[redacted]	
Joan Lyewski	947 14th St. Mstee	723-[redacted]	
Irma Kaminski	357 4th Mstee	723-[redacted]	
Robert Lindemann	1939 Stein Berg Rd	723-[redacted]	
Jon Peterson	321 7th St. Manistee	723-[redacted]	
Colleen Peterson	321 7th St. Manistee	723-[redacted]	
Dave Obrien	605 Fairview Ave Manistee	723-[redacted]	
Toni Bowers	721 Mickey Rd Manistee	723-[redacted]	
Elaine Kaminski	1200 23RD ST Manistee	723-[redacted]	
Cheryl Sividron	2286 Water St	723-[redacted]	

12

99

(Attachment #58)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Bob Saya	2475 N Tuttle Scottville		
[illegible]	7851 Caberfae Manistee		
Steve Mereche	18168 Coates Hwy Bretthren	477-[illegible]	
Doug Anderson	229 5th AVE MANISTEE		
[illegible]	4924 N Harrison St. [illegible]		
[illegible]	1054 OAK MANISTEE	723[illegible]	
Chas [illegible]	24 CABERFAE Hwy MANISTEE		
Sandy Killian	208 Pine St. Manistee MI		
Randy Leiffers	PO Box 101 Irons MI 49644		
Bob Falconer	1555 W Birch Dr Scottville MI 49454	231 842 [redacted]	

102

10

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Philip [illegible]	1293 LEXINGTON ST, MANISTEE,	231-723-[illegible]	
Theresa Cabot	777 Clayfork Rd Mstee	231-723 [illegible]	
Kenneth Nelson	183 Lincoln St Manistee	231-727-[illegible]	
Toni Cruddle	4204 University Pl Manistee	72[illegible]	
[illegible] James Andrews	3797 W Colburn Lud.	843 [illegible]	

101

(Attachment #58)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Dan McIsaac	1422 Yuden Rd.	723-[redacted]	
Jane Bobbrente	2418 Bialik Rd.	723-[redacted]	
Dave Cameron	9016 W U331	464-[redacted]	
Timothy Shively	811 Cherry ST.	723-[redacted]	
Bryan Thomas	291 Brockwood	723-[redacted]	
[redacted]			
Daryl Scutaleski	259 3RD ST	398 [redacted]	
Rick Baker	2600 Manistee St	723-[redacted]	
Deb Saya	2975 N. Tuttle Scottville	757-[redacted]	
Michael Krusniak	617 Ramsdell St. Manistee	723-[redacted]	
Andrew Wotey	415 End ST East Lake Rd.	398 [redacted]	
Brian Mgeshe	13827 Curtis Hwy Brethren	477-[redacted]	

104 11

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
William Volkema	2656 Caberfae Hwy	723-3 [illegible]	[illegible]
Nicole Johnson	5443 Caberfae Hwy	723-[illegible]	
Richard Brown	1923 Blossom Trail	398- [illegible]	
Mickey Bredbanner	155 Narrow St.	352-[illegible]	
Duane Peters	42 W Dewey	757-[illegible]	
Shirley Chancellor	4924 Harrison St.	462-[illegible]	
Josh Newson	12089 10th Bear Lake	864 [illegible]	[illegible]
Callen Kenny	586 8th Street	723-	
Kathy Volkema	2656 Caberfae Hwy	723 [illegible]	[illegible]
Ronda Vista	1833 E. Hoague Rd	464-	
Andy Rohrbach	1865 Blossom Tr	723-	
Robert Shrum	8345 Alkire Rd Bear Lake	8[illegible]	
Mason Brown	519 Ramsdell St.	3[illegible]	

103 13

(Attachment #58)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Rob Blackmore	6226 8 mile Rd Bear Lake	889-	
Renee Blackmore	6226 8 Mile Rd. Bear Lake	889-	
Charles R. Cultman	6490 8 mile Rd. Bear Lake,	(231)(8	
Carol A. Cultman	" " " "	" "	" " "
[illegible] Schramsk	3387 Orchard Hwy, Manistee	723 [redacted]	
Rodney Schimke	8410 Brandt St Onekama MI	[illegible]	
[illegible] Schimke	8410 Brandt St. Onekama Mi	[illegible]	
Raymond Schimke	8284 Lee Crest		

100 8

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Joseph D. Kimball	1828 Pine Ridge	723-1	[illegible]packingingcorp.com
Dale Smith	2840 Grant Hwy	723- 7	
Maureen Barry	230 Lighthouse Way	723-0070	
[illegible]			
Keith Carpenter	253 Third St Manistee		
[illegible] Weaver	201 Washington St	510-5[illegible]	
[illegible]			
Ronald C. Peterson	2454 S. ~~Bendo~~ Benedict Rd Ludington	84	
Jeffrey Smith	102 E. Preuss Rd.	723-6[illegible]	
Lorrie O'Shaughnessy	20363 Husiar Rd, Wellston	848-[illegible]	
James Alexander	3415 Maple Road Manistee	[illegible]	
Donna Labbe	7380 Red Maple DR Cadillac MI	49601	

105 12

(Attachment #58)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
David Yarnell	603 Pine	7[illegible]	[illegible] com
Jack D. Ball	2665 Red Apple	727 [illegible]	[illegible]
Steven Blank	4020 Stocelmo	723-6[illegible]	[illegible] @ [illegible] .net

(108)

(3)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
[illegible]	366 Sixth St	[illegible]	
Therman Radtke	2545 Fisher Lvd	8[illegible]	
[illegible] Greene	3979 W. Co. Line Rd	7[illegible]	
Robert Cameron	2575 Hill Rd.	72[illegible]	
Theresa Schubert	1018 22nd St Manistee	72[illegible]	
Rick Cabot	611 Buckwood Dr.	723-[illegible]	
Dale Sanderson	6757 S 4531	86[illegible]	
[illegible]	798 Madsen Rd Manistee	723 [illegible]	

All Manistee

(107)

(8)

(Attachment #58)

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Rhonda Brown	1923 Blossom Tr, Manistee	39[illegible]	
Anne Childs	741 Edgewood St. Jackson, MI 49202		
Gerald Schaefer	659 Elliott Dr. Manistee	[illegible]	
Frank W. Hayward	10527 Erdman Rd. Onekama MI 49675	231-[illegible]	
Larry Roels	15788 Betsie River Dr. Thompsonville, MI 49683	2774	
Jon C Lowe	14222 St. Pierre Rd Arcadia Mi. 49613	[illegible]	
Marshall N. Lowe	4659 Maidens Rd. Onekama MI 49675	[illegible]	
Randy Lindeman	301 Third ST Manistee Mi 49666	723 [illegible]	
Sara Staffan	1319 E. Koenig Rd Free Soil Mi. 49644	[illegible]	
Steven P. Ellison	10580 W. 22½ Rd P.O. Box 601 Mesick, MI. 49668	231 [illegible]	
Shelli Kubisky	17 E Koenig Rd Free Soil MI 49411	[illegible]	
Darcie Kott	248 4th. Ave, Manistee	39[illegible]	

12

110

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
John W. Tony	102 Fighthouse Way	72[illegible]	[redacted]
Meagan Kempf	1725 Merkey Manistee	72[illegible]	[redacted]
Kindrey R Aultman	229 Fifth Ave. Manistee	72[illegible]	[redacted]
Pernella Aultman	229 Fifth Ave Mst	72[illegible]	[redacted]

(Attachment #58)

09

2

Bill Beebe

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Fred Thiemann	7 PARK AVE	723	
[illegible]	142 Washington	39[illegible]	
Terri Musser	181 Harrison	[illegible]	
[illegible] Bertelsen	168 Quincy	9[illegible]	
Dander Parris	14039 W. Pine Island		
Lynn Maybrook	13 Sixth St. Ore Make	[illegible]	
John C. Barbiz	613 BRYANT AVE	[illegible]	
Leonard [illegible]	4782 CARL ST [illegible]	[illegible]	
Scott [illegible]	2450 Stranach Rd.		
[illegible]	1405 28th St	[illegible]	
[illegible]	3268 Lakeland Dr. Reading	[illegible]	

112

Bill Beebe

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Jorain Wilkerson	1835 Surfside Drive	[illegible]	
[illegible]	7179 JOHNSON CRT.	231	
[illegible]	MANISTEE		
DEN YARNELL	5 BURSE ST	231 [illegible]	
[illegible] BENDIG	MANISTEE	231 510	
BRIAN MOORE	Manistee	39[illegible]	
Michael Schumaker		616 451[illegible]	
Phil [illegible]	MANISTEE	616-[illegible] 398-[illegible]	
Doug Jokey	MANISTEE	231-398-[illegible]	
Anne Bidelman	Manistee		
[illegible]	MANISTEE		
[illegible]	MANISTEE	398-[illegible]	
Gary Soper	Freesoil	464 [illegible]	
Bill [illegible]	Manistee		
Robert L Kruger	MANISTEE	7[illegible]	
Christopher S. Smith	16900 G. Dert Rd Arcade	88[illegible]	

112

(Attachment #58)

Bill Beebe

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Kevin Pelletier	719 Prairie Creek Midland Mi	989	
Carol Sullivan	418 Second St Manistee		

114

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Lonnie Schaub	3582 Westridge Ct. Traverse City, MI	231-9[illegible]	
Penny West	2658 Voice Rd, Kingsley, MI	231-26[illegible]	
THOMAS CANFIELD	1820 S. LAKE MITCHELL DR. CADILLAC, MI	231-[illegible]	
Debra Paulton	402 S. St. Mary's St. Lk. Leelanau	231-[illegible]	
WILLIAM MCDILL	700 S. CLARK ST MESICK, MI	231-885	
Gerald Sowe	9522 S 21 Rd Cad. Mich.	231-[illegible]	
Dean Galla	1627 Fairfield Grawn MI	231-[illegible]	
[illegible]	8453 W. 24 RD MESICK, MI	23138	
[illegible]	5994 Boone Rd. Traverse City	231-[illegible]	
[illegible]	245 Sleights Rd. Traverse City	231-9[illegible]	
[illegible]	5018 Lackey Rd. Williamsburg, Mi.	231-26[illegible]	
TONY BARBER	3398 Valley Rd KALKASKA, MI.	231-25[illegible]	

113

(Attachment #58)

Dec 08 03 09:39a Jim Tondu 616-868-5321 p.1
12/08/03 TUE 14:28 FAX 989 798 5288 HEAT & FROST INS # 47 BILL BEEBE 002
Dec 08 03 12:40p Sheetmetal Local 7 Sheetm 616 458 2318 p.1
Dec 09 03 10:44a Jim Tondu 616-868-5321 p.1

Bill Beebe

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Brooke Kemp	8813 Millst.	231-510-[illegible]	
C. Steinberg	265 5th St	231-723-[illegible]	

116

Bill Beebe

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Jill Lytle	312 4th St	Manistee Mich	

115

(Attachment #58)

DAYS INN
support

Bill Beebe

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Carol Kaminski	2306 Manistee St.		
Roseanne M Colton	1485 Red Apple Rd		
[illegible]	391 11th St		

118

Bill Beebe

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Robert K Coates	14984 Coates Hwy Brethren Mi.	231-	
Nancy Coates	14984 Coates Hwy Brethren Mi.	477-	

(Attachment #58)

117

Bill Beebe

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Kami Quick	90 Park Ave Apt 204	398-3[illegible]	
Clay Bladzik	212 MAIN Eastlake, Mi.	4962[illegible]	
Jack Quick	PO Box 123 Fountain Mi		
[illegible]	[illegible] Copemish Mi		
Karl R Wanner	5430 Pine Creek Rd Manistee	723-5[illegible]	
Jeff Pomeroy	24 Cobb Hwy 21		
Bill Grant	2026 Pinecrest Rd	723-[illegible] Manistee	49660
Vince Magner	15 Bridge Manistee Mi	723-[illegible]	
Kurt Edenborn	2857 OLD MAPLE MANISTEE	723-[illegible]	
Mike Gieczyk	P.O. BOX 153 MANISTEE	702) 59[illegible]	
Sherrie Stringham	PO Box 9 Manistee	Mi	
[illegible]	PO Box 372 Manistee	Mi	

120

Bill Beebe

The following signatures are joining together in support of the Northern Lights Power Plant and encourage the City of Manistee Planning Commission to vote in support of this project.

Name	Address	Phone	Email
Jen LaFave	121 Sibben St	510 [illegible]	
[illegible]	717 E Pinecrest	723-[illegible]	
[illegible]	293 Sixth St	723-[illegible]	

119

(Attachment #58)

Manistee City Planning Commission
March 4, 2004

Yesterday I planted my onion seeds. To plant a seed suggests optimism, faith and hope for the future. In a very real sense a land use decision is like planting a seed for the future of our community.

I have a friend and her Grandfather that live in New Mexico. They are subsistance farmers and seed savers. Their heritage is rich and the crops they nurture have links to the past for many generations. I talked to her about their spring planting. She said they would not be planting their seed. New Mexico was in the 3rd year of a drought. Her Grandfather said, "we will wait until the rain comes. If we plant our seeds now they will wither and die. There would be no future."

As a farmer I cannot imagine a spring that I did not plant my seeds. It would be a very difficult decision. Much like the decision you must make. Sometimes we have to make a hard decision and give up on a very short-term hope, one that will steal our future.

Let's look at the seed the applicant has proposed. This plant would spew toxins on us, it would poison our fish, it would warm our lake, and it would use up our infrastructure. And it would cost us plenty. It is not light industrial. It's not even industrial. It is mega industrial. It is totally incompatible with your Master Plan.

This "small" Tondu Corporation will profit in the tens of millions of dollars if this plant is built. All meaningful analysis of economic, environmental and public health issues have been minimized by the applicant. Cost benefit analysis has been replaced with public relations sound bytes. What will the people of Manistee gain? There will be a gain statewide of a few short-term jobs. We will gain pollution, debt, health problems and a bleak future. If you build this coal fired plant it would be like planting seeds in a drought, they will wither and they will die.

There is another seed growing here. It is the seed of optimism, faith and hope for our future that is growing within the people that have come before you these last weeks. We are ALL working for our future. We are planting a seed of a better vision for Manistee.

We must learn from the past, because only then can our future be different. Deny this Special Use Permit and plant the seed of hope for our future.

Thank you

Sandee Ware
9094 Alkire
Bear Lake, MI 49614

I would like to express some thoughts about the proposed coal fired plant. I will not go into the mercury or traffic aspects as these have been discussed at some length as they should be. There are some other things that have been overshadowed that I would like to bring out for consideration.

One of the concerns is the so-called "waste heat"-it seems to me that the figure was in excess of 4 million BTUs per hour. The impact on the surrounding area has to be great and the conservation or lack of it seems unconscionable and leaves more questions about this so called modern plant.

Another is the real need or "shortage" of electrical energy. The blackout last year was a grid or distribution problem-the electrical energy already there caused the damage when the distribution process failed. Also I question the need as real when Reuters reports that margins or pricing power on electricity generated are low. This specifically refers to Calpine primarily located in California and the western states where the blackouts were so well publicized. For the record Calpine is considered one of the most modern and efficient power producers in the country. A shortage gives pricing power to those who have the commodity not the opposite. Our situation seems a convenient way for others to profit at our expense-in this case it seems to be other municipalities and Mr. Tondu.

(Attachment #60)

Another mostly overlooked aspect is the ash. Do the people of this county want to be a dump for everyone else? Do not forget that Mr. Tondu has already tried to start another dump in Stronach Township and still owns nearly 65 acres there. I do believe that he would very much like to see this come to fruition and avoid the expense of the current landfill. It is hard for me to envision the benefits of another dump in the county, especially so near the growing population center. As a practical matter I would like to all this ash loaded back on the boat, the trains reversed and it all put back in one of the abandoned pits rather than the lost land and another eyesore and an imperiled ground water supply.

Also I have noticed that many supporters of his project are out of towners that expect to benefit from the construction work. I think it laudable that we all have employment-especially of a well compensated nature- but theirs would be of a temporary nature, our burden would be ongoing.

I would also like to touch on lack of revenue to the local units of government and the stress on the infrastructure and I can find no positive. Rather the young student shown on the local news asking that there be a real legacy for his generation comes to mind.

Overall I am reminded of the Biblical story of one brother selling his birthright for a warm meal. That is the image that I get.

Thank you for your time and patience

Terry LIndeman

Terry Lindeman
693 Filer Ave
Filer City MI 49634

(Attachment #60)

NORTHERN LIGHTS MANISTEE , MICHIGAN

7/29/2004

My name is Bruce Baker my address is 3376 South Scottville Rd . Scottville. I would like to thank the Manistee City Planning Commission for allowing me 5 min. to to speak. I am a proud member of the INTERNATIONAL UNION OF OPERATING ENGINEERS an origination here in Michigan some 13,800 members strong. I'm a life long resident of Mason County and Mason County has been the home to my family since 1880's In my wife's family the Rybicki name has much local history as well. With history in mind you " The Manistee City Planning Commission" are facing the task of your vision of the future history of this area.

Our fore fathers visions was one of hard labor for prosperity . Being industrious was a part of life for at least 70 to 80% of the population here not all that long ago. Look around the area, remnants of history are falling apart everywhere.

The governing body here needs to focus on the concerns of the health, welfare and prosperity of our grandchildren, and their grandchildren. By looking in this room here, IM not alone with my concerns, and this zoning issue here is now a public debate. I have attended most of your meetings here, not speaking, but observing the pros and the cons of this 425 meg- watt coal burner.

The opposition side has turned out in great numbers of retirees, soccer moms with their school age children ,the out spoken so called here "The Johnny come lately" and a gentlemen that as he spoke, he smudged his hands and face with a lump of coal to demonstrate the filth of a fossil fuel in its raw form and with some ad-lib drama the opposition applauded. Hey so where is this guy coming from? Does he live in card board box under the steps of the Ramsdaile theater.? OK enough of the drama.

I like to touch base on some facts for you and the school age children. If you didn't walk or ride a bicycle to get here tonight, your here Via a fossil fuel burnt in your internal combustion engine and that fossil fuel in any of it's forms is 100's of times more dangerous to your health and our environment than a lump of coal in a contained stock pile.

From where you sit now how far north do you go to find raw crude oil and H2s in mass quantities ? H2s "hydrogen suffent gas" . That's the open flame to the atmosphere

(Attachment #61)

that you see in the nite sky and let me remind you this is a gas that will make you brain dead within seconds.

But that industry with technical evolution has had very few problems to date.

As in the evolution of your automobile, the removal of teteral Ethel lead, computer controls and sensors, computer aided calist or "catalytic converter". your auto burns a fossil fuel cleaner than it did back in pre everomental days.

Now if the facts and projections stated from the TONDU Corporation are true, the very same type of technical advances have been incorporated in the plans of this 425 meg- watt facility.

Now IM going off on tangent, some 35 + years ago the nuclear power plants were born with a plan live of 20 to 25 years. To date there is nothing on the drawing board to replace them nor the the coal fired plants. All across the United States natural gas fired co-gen plants are still being constructed and moth-balled even after the fact that the ratio: cost of gas/ the price electrical power is in an imbalance. But still such a plant is under construction and test fire right here at Covert Michigan.

The picture that I am trying to paint you is this, The day when our current oil motivated government pulls the plug on the nuclear plants or a disaster dictates the end of the nuclear era ,or the clock has run out, It will be then the oil industry will control the price of electrical energy as well . Do you like what you see at the gas pumps now?

So for now this 425 meg- watt project is a necessity , for now, even if we the people here had the power to change the the current oil industry's influence over our elected government it would be some 20 years to put an alternative energy into production or on line. So it would require 1- A change in elected policy. 2- The funding for research and development. {Try find investors who are willing to invest into new uncharted theories with the presents of a cloudy economy, and our new national deficit.} Where can we find such money? Our money is going to Iraq. 3-Then it would take an on site construction of a proto-type. "to work out the bugs". {Look how many years passed from the first atom bomb dropped on Japan till the first nuclear power plant went on line}

With this in mind you "The Manistee Planning Commission" should look deep within yourselves as to what is your visions are for the future of Manistee's history, the history and welfare of the people of Manistee, and for the historical role Manistee will play part in this Nation.

If the Tondu Corporation can construct and operate a coal fired generation plant to the emissions data that they have submitted to you and the public, then that plant will set new industry standards. Remember our air quality here is affected by all of the old coal burners across the nation.

By allowing this project to move forward ,we locally here will be doing our part to change the current air quality emissions standards in the United States, we will help meet the new demands for electrical power , we will stimulate the economy by no less than $700,000,000. and this project will draw national attention to Manistee, Michigan.

At this time I would like to ask of you "The Manistee Planning Commission" to

please review the facts that I have stated here to you tonight with an open mind, and that you review all of the other facts presented ,be it pro or con and that you please base all your decisions that pertain to this proposed project by facts that pertain to this proposed design only and not drama.

If you allow the Tondu Corporation to clean up the proposed site ,construct and test fire this proposed plan. Then hold the Tondu Corporation to their proposed emissions data that they have submitted to you and the public. Once the unit been test fired and can continue to pass all of the emissions standards proclaimed, it is then you the "City of Manistee" issue an on line operations permit.

Also maybe the City Planning Commission may consider to create a position for a person full time to monitor compliance and to invite more industry that could utilize the byproduct of heat and the steam generated and explore the possibilities to incorporate a heat exchanger instead of wasting heat energy back into Manistee lake . The possibilities are endless water can be pumped 100's miles through a pipe lines. Maybe to an agricultural area to heat green houses. To the oil fields to aid in the extraction of congealed crude oil. Or to heat all of the municipal ,the industrial, non profit buildings, streets and sidewalks here and well beyond this City .

Streets without the cost of snow removal and frost damage, and reduced slip hazards for the elderly what that worth? How about a city park with the ground heated and the grass is green all year round. Hot water has a endless number of uses lets all get creative, Jim Tondu has a industrious vision with every ones help we can coexist and take it one step further for the benefit everyone here.

The coal fire is not the best long term plan but for now its is a vision for jobs and prosperity of a bright future until a newer source of energy can be engineered and tested.

Please if nothing more , lets try to guide our school age children so when faced with situation or a challenge they will be able tell first what they can do rather than what they cannot do. That in itself would make Manistee a more postive place to live.

Again I would to thank you for this time.

(Attachment #61)

My name is Kristine Harvey, 17136 Fourth St. Arcadia. I am a mom, a teacher.

I am opposed to the construction of the proposed coal burning electric plant.

First of all I want to thank you for your thoughtful consideration of this matter. I'm sure you'll be glad when this is over.

Again, I speak as someone who chose to leave Michigan City, IN, a town where the coal-burning electrical plant has been there for as long as most residents can remember. This coal-fired plant has had many years to do its damage. The neighborhood directly adjacent to the plant is impoverished and dangerous. Crime, drugs, vacant properties are a constant. Still, children are all over the neighborhood, playing basketball, jumping rope, playing in the snow, hanging out with their friends. Although some are very sweet and others quite spirited, these children are not high academic achievers. They have difficulty performing basic school tasks and do not have well-developed fine moter skills. I know. I was their teacher. Many families are stuck in this low-cost housing neighborhood for generations. It is a dismal place and it never gets any better. The coal-burning power plant tells them to this day that the ash and dust that falls down on them has no ill effect on people. The power company makes a big deal when they update their scrubbers. But the Best Available Technology at any given time is not good enough. It's like handing your 9 year old child a filtered cigarette and telling him or her that it is the Best Available Cigarette to smoke.

I am so glad I live here. I am so glad there isn't a coal-fired electrical plant within 30 miles of my home. I am so glad I have the opportunity to voice my concerns to you. I am greatful to you for providing this forum for discussion.

A coal-burning power plant brings a reputation that is far reaching while it intimately affects the adjacent properties. While a good neighborhood may be able to maintain its pleasant character for 20 - 30 years, the reality is that once a generation has passed through, the houses will sell or rent at low prices. True, every community needs low cost, affordable housing. But I am against low cost housing being located in the **most** polluted areas of town. The children who will inhabit those areas, who will have the distinct "opportunity" to breath and drink those molecules for prolonged periods of time while their bodies are still growing, the children who will eat the berries in their yard and be fed large quantities of local, contaminated fish because it is **free food** have no voice here today. The cities who allow toxic industry next to a residential area create problems for the poor that are compounded exponentially. The ramifications are felt through the entire community. An environmentally undesirable neighborhood creates segregation that is unhealthy for communities and other living things.

Regardless of where all of us in this gymnasium stand on this issue, I think we all owe Mr. Tondu a big thank you. He has already Energized Manistee. The quest for the Northern Lights permit has stirred this area and unleashed a power in Manistee that has never existed in exactly this way before. If harnessed the brainpower and talents of Manistee's people could generate 160 jobs and develop responsible energy sources. But that's not why we are here. We are here because a business proposal is on the table. The proposal, by the way, will stir up toxic sediments in the water, will create dust particles that will coat the lawns and lungs of its neighbors directly adjacent to the property and within a 30 mile radius, and it will change the temperature of Manistee Lake. I guess the applicant thought we wouldn't notice. But we are here because we do notice. The proposal does not meet the special use permit standards. and the stakes are so high.

Manistee has lots of treasures--Mr. Tondu is particularly interested in Manistee's port, Manistee's primary asset one hundred years ago during the logging era. But one hundred years and a changing world have brought to light other treasures of Manistee--its river and the fish it holds; its not one but two lake fronts; the exquisite homes, public buildings, magnificent churches and the theater it has inherited; its good schools; and most importantly its people--hard-working, skilled, old, young, newcomers, families who have been here for over a century and familes who have been here for century upon centuries. A *good* plan will get its energy from *all* of these treasures and benefit iron workers, babies in the womb, boilermakers, retired

persons, high school graduates, brick layers, and all of Manistee's children.

Again, I thank you for these Thursday nights. I'm not sure I trust the applicant's words or motives in this issue. Maybe if he were someone you had approached to come up with a plan for Manistee I would, but he is getting paid by other cities. But you, I trust. You live and breath here just like me. I am trusting you to make a decision for me and my family, my students, and my friends and neighbors--the most important people in the world in my eyes. I wish you well on your continued planning.

Kristine M. Harvey

March 4, 2004

(Attachment #63)

February 16, 2004

Re: Comments to the Planning Commission of the City of Manistee

My name is Louis Blouin. I live at 441 ½ W. 8th Street in Traverse City. I am speaking for Sweetwater Alliance, a grassroots citizen organization.

I appreciate the opportunity to address the commission and the public tonight on this important decision now lying before you. I am also pleased to see that the full extent of tonight's hearing has been devoted to its purpose, namely public comment. I know I am not alone in expressing frustration with the filibuster tactics employed by Mr. Tondu at last week's hearing, in which he consumed nearly half of the scheduled time, ostensibly in an effort to minimize public participation in this process. I say this only because the bulk of the information presented by Mr. Tondu was irrelevant to your decision on this matter. For example, the majority of Mr. Tondu's presentation was spent discussing the particulars of the permitting process used by the DEQ and other state agencies in reviewing projects like this one. But as you obviously know, this body is a city planning commission, and must ultimately base its decision on the laws, zoning ordinance, and master plan of this city—not the standards of agencies in Lansing or Washington.

Hence the chosen route for Mr. Tondu's testimony was not only irrelevant but insulting. The essence of Mr. Tondu's message to this board? Don't worry about wrapping your small-town minds around these issues which obviously surpass your deliberative capacities. For there are big, benevolent state and federal laws and agencies out there, better equipped to handle issues of such nuance and complexity. Take lightly, then, your decision on this matter. For if you err, others with deeper wisdom can right your wrongs, and all will live happily ever after.

Ah, but all will not live happily ever after. For such agencies while big, are not benevolent. In some cases they are handcuffed by an absence of meaningful laws and regulations designed to protect against dangers to public health and welfare. And when such handcuffs are not adequate, political armtwisting is usually sufficient to manufacture a result. The reality here is not Mr. Tondu's fairy tale of checks and balances, but of a dangerously weak system of state and federal regulation, and of a local body, this commission, which must take its decision then with the utmost seriousness and attention to the welfare of this community. I can assure you that the rubber stamping of this project at the state level has already begun. If you do not want this future Mr. Tondu is proposing for Manistee, it will up to this body, and no one else, to make it so.

That said, I would like to direct my comments tonight to the relevant criteria you must use to guide your decision, namely the Special Use Permit Standards contained in the city's zoning ordinance. In particular, I would like to comment on the design of the proposed facility and how this relates to the first of these standards, namely, that proposed use must be "*reasonable and designed to protect the health, safety and welfare of the community.*"

In many conversations and meetings with members of our Board of Light & Power in Traverse City, our main source of information on this project since they are a member of the MPPA (the municipal energy cooperative spearheading Northern Lights), I have come to realize that the design of the Northern Lights Project falls well short in its obligation to protect the health and welfare of this community. Rather than making use of the best available technology to minimize adverse impacts to public health and the environment, the Northern Lights Projects relies on one of the dirtiest, most primitive methods of energy production still in use: the burning of pulverized coal. In fact, Fred Nelson, chair of our own Light and Power Board in Traverse City, has called this an "outdated, 1950's technology" and the board has repeatedly and publicly aired their concerns about the project's potential impacts to the surrounding community. As recently as last Tuesday, the board went so far as to say that if the project goes ahead as is, they will withdraw their support, and they will urge their fellow members in the MPPA to do likewise. We have also just learned that Holland, the MPPA member originally pushing hardest for Northern Lights, is having serious second thoughts, and has just voted to spend $50,000 to study the possibility of developing a Holland plant fueled by bio-solids from their wastewater treatment plant. Hence, the message from Traverse City Light & Power, and apparently now Holland: we can and must do better.

Furthermore, it is not as if a superior alternative coal-based technology does not exist. In fact, in conversations with Richard Smith, the Executive Director of Traverse City Light & Power, we have learned that a coal-based technology referred to as circulating-fluidized-bed (CFB) could greatly reduce the kinds of pollutants usually associated with coal-based energy. Furthermore, CFB technology, the same technology now being studied by Holland, is also capable of using biomass fuels, such as wood, which are renewable and do not have the devastating impacts associated with the fuel and technology chosen for Northern Lights. (I direct you to Richard Smith (231-932-4559) for more information about CFB and its benefits.)

Clearly then, this project falls far short in its requirement to be designed to protect the health, safety and welfare of this community. On the contrary, by making use of one of the dirtiest, most primitive coal-based technologies, especially when a much better alternative is available, it deliberately puts this community's health and welfare at grave risk. And it is on these grounds that this permit can and should be denied.

I'll close by acknowledging the difficult position this board now finds itself in. For many of you, I know this project may have initially looked very appealing, especially when you consider the devastating impact the loss of manufacturing jobs has had on Manistee. But I also want you to understand that nothing is more honorable than to question one's opinions, perhaps admit a mistake, and to revise your position based on the best available version of the truth. Somewhere along the line, we have lost a respect for this ability to own up to our infallibility, and to constantly seek out what is the best telling of the story. Perhaps Ralph Waldo Emerson, the great American philosopher and patriot, summed up

this tradition of revision best, saying: "A foolish consistency is the hobgoblin of little minds." Let me assure you, the public will forgive you for revising your initial position on this matter, for a change of heart and mind is no great sin, but in fact a virtue. The public will show less tolerance, however, for foolishness.

Lastly, we realize that your decision must be based on the merits, and specifically, the sections of the law, zoning ordinance, and master plan relevant to this matter. I understand you may feel restricted by these standards, that they do not allow you to make the decision that your conscience tells you is right to make. It is a dilemma, but thankfully, the public has provided you a way out. By directing their comments so skillfully and specifically only to the relevant criteria on which you must base your decision, the public has done you a great service during these hearings. They have handed you literally dozens of well-reasoned arguments which can be used to justify a rejection of this permit based on the merits, and the standards you must use to evaluate this project. We have given you an opportunity to do what I'm sure has motivated you to serve on this body: to protect this community and promote what is good for it. I urge you to take it.

Thank you,

Louis Blouin
441 ½ W. 8th Street
Traverse City, MI 49684
231-946-8257

(Attachment #63)

2/26/04

I would like to first say thanks for the opportunity to address this commission. I have worked in the power industry for 17 years. Prior to that, I sailed on Great Lakes freighters as a licensed engineer and have been on all of the Great Lakes except Lake Ontario. We live in a truly beautiful region. I have been following the debate surrounding the Northern Lights Project and felt compelled to address this commission regarding statements that have been made about T.E.S. Filer City Station and the Northern Lights Project.

I work for T.E.S. Filer City Station. The plant has participated in the Michigan Clean Corporate Citizen program since 1999. We are one of only four power plants in the state that has this designation. We work very hard to maintain this status by evaluating environmental aspects and impacts annually. We take action on areas of concern and report the action taken to the State of Michigan. The program follows ISO 14001 guidelines which are the international standards for environmental management systems. In addition, we participate in the EPA National Performance Track program. There are 344 members and T.E.S. Filer City Station is one of five coal-fired plants in the U.S. and the only one in Michigan that has been recognized. This recognition is only given to businesses that go beyond the current environmental requirements. The plant has also participated in the Michigan Business Pollution Prevention Partnership since 1999. The program encourages businesses to apply creative cost-effective techniques to reduce waste and prevent the release of hazardous substances. The plant has also participated in the EPA waste Wise program since 2001. This program encourages the reduction of solid waste through recycling. Every employee in the plant is charged with environmental compliance. As a matter of fact, every employee's annual bonus has an environmental compliance component to it. If we do not maintain compliance, we are affected monetarily. Since this plant entered into commercial operation in 1990, 25 healthy children have been born to employees. We live in this community, love our children and take environmental compliance very seriously.

Questions have been raised regarding the use of alternate forms of energy. Fossil, hydroelectric, wind, solar, and biomass all can have negative impacts on the environment. According to a United Nations report from 2002, there are over 2 billion people in this world without clean reliable power. These people rely on biomass and wood. Wood for instance, which is very commonly burned in Manistee County as a substitute to fuel oil, propane or natural gas, contains hundreds of chemical compounds and harmful particulates that are being deposited into our atmosphere. The Northern Lights Project would employ the best available control technology, clean up an industrial site that is polluting our environment as we speak and positively effect humanity with clean reliable power.

There have been questions concerning the number of permanent jobs that the Northern Lights Project will create. Focus on this number is extremely shortsighted. During 2003, T.E.S. Filer City Station did business with over 70 vendors and our vendor list contains approximately 121 businesses in and around Manistee that provide services to the plant on a regular basis. These businesses include all of the skilled trades, merchants,

restaurants, hotels, accountants, engineers, doctors, septic services, lawyers, banks, chemicals, fasteners, steel, welding and piping suppliers, machine shops and many others. The services rendered employ hundreds of people and pump millions of dollars into the local economy each year.

Water shed councils, land use institutes and other legitimate environmental organizations have positively affected change, and there is no denying it. What are very questionable are the fringe groups that are involved in this debate. I am speaking specifically of the Aurora group and Manistee Citizens for Responsible Development. One of the overriding messages that I see and hear from these groups all seemingly under the guise of environmentalism is build it in Houston, Holland, Hillsdale or Harbor Springs but not Manistee. This reasoning is flawed and has nothing to do with environmentalism but has everything to do with the self-centeredness that has permeated our society. I urge this committee to embrace the Northern Lights Project. This project would provide clean safe environmentally responsible power and provide employment to hundreds of people. If it is good enough for the people of Houston, Holland, Hillsdale or Harbor Springs, it is good enough for the people of Manistee.

Thank you

Frank Hayward
10527 Erdman Rd
Onekama MI 49675

(Attachment #65)

February 26, 2004

Dear members of the Manister City Planning Commission:

As you consider this special use permit application from The Tondu corporation of Houston, Texas, I ask you to be clear in your own minds regarding your authority and responsibility.

Fate, history or circumstance has placed you in a position to make a decision which will affect the people and environment of this area for generations to come.

You must make this decision based on the health, welfare and safety, on compatibility with surrounding areas, and on impact on city services. The specific issues which triggered the need for a special use permit, such as activities outside a building, shoreline alterations, etc. are not the only issues you need to consider. You have the responsibility to approve or deny this permit based on the health, safety and welfare of the community. Don't let anyone tell you otherwise.

Now, how about pollution? Do you need to be concerned about that? Absolutely. Doesn't the DEQ take care of that? Absolutely not.

I ask you to view the attached photos of areas right here in the county where egregious pollution is permitted by the DEQ. In each case — PCAs sewer pipe into Lake Michigan, and the abandoned Brown 19 and still-operating Brown 7 sour gas plants in Brown Township, the DEQ continues to permit pollution to occur, and in some cases to worsen.

The extent to which pollution will increase if this plant is built is debatable. What is not debatable is that pollution will be increased. Common sense tells us that we cannot burn 1,800,000 tons of coal, or 130 shiploads of coal, a year, and not produce a lot of pollution.

So, for better or worse, it is up to you few people to decide whether the air we breathe, the water we use, the fish we eat are degraded.

I urge you to refuse to allow that degradation. I urge you to be heroes for this community. I urge you to deny this permit.

Thank you.

Tim Joseph
11171 Kerry Rd, Brethren, MI

Testimony for Manistee City Planning Commission
February 19, 2004

Dear Planning Commission members,

I speak to you tonight as a member of the Board of Trustees of Brown Township. Brown Township lies from 6 to 14 miles northeast of the site of the coal fueled electric plant which is being proposed by Tondu Corporation of Houston, Texas. Our township encompasses six miles of the Big Manistee River valley, three miles of the Bear Creek valley, thousands of acres of forest and farmlands, and seven hundred living, breathing human beings. We are down wind and in close proximity to the proposed coal burning plant.

On December 15, 2003 the Brown Township Board of Trustees adopted the attached resolution.

My questions to you tonight are as follows:
Have you taken into consideration the health, safety and welfare of your neighbors? Have you asked the people of Oak Hill and East Lake and Stronach how they feel about the strobe lights atop a 400-foot smoke stack flashing in their windows every night for the next several decades? Have you asked the people of Filer and Stronach Townships how they feel about additional thousands of dump truck loads of coal ash and lime and tankers of ammonia and other chemicals rumbling through their streets every year for the next thirty or forty years? Have you asked the people of Manistee and Stronach Townships, who share the shores of Manistee Lake with you for their input on the prospect of millions of gallons of hot water being poured into the lake every day? Have you asked the people of Brethren, Wellston, Kaleva, Onekama, Bear Lake, Copemish, Arcadia, Free Soil, Harrieta, Benzie County, Wexford County, Mason County how they feel about the added pollution in the air they breathe, and that falls out on their land, their gardens, their lakes and streams—the sulfur dioxide, nitrous oxides, ozone, particulates, heavy metals—the mercury which so insidiously affects the developing brains of fetuses and small children?

You, the Planning Commission have the responsibility to approve or disapprove this permit, based on this project's effect on the health, safety, and welfare of the community. Have you sought the input of the governing bodies of effected communities?

Another question, based on Brown Township's resolution is this: Have you sought out qualified, independent sources of information on the health, environmental and economic impacts of this project? Have you required the applicant to pay for independent, professional environmental and economic impact statements, something that is certainly within your authority to require? Or have you relied mostly upon information supplied by the applicant, information that can in no way be considered objective?

Thank you for your consideration.

Tim Joseph

Tim Joseph
11171 Kerry Rd.
Brethren, MI
231-477-5381

(Attachment #65)

RECEIVED DEC 17 2003

Brown Township
Manistee County, Michigan

Date: December 15, 2003
To: Manistee City Planning Commission
Re: Proposed Tondu coal-fired electric plant

We, the Brown Township Board of Trustees make the following request of the members of the Manistee City Planning Commission as they review the application for the proposed Tondu coal-fired electric plant:

That careful consideration be given to the effects of air pollution on the people who live down wind of the proposed plant as well as the effects of potential pollution on the land, lakes, rivers, fish and wildlife in surrounding areas;

That the commission seek out qualified, independent sources of information in order to obtain objective answers to these concerns; and

That in its deliberations, the commission members do not rely solely upon information supplied by the applicant to determine potential harm to the surrounding communities.

Thank you for your consideration.

Brown Township Board

Pamela Tompke

Pamela Tompke
Clerk

CC: Manistee City Council
Manistee County Board of Commissioners

(Attachment #66)

As Delivered 3-4-04

Good Evening Mr Chairperson, Commission Members & Fellow Citizens.

My name is J Scott Wing. I live at 6671 Comstock Road in Jeddo, Michigan but am renting a home at 811 Mee Street in Filer City and plan to move to Manistee in the near future. I'm a 1972 Graduate of Michigan Technological University and a Registered Professional Engineer in the State of Michigan.

My family loves the outdoors and we spend a lot of our time in the forests, lakes and streams of our state trout fishing, hunting and camping.

I am also the evil Plant Manager of the T.E.S. Filer City Generating Station, and I appreciate this opportunity to speak tonight. From A realistic and factual basis.

First- I need to correct a few of the things I've heard: about our plant.

The coal boats that serve our plant are 700 feet long, not 1200.
No, we do not turn off our pollution control equipment at night when nobody can see it.
Yes, we do burn wood from PCA- about 37,000 tons of it a year but yes, there were times this year when we couldn't take all that they could send.
If you smell propane, trust me, it is not coming from our plant. Don't create
And if you think that new casino's and prisons ~~aren't responsible for~~ pollution like power plants are, please think again. Where on earth do you think the energy comes from that powers these huge facilities? Who is responsible for pollution- the people who demand and use the power, or the people who make it? The answer is- we both are.
for them.
The people who use it, need to use it wisely. And the people who make it need to make it as economically and cleanly as possible. We both need to do our part. To achieve a balance on this planet earth.

Folks are concerned about operation of the Northern Lights plant from an environmental viewpoint- well, why not look at how the existing T.E.S. plant is currently being operated by Tondu Corporation and its Partners. ~~Here are a couple of~~ facts:

1. T.E.S. has been awarded membership in the MDEQ Clean Corporate Citizen program each year since 1999. This award is considered for only those facilities that demonstrate environmental stewardship and strong environmental ethics. In order to earn this award, we had to demonstrate an effective Environmental Management System, an approved Pollution Prevention Program and total Environmental Compliance for the year and T.E.S. is one of only four power plants in Michigan to receive this recognition.
2. In the year 2000, T.E.S. became a charter member of the EPA National Environmental Performance Track. This program recognizes facilities that go above and beyond the EPA requirements for control of pollutants. In the year 2000, there were only 228 facilities in the entire United States that were recognized for this achievement. Today, four years later, there are only 344 facilities in the country that have earned this achievement. Only five of these facilities are coal fired power plants and T.E.S. is the only coal fired plant in the state of Michigan that made the grade.

HAS AWARD

HAMWARD

These environmental achievements were not mandated by some regulation or law, but were implemented freely and voluntarily by the former plant manager, Mr. Bob Ryan and Mr. Larry Roels, our environmental supervisor under the guidance of the T.E.S. partners.

We have heard caring and passionate pleas for "No more coal plants". I don't have enough time to give the background for each one but for various reasons, nuclear, hydro-electric, solar, wind, wood, biomass and oil cannot provide the energy Michigan needs. I invite everyone in this room to schedule, key word schedule please, a visit to our plant to discuss these sources in realistic detail and to also tour our plant to see for your self how power is produced. That brings us to Gas and coal. THE ONLY OTHER 2 SOURCES ARE GAS & COAL

Gas works and it's pretty clean. But North American gas production is declining. As we speak, new terminals are being considered to import gas from foreign countries. This just makes us even more dependent on imported energy and prices keep climbing. And there are those that question whether burning a home heating fuel for power generation is the right thing to do.

And that leaves - Coal. It does pollute more than gas, wind, wood and solar energy- no doubt about it. But it is reliable and we have developed technologies to reduce that pollution. The T.E.S. bag house removes over 99% of the dust in our exhaust stack. Our scrubber removes over 90% of the sulfur. EPA calculations show that in combination, these two technologies remove over 94% of the mercury from our exhaust stack. These calculations indicate that our stack emits less than 6 pounds of mercury per year. The Northern Lights plant will employ both of these technologies plus Selective Catalytic Reduction which is designed to remove the oxides of nitrogen. And we have enough coal right here in our own country to meet the needs of our citizens for a long, long time, reducing our energy dependence on foreign countries and strengthening our nation.

The hard truth is, that sooner or later, a plant like Northern Lights will be built to serve us, the people of Michigan. And yes, with this new electricity will come a certain amount of pollution- it is unavoidable. Whether it is built in Manistee or somewhere else remains to be seen, but the impact on our environment will be the same no matter where it is built.
JUST AS IT WAS WHEN WE ALL DROVE OUR G
HIGHER TON

I would again like to encourage anyone in this room who has additional questions or who would like to tour our plant to see what really goes on, to schedule a visit with us.
AT A COAL FIRED POWER PLANT

In closing, I'd like to say that I support the Northern Lights project because I truly believe that it will provide a responsible balance between meeting our electric demand and the need to protect our environment while doing so. Thank you.

Long Version
with more Detail

Good Evening Mr. Chairperson, Commission Members and fellow citizens.

My name is J Scott Wing. I reside at 811 Mee Street in Filer City. I'm a 1972 Graduate of Michigan Technological University and a Registered Professional Engineer in the State of Michigan.
My family loves the outdoors and we spend a lot of time in the forests, streams and lakes of our State trout fishing, hunting and camping.

I am also the Plant Manager of the T.E.S. Filer City Generating Station, and I appreciate this opportunity to discuss our plant and the power industry with you tonight.

We have heard genuine concerns about how the proposed Northern Lights plant will be operated from an environmental viewpoint- I think the most telling way to address those concerns is to look at how the existing T.E.S. plant is currently being operated by Tondu Corporation and its Partners. Here are a few facts:

1. Contrary to some of the opinions we have heard lately, the employees of T.E.S. have a deep regard for the stewardship of our environment. That regard is so important to us that we have developed an Environmental Policy Statement that guides the operation of our plant. It reads as follows: "The employees of T.E.S. Filer City Station take seriously their role in protecting and enhancing Manistee County and Michigan's environment. Environmental protection is always a primary objective."
2. T.E.S. has been awarded membership in the MDEQ Clean Corporate Citizen program each year since 1999. This award is considered for only those facilities that demonstrate environmental stewardship and strong environmental ethics. In order to earn this award, we had to demonstrate an effective Environmental Management System, an approved Pollution Prevention Program and total Environmental Compliance for the year and T.E.S. is one of only four power plants in Michigan to receive this recognition.
3. In the year 2000, T.E.S. became a charter member of the EPA National Environmental Performance Track. This program recognizes facilities that go above and beyond the EPA requirements for control of pollutants. In the year 2000, there were only 228 facilities in the entire United States that were recognized for this achievement. Today, four years later, there are only 344 facilities in the country that have earned this achievement. Only five of these facilities are coal fired power plants and T.E.S. is the only coal fired plant in the state of Michigan that made the grade.

It's critical to note that these environmental achievements were not mandated by some regulation or law, but were implemented freely and voluntarily by the former plant manager, Mr. Bob Ryan and Mr. Larry Roels, our environmental supervisor under the guidance of the T.E.S. partners.

We have heard caring and passionate pleas for "No more coal plants". The first thing we all need to do, like it or not, is come to grips with the fact that every one of us depends upon electricity every day. To illustrate this point, I challenge everybody in this room, right now, to look around and find one thing, except naturally occurring things like dirt, and sunlight and animals, find one thing where electricity has not played a role in its creation. You will be amazed- it's almost impossible to do. But if we don't want coal plants, lets review the 8 commercially viable alternatives. (In the interest of time, I will provide only a brief, summary for each source but supporting detail is included in my comments.)

Nuclear Power- Nobody will build a Nuclear plant until spent fuel issues have been resolved and construction cost recovery is guaranteed.

Hydro-Electric- Michigan's hydroelectric capability has been tapped out. Michigan simply does not have the geography to support large scale hydroelectric generation.

Solar Cells- This works OK on a small scale. It works out in the Nevada desert and can augment individual household needs but it's weather dependent and it doesn't work at all at night. This doesn't work at night.

Wind- This works....and it works well But on those scorching days and clear polar nights when there is no wind at all, the wind generators are silent. But we all still need our furnaces, our refrigerators and sump pumps and traffic signals and our water and lights to work. This doesn't work when there is no wind. So this power, like solar power, must be backed up 100% by a reliable, alternate energy source.

Oil- Our demand for oil for gasoline, home heating fuel, plastics and lubricants alone has already forced the United States to become dependent on foreign countries for oil and it is also very high in sulfur compounds. Like Nuclear, nobody can build an oil fired power plant today.

Gas- This works and it's pretty clean. But North American gas production is declining. As we speak, new terminals are being considered to import gas from foreign countries. This just makes us even more dependent on imported energy and prices keep climbing. And there are those that question whether burning a home heating fuel for power generation is the right thing to do. North American gas production is declining and we're turning to off shore foreign countries to import gas.

Wood- This also works. But wholesale power generation from wood will devastate our forests. We have already seen the prices of particle and chip board soar from $5 to $15 a sheet due to supply and demand imbalances created in part by wood burning power plants. Existing power plants in Michigan that burn wood as a primary fuel are facing supply shortages as we speak.

And that leaves - Coal. It does pollute more than gas, wind, wood and solar energy- no doubt about it. But its reliable and we have developed and implemented technologies to reduce that pollution. The T.E.S. baghouse removes over 99% of the dust in our exhaust

(Attachment #66)

stack. Our scrubber removes over 90% of the sulfur. EPA calculations show that in combination, these two technologies remove over 94% of the mercury from our exhaust stack. That's what we have at T.E.S. station and EPA calculations show that we emit less than 6 pounds of mercury per year. The Northern Lights plant will employ both of these technologies plus a new one- Selective Catalytic Reduction- that is designed to remove a large portion of the oxides of nitrogen. With the diligence demonstrated by the owners of T.E.S., there will be a responsible balance between our environment and our electric demands. And we have enough coal right here in our own country to meet the needs of our citizens for a long, long time, reducing our energy dependence on foreign countries and strengthening our nation.

The hard truth is, that sooner or later, a plant like Northern Lights will be built to serve us, the people of Michigan. Current wisdom indicates that it will be a coal fired plant. And yes, with this new electricity will come a certain amount of pollution- it is inevitable and it is certainly going to happen. Whether it is built in Manistee or somewhere else remains to be seen, but the impact on our environment will be the same no matter where it is built.

I have presented just a few facts here tonight and I'll submit a supplemental package with additional facts about the T.E.S. Station to the Commission. I would also like to encourage anyone in this room tonight who has additional questions or who would like to tour our plant to see what really goes on, to schedule, (key word- schedule) a visit with us.

In closing, I'd like to say for the record that I support the Northern Lights project and believe it is the best alternative to protect the environment while providing economic opportunity to the Manistee area and helping to meet the electrical demands of all of us as consumers of affordable electricity in Michigan. Thank you.

Submit Copies.

(Attachment #66)

T.E.S. FILER CITY STATION FACT SHEET

February 12, 2004

1. Environmental Policy Statement

"The employees of T.E.S. Filer City Station take seriously their role in protecting and enhancing Manistee County and Michigan's environment. Environmental protection is always a primary objective."

2. Voluntary Environmental Programs and Awards

The Plant's owners and employees participate in several voluntary environmental quality assurance programs, both with the State of Michigan and the Environmental Protection Agency (EPA).

State of Michigan Clean Corporate Citizen

The Clean Corporate Citizen (C3) program is for establishments that have demonstrated environmental stewardship and strong environmental ethics through their operations. The Plant has been a member since 1999 and is one of only four power plants in the state that has this designation. Each year, the Plant has to demonstrate compliance with the program, before a renewal is given. The requirements for the renewal are: (i) Environmental Management System (Improvements, concerns, set objectives and targets, etc.); (ii) Pollution Prevention Plan (Effective pollution prevention program); and (iii) Environmental Compliance (No violations.)

EPA National Environmental Performance Track

This program recognizes businesses that demonstrate strong environmental performance beyond the current requirements. It encourages continuous environmental improvement through the use of environmental management systems, local community involvement, and measurable results. The Plant became a chartered member on December 13, 2000, one of 228 companies nationwide and one of the few power plants.

Michigan Business Pollution Prevention Partnership Program

Companies in Michigan have the opportunity to become involved in a unique program encouraging businesses to apply creative, cost-effective techniques to reduce waste and prevent the release of hazardous substances. The Plant has been a member of the program since 1999. Each year the Plant has to apply for renewal and must demonstrate compliance to the MDEQ.

EPA Waste Wise Program

Waste Wise is a voluntary EPA program promoting companies to eliminate costly solid waste. The program supports finding ways to reduce solid waste by recycling. Each year the Plant makes goals for the program in reducing solid waste. The Plant has been a member of the program since July 2001.

International Organization for Standardization (ISO) ISO 14001
ISO has developed standards that help organizations take a more pro-active approach to managing environmental issues. The Plant became ISO 14001 compliant on November 28, 2000.

3. Community Services and Involvement

The Plant has sponsored an environmental art contest for five years. Children in the first through sixth grades from 11 schools participate in the program. 525 students entered the contest in 2002.

The Plant has adopted 1.5 miles of Stronach Road in Manistee County as part of the state's Adopt-A-Highway program.

The Plant participates in a voluntary recycling program. In 2003, donations were made from the Recycle Fund to the Manistee High School Seat Sponsorship (New high school auditorium), the Manistee High School Grad Bash, Boys Scouts Scenic Trails Council Pack 61, the Manistee County Five Cap Toys for Tots, Manistee County Girls Scouts Troop 463 and 458, and the Manistee Catholic Central Washington Group. Two computers were also donated to the Filer Township Fire Department.

Some of the other groups/organizations that the Plant has donated to in the past, include the Salvation Army, Easter Seals, United Way of Manistee County, 4-H, Chamber of Commerce, numerous schools and youth organizations. Items such as computers and air compressors have also been donated to local schools. Employees have also donated their time to help out the needs of the community and have gotten involved in coaching children's sports teams.

4. Property Taxes

The Plant has paid almost $14.0 million in property taxes since 1990 and has paid these taxes every year at the assessed value even though the amount of the assessed value has been in dispute.

5. Employee Statistics

Number of Employees Hired From	29	
Manistee/Surrounding Counties	19	66%
Michigan	7	24%
Out of State	3	10%

(Attachment #66)

6. Local Economic Impact

Approximately 86% of the employees own property in the area.

The 2003 annual payroll and benefits for the employees of the Plant was $2.1 million.

During 2003, approximately $2.4 million was spent with over 70 businesses, vendors and contractors in the Manistee area.

7. Importance of the T.E.S. Filer City Station to the Michigan Grid

Because Michigan is surrounded by the Great Lakes, it can be difficult at times to import power into the state because of electric transmission limitations. As a result, electric consumers in Michigan are more dependent upon power generated in their state than consumers in neighboring regions. This becomes even more critical during periods of peak electrical demand when plants like the T.E.S. Plant, which are located physically near the electric load, become vital players to provide stability for power, system voltage, system frequency and VAR generation (Volt-Amps-Reactive or inductive load) for the region. This helps prevent "rolling brownouts" or electricity curtailments that some regions of our country have experienced in recent years. With Michigan customers setting new peak load records almost every year for the past several years, plants like the T.E.S. Plant continue to play an increasingly important role in meeting the needs of the electrical customers in our region.

8. Fuel

	Annual Permit Levels	2002 Fuel Consumption Tons	Percentage
Coal	No tonnage limit	202,000	86.9
Wood Waste	149,650	27,175	11.7
Tire-derived fuel (TDF)	35,040	3,365	1.4
		232,540	100.0

9. Plant Air Emissions Permit Requirements

- Carbon Monoxide (CO) shall not exceed 1009.2 tons per year.
  153 tons produced in 2002, 856 tons less than the permit level or 85% below the permit level.

- Nitrogen Oxides (NOX) shall not exceed 2,018 tons per year.
  1,119 tons produced in 2002, 899 tons less than the permit level or 44% below the permit level.

- Sulfur Dioxides (SO_2) shall not exceed 1,6819.9 tons per year.
  483 tons produced in 2002, 1,198 tons less than the permit level or 65% below the permit level.

10. Air Emission Requirements

SO_2	Requirement	Compliance
• 24 hour average	0.7lb/mmBTU	99.1%
• 30 day average	0.5 lb/mmBTU	100%
• 30 day average	90% reduction	100%

NOX	Requirement	Compliance
• 30 day average	0.60 lb/mmBTU	100%

OPACITY	Requirement	Compliance
• 6 min average	<10%	99.1%

11. Air Permit Requirements
Renewable Operating Permit (ROP)
Daily Gas Audits
Cylinder Gas Audits (CGAs)
Relative Accuracy Test (RATA)
Quarterly Emission Monitoring Report
ROP Semi and Annual Reporting
CEMS Prevent Maintenance Program
Maintenance Management Plan

12. MDEQ Air Quality Inspections
Routine facility inspections.
Inspections from a citizen complaint.
Review of performance testing done by the plant.
Review reports submitted by the plant.
Voluntary disclosure resulting from a plant self audit.
Observation of stack exhausts for visible emissions.
Sampling of fuel.
Review plant records and emissions calculations.
Evaluation of air pollution control equipment for proper operation and maintenance.

13. Other Regulatory Requirements
SARA Title III, Tier II
SARA Title III, TRI
Storm Water Inspection
Waste Water Report
Thermoelectric Water Usage

(Attachment #66)

Michigan Air Emissions Report System (MAERS)

14. Mercury Emissions

The total amount of mercury air emissions was erroneously reported in 2001 as 137.4 pounds. That was the first year a new EPA emissions calculation methodology was initiated. The calculations were performed incorrectly and not recognized as such until the end of last year. The corrected amount, which will be in an amended 2001 Report, is 5.3 pounds. The reported amount for 2002 is 5.4 pounds and the amount for 2003 is expected to be a similar number. There is no scientific evidence that these emissions are primarily deposited within 1.5 miles of the Plant.

For additional information about the Plant, please go to www.tesfilercitystation.com

Testimony before the Manistee City Planning Commission
March 4, 2004

My name is Mark Dougher, I live at 266 Fremont Street, Manistee, and I am employed as the Director of Grants & Contracts for the Little River Band of Ottawa Indians Tribal government.

At the February 19th City Planning Commission Public Hearing, it was stated by Joe Tondu that the General Chemical site, given its history of industrial use and contamination, will never be a park or anything other than an industrial use.

Suffice it to say that Mr. Tondu is grossly misinformed. Across this nation, there are literally hundreds of former industrial sites, dumps and other contaminated sites that have been transformed into productive and valuable properties, including housing developments, mixed-use commercial developments, and even parks and golf courses.

I could spend the entire evening here with descriptions and illustrations of such sites just in Michigan, but I will be merely showing you a few.

Contrary to Mr. Tondu's myopic view of the General Chemical site, the following illustrations are examples where public and private sector interests have joined forces, and with a shared vision, have pooled their resources, and exercised the political will to bring about a new and achievable reality for their communities.

(Attachment #67)

Mason Run Housing Development, Monroe, Michigan

Between 1916 and 1978, the site was used by a number of paper manufacturers who eventually merged to form the Consolidated Paper Company. Consolidated used the site as a containerboard mill which primarily manufactured corrugated cardboard boxes. Wastewater from site operations was pumped to settling tanks and lagoons located on the property.

Paper manufacturing activities at Consolidated began to slow during the 1970s because of national economic problems, as well as growing inefficiency of the capital plant on site. Consolidated eventually declared bankruptcy in 1978 and abandoned the property, leaving the mill structures standing. After a multi-year negotiation process, and with support from the citizens, the City of Monroe acquired title to the property in 1987 as a settlement for unpaid taxes and utility bills.

In 1998, Crosswinds Communities, Inc. and the City of Monroe executed an agreement and commenced redevelopment of the former Consolidated Paper Property. Crosswinds Communities, Inc., the project developer, is one of the largest homebuilders in the State of Michigan.

The project is comprised of approximately 200 acres. Mason Run will eventually contain as many as 1600 homes and will have a new grade school, several neighborhood parks and a meandering, tree-lined boulevard following the path of the original Mason Run creek. All of the property is owned by the City of Monroe.

When the first phase is complete, with the construction of 225 homes, Mason Run will contribute more than $15 million in taxable value to the City of Monroe, and other area taxing jurisdictions. The estimated annual economic impact of this project on the Monroe community is approximately $24 million, and is projected to stimulate the creation of 100 jobs.

Brownfields to Parks

Founded in 1972, the Trust for Public Land is the only national nonprofit organization working exclusively to protect land for human enjoyment and well-being. They help conserve land for recreational purposes and to improve the health and quality of life of American communities. The Trust for Public Land has helped more than 190 cities complete over 420 park projects.

One of their national initiatives is the "Brownfields to Parks" program. For years, America has maintained a "throwaway" attitude toward land. Properties have been developed, used, and then abandoned to become vacant lots and empty buildings. The Brownfields to Parks program illustrates how communities are restoring brownfields for use as community gardens, parks, and open space.

One example here in Michigan is the former BASF plant in Wyandotte. This 84-acre site was owned by BASF and used for chemical manufacturing and shipbuilding. In 1980, a regulatory suit was filed by the state, requiring clean-up of the property under the state's hazardous waste law. The groundwater and soil was contaminated with mercury, polynuclear aromatics, and chlorinated hydrocarbons. BASF cooperated with the city on a plan for clean-up and public access to the Detroit River.

This project involved transforming a defunct, 84-acre chemical manufacturing plant along the Detroit River into a public recreation area and a nine-hole golf course. Through a combination of public and private funding, the city was able to revitalize the waterfront and the once-blighted neighborhood around BASF's plant. According to City officials this redevelopment has precipitated a domino effect of economic growth throughout downtown Wyandotte.

(Attachment #67)

Washington's Landing

From the late 1800's through the 1960's, this 42-acre island in the Allegheny River near Pittsburgh was the former home to meat-packing plants, stock yards, sawmills, scrap yards, soap and fertilizer processing plants, and railroad yards.

Known as Herr's Island, "Thirty-five years ago, this site was notable for just one thing: the nauseating smells generated by the animal rendering plant housed there. What a difference a few decades -- and a vision -- can make."

Now known as Washington's Landing , this project has involved the revitalization of a once abandoned and contaminated island into a high-quality, multi-use development, encompassing a full service marina, market-rate housing, office/research and development/light industrial uses, a rowing center, and a public park. The development was undertaken pursuant to a Redevelopment Plan adopted by Pittsburgh's City Council in October, 1983.

According to an article in the Pittsburgh Post-Gazette: "Washington's Landing shows what can happen if you do it right. For a long time, people saw this area as a blight, but now we've got a park, running trail, businesses and government offices."

The Washington's Landing redevelopment project was funded by various organizations. Both public and private industries made significant contributions to the site through loans, grants and investment funds. In sum over $24 million in public and private sector financing was generated to remediate the island and to provide for new infrastructure, which has yielded over $42 million in new investment and development.

(Attachment #67)

Fletcher Paper Mill / Alpena Marc, LLC

A young man was raised in a working class community where his father worked for 37 years in the local paper mill. The plant is located on the outskirts of downtown Alpena, along the river front. This young man was determined to become an entrepreneur. He left Michigan, moved to the Chicago area, and created a business that provided him with a wealth of new opportunities.

Meanwhile, back home in Alpena, the paper mill closed, forcing his dad and his colleagues out of work. The plant closing left behind more than just the unemployed; it also left behind contamination and blight, all powerful symbols of his hometown's decline.

But the Alpena native returned home to Michigan. With his own equity and financial partners, Jeff Konczak of Alpena Marc, LLC purchased the old Fletcher Paper Mill plant. After the development of strong local support and partnership, strategic planning and visioning, a business venture was launched.

Once completed, the fully rehabilitated former industrial complex will house the National Oceanic Atmospheric Administration Great Lakes Underwater Sanctuary and Museum, a working brewery and restaurants, and a hotel and conference center. This development will all be tied together with a series of paths and boardwalks.

The entire project will cover about 29 acres and nearly 3,000 linear feet along the riverfront. The older mill buildings will be restored and new construction will mirror the architectural style of the existing building to maintain historical continuity.

The project will generate $ 40–60 million in investments and will create from 500 – 700 jobs during the redevelopment phase, along with 160 permanent jobs once operational. Last August, Governor Granholm went to Alpena to award the community with a $1.6 million Community Development Block Grant which will be used to help fund public improvements around this new development, including sewer, water and streetscape improvements.

During her visit, Governor Granholm said, "The Alpena mill project is one of the marquis redevelopments in this state. The city of Alpena should be commended for its diligence in obtaining the funding for this important project that will draw investment and jobs to the downtown area for many years to come."

Conclusion

All of these are illustrations of what is possible when we commit to forge a new and sustainable vision for our communities, coupled with the resources and political will to implement that vision.

I believe that that vision exists in this community, and I know that the resources are there, the only question is whether or not we have the political will. Thank you.

March 4, 2004

Alice Mummey
12332 Smith St
Bear Lake MI

I am a pre-school teacher, a volunteer at my childrens school, a reading tutor and also work with young children at Crystal Mountain Resort .

I am opposed to the coal fueled power plant proposed by the Tondu Corp of Houston, TX.
According to the Special Use Permit Standards the proposed use must be 2: Compatible with the adjacent land use. I have been up on Main Street many times in the last year, visiting someone who lives there and I have occasionally taken walks to the park,Reitz Park, right across the street from General Chemical which is the plant that the Tondu Corp out of Houston, TX has an option to purchase. There is also a big beautiful ball park where the Manistee Saints and the high school play ball. Lots of homes and apartment buildings, one being a low-income housing project, are directly across the street from the site. On any summer evening there are many children playing at the park and kids playing ball. I wonder if they know that the park they are playing in is in an industrial area and should not be there? Or how the young families in the low-income housing will be able to afford to move somewhere else as the huge coal-burning plant comes in across the street?
For this reason the special use permit standard is not fulfilled and I am requesting that you deny the application.

There is one more reason that I think needs to be addressed here tonight and that is that many times I have heard the Planning Commission state that the monitoring of the Tondu Corp coal-fired plant should be under the jurisdiction of the DEQ and the EPA and really not be their concern. Considering the first standard -reasonable and designed to protect the health, safety and welfare of the community- I would like to read a line of an article which I will pass out to the Planning Commission: And I quote: The DEQ conducts less than 30% of the required permit inspections and on-site compliance inspections are rarely done because the agency says it has too few employees to handle the task. The article goes on to say how many cutbacks there have been and how that trend under Rebublicans- Palsrock-Manistee- Walker-Traverse City and Bradstreet appear ready to continue this lack of support for the DEQ.

I will pass out this article in case you have not seen or heard how the DEQ itself states it has no money,and no staff for monitoring facilities.
This is another reason why the Special Use Permit should be denied.

Thank you
Alice Mummey

alice L Mummey

(Attachment #68)

TRAVERSE CITY RECORD-EAGLE SECTION B

REGION

NEWS FROM NORTHWEST LOWER MICHIGAN

NEWS TIP LINE (231) 933-1472

unday, February 8, 2004

Problematic permitting

DEQ has no staff, no money for monitoring facilities

BY BRIAN MCGILLIVARY
Record-Eagle staff writer

TRAVERSE CITY — For a decade, Gov. John Engler's administration cut back on regulatory staff who monitored groundwater polluters.

Northern Michigan members of the state House, including representatives Howard Walker, R-Traverse City, David Palsrok, R-Manistee, and Ken Bradstreet, R-Gaylord, appear ready to continue that trend.

POLLUTER PAY BILL

In 1990, the Department of Environmental Quality had 23 people to monitor 1,350 facilities that discharge pollutants into groundwater, whether by septic system, topical spraying, or through lagoons. By April 2003, there were seven.

The DEQ conducts less than 30 percent of the required permit inspections and on-site compliance inspections are rarely done, because the agency says it has too few employees to handle the task.

In 2003 the program was supported with $1.4 million from the general fund. Permits were free.

Gov. Jennifer Granholm

PLEASE SEE PAGE 6B

PERMIT

Polluter pay bill mired in details

FROM PAGE 1B

last year proposed $3.5 million in fees to be paid by polluters. The state Senate halved that figure, agreeing to $1.7 million in fees and the hiring of five more DEQ staff members.

When the polluter pay bill reached the state House, local representatives sponsored several fee exemptions that gutted funding and wouldn't provide enough money to pay current employees, state records show.

In Grand Traverse County, the state requires permits from approximately 20 facilities, including a mobile home park, subdivision, school, two villages, wineries and agricultural food processors.

The proposed DEQ fees run from $200 for Sara Lee Bakery to $1,500 for wine makers and $3,650 for Cherry Growers Inc.

The House slashed fees for all agricultural-related uses, schools, nonprofits, businesses with fewer than 20 employees and small communities, state records show.

Under the House bill, only a state park and state prison would have to pay inspections fees, said Jim Janiczek, chief of the DEQ's permit unit.

After reducing the number of entities that would have to pay fees, Walker and Bradstreet then voted against the bill.

Walker said the bill would have required every non-residential user of water — thousands of businesses — to be subject to a new user fee.

"If they sprinkle a lawn they have to get a permit," Walker said.

Another local legislator disagreed.

"That is a misconception, incorrect," said state Senator Michelle McManus, R-Lake Leelanau. "Go read the bill."

"These are existing programs, we are not permitting new people," said McManus, who co-chairs the conference committee charged with pulling together House and Senate versions of the bill.

In more than four months the conference committee still hasn't met on the groundwater bill. Instead it is focused on closing a $165,000 gap with the House in a companion fee bill for discharge into lakes and streams. The difference in the groundwater bill is almost $1.4 million.

Walker subsequently said he continues to research the bill he voted against four months ago. He said he'll reconsider his position because it appears the bill looks at waste water and not just water usage.

"I'm still convinced it is expansionary and am concerned with how easily it can become more expansionary," Walker said.

The lack of funding has created a backlog of 200 applications including 150 with high potential risk to the environment and public health.

Graceland Fruit Cooperative Inc., for instance, applied to the DEQ for a groundwater discharge permit in 1992 and again in 2001. It was never granted, though discharges continued.

Janiczek said lack of staffing likely contributed to the DEQ's inability to follow up on the permit issue.

(Attachment #68)

(Attachment #69)

Manistee County Audubon Society
Resolution of Opposition
Re: The proposed Northern Lights Coal burning plant in the City of Manistee

Whereas, the Manistee Audubon Society has serious concerns about risks involved with the plans of the Tondu Corporation, to build a 425 Megawatt coal burning power plant in the city of Manistee; and

Whereas, coal plants emit Carbon Dioxide gas, the main agent of climate change, and human induced emissions are at least a contributory factor in this process; and

Whereas, Nitrogen Oxide and Sulfur Dioxide compounds like those emitted by coal plants, combine with atmospheric moisture to produce acid precipitation (acid rain, snow, or fog) that harms or kills forest trees, aquatic plants, invertebrates, frogs, fish; and

Whereas Nitrogen Oxide gas and Volatile Organic Compounds combine with sunlight to form ground level ozone or smog; and

Whereas, exposure to smog increases the risk of or asthma, chronic bronchitis, emphysema, pneumonia; and

Whereas, soot from coal fired power plants is the most dangerous air pollutant, increasing or causing respiratory problems including asthma attacks, upper and lower respiratory problems, cardiac problems; and

Whereas, soot from U.S coal fired power plants is estimated to cause 30,000 human deaths per year; and

Whereas, the proposed Northern lights coal burning power plant is expected to emit 737 tons of additional particulate matter (soot) into our atmosphere; and

Whereas, a synergistic effect exists, whereby soot, smog, and other pollutants will all act on the human respiratory system in a negative manner; and

Whereas, the very young, the elderly, those persons with pre existing respiratory conditions are most vulnerable; and

Whereas, the American Lung association has indicated that 15% of the citizens of Manistee County has some kind of lung problem; and

Whereas, coal burning plants are recognized by the United States Environmental Protection Agency as a major source of mercury pollution in Lakes and streams; and

Whereas, mercury is recognized as the second most hazardous element, being a Developmental Toxicant, Carcinogen, Cardiovascular Toxicant, Blood Toxicant, Gastrointestinal Toxicant, Kidney Toxicant, Carcinogen, a Neurotoxin; and

Whereas, mercury emitted into the air falls into the water, and is changed into methyl mercury by bacteria, enters the food chain; biomagnifies; and

Whereas methyl mercury contamination is a subtle, but very real, threat that grows over time, often going unnoticed until it becomes severe; and

Whereas, existing methyl mercury contamination in this region of Michigan has resulted in fish consumption advisories being placed on species such as Crappies, Bass, Walleye and Pike; and

Whereas, methyl mercury contaminated fish are a documented threat to birds, animals, humans that consume them; and

Whereas, a study of chemical contamination in eagles feathers revealed that Bald Eagles in one Manistee County nest showed elevated levels of mercury that were the highest tested in that study; and

Whereas, the effects of mercury poisoning on humans, might include delayed development, cognitive defects, fatigue, memory loss, attention problems, language difficulties, poor motor function, convulsions mental retardation; and

Whereas, the current Bush EPA is attempting to classify mercury as a less hazardous substance than it actually is; and

Whereas, the current Bush EPA has proposed lenient new mercury rules that were in part, written by a coal industry law firm; and

Whereas, mercury poisoning is particularly dangerous to developing fetuses, infants, young children; and

Whereas, the proposed coal plant will also emit up to 832 pounds of lead that would have health effects very similar to mercury; and

Whereas, coal burning power plants like Northern lights emit other toxic and carcinogenic heavy metals like cadmium; and

Whereas, Manistee area industrial complexes presently emit nearly 2000 tons of Volatile Organic Compounds and 4000 tons of Nitrous Oxide, that form smog; and

Whereas, existing Manistee area industrial complexes add over 365,000 pounds of 16 other chemicals, including 944 pounds of lead, 137 pounds of mercury; and

(Attachment #69)

Whereas, the Northern Lights coal plant would add an estimated 2,693 tons of Nitrogen Oxide, 4,444 tons of Sulfur Dioxide, 832 lbs of lead, 737 tons of soot, at least 80 pounds of mercury; and

Whereas, there are at least 23 professionally accepted studies showing power plant pollution increases the incidence of asthma, heart attacks; and

Whereas, the Northern Lights projects central location in Manistee facilitates the spread of contaminants over the town, the lower Big Manistee River marsh system, its outlet into Lake Michigan; and

Whereas, Manistee Lake is highly polluted, with normal populations of aquatic life found in lake substrates only at or near the two river mouths; and

Whereas, there are synergistic effects whereby acid rain can facilitate the release of mercury into aquatic environments; and

Whereas, the Northern Lights project would involve dredging in Manistee Lake near the plant site; and

Whereas; dredging operations would release chemical contaminants buried in these lake sediments; and

Whereas, the proposed Northern Lights coal plant project would draw very large amounts of water from Manistee Lake, which could disturb, disorientate or kill large numbers of fish; and

Whereas, the warm water discharge from this plant could further disturb the lakes ecology; sicken or kill fish, especially salmonids; and

Whereas, we oppose any damage to the area sport fishery that would cause our area economic loss; and

Whereas, we support the progressive conservation and research efforts conducted by the Little River Band of Ottawa Indians in the Manistee River area; and

Whereas we support efforts by the Little River Band of Ottawa Indians to increase the Lake Sturgeon population in the Manistee River system; and

Whereas, we believe increased pollution by direct means or dredging associated with the proposed power plant would jeopardize these important tribal conservation efforts; and

Whereas, the use of chloride or similar substances to remove aquatic plants or zebra mussels from the proposed plants water intake pipes and equipment would likely harm plants and animals in Manistee Lake; and

Whereas, the coal pile runoff associated with this plant would contain arsenic and heavy metals; and

Whereas, we oppose the dumping of this runoff in Manistee Lake, Lake Michigan or any location where ground water could be contaminated by it; directly or as leachate from the retention ponds or community landfill; and

Whereas, the Manistee Lake ecosystem, in addition to being highly polluted, is degraded and stressed by the introduction of invasive exotic species; and

Whereas, over 250 exotic species have been found in the ballast water of cargo ships, and

Whereas exotic species are causing disruptions in the Great Lakes food chain; and

Whereas, the increased ship traffic, associated with coal delivery to this plant, would increase the likelihood that exotic species could be transported from parts of the great lakes where exotics are established, to the waters of Manistee Lake; and

Whereas, the proposed Northern Lights plant is a merchant plant, structured so groups of municipalities would be the main shareholders; and

Whereas, the plants owner, its developer and investors would pay no taxes of any kind to the City of Manistee or to Manistee County; and

Whereas, the Tondu Corporation propose to pay community service fees that will not adequately compensate local taxpayers for the multitude of expenses this project would entail; and

Whereas, such a community service fee agreement would reduce would the money available for local schools; hindering the education of local schoolchildren; and

Whereas; we believe that education is an essential component of modern life, including a prosperous economy, good environmental stewardship; and

Whereas, misleading and incomplete statements continue to made by the developer about the pollutant emissions levels at the proposed plant; and

Whereas, contradictory statements continue to be made by the developer about the number of workers to be employed at the plant, and what they would be paid; and

Whereas, despite citizens repeated requests to the Manistee City Planning Commission for an independent environmental impact statement and an independent economic impact statement, no such statements have as yet been done; and

Whereas, we believe this community service fee agreement amounts to a breach of environmental justice, whereby, a corporation uses a communities poor economy as a lever to cause that community to subsidize environmental degradation; and

Whereas; we believe that together the environmental and economic reasons to reject this plant and the special use permit are overwhelming and irrefutable; and

THEREFORE, IT IS RESOLVED that the Manistee County Audubon Club is steadfastly opposed to the granting of this special use permit and the construction of this coal fired power plant.

These resolutions were authorized and adopted by a vote of the membership of the Manistee County Audubon Club on January14, 2004.

Secretary's Signature — Date: March 04, 2004

President's Signature — Date: March 4, 2004

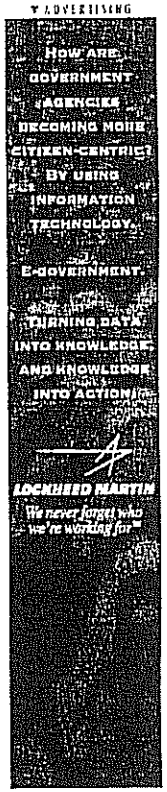
(Attachment #69)

Submitted by the Manistee Audubon Society

Proposed Mercury Rules Bear Industry Mark

EPA Language Similar to That in Memos From Law Firm Representing Utilities

By Eric Pianin
Washington Post Staff Writer
Saturday, January 31, 2004; Page A04



The Bush administration proposed new rules yesterday regulating power plants' mercury pollution, and some of the language is similar to recommendations from two memos sent to federal officials by a law firm representing the utility industry.

The three approaches that the administration published for public comment would for the first time regulate airborne emissions of toxic mercury, which can enter the food chain and cause developmental damage to infants whose mothers eat mercury-tainted fish.

A side-by-side comparison of one of the three proposed rules and the memorandums prepared by Latham & Watkins -- one of Washington's premier corporate environmental law firms -- shows that at least a dozen paragraphs were lifted, sometimes verbatim, from the industry suggestions.

Environmental Protection Agency officials dismissed the matter as largely an interagency mix-up that had little to do with shaping the administration's centerpiece proposal for forcing power plants to reduce mercury emissions 70 percent by 2018. They said the law firm language that turned up in the proposed rule published in the Federal Register was related to an alternative proposal that the administration does not support.

"That's not typically the way we do things, borrowing language from other people," said Jeffrey Holmstead, head of the EPA's air policy office. "But it came to us through the interagency process."

Latham & Watkins was among the law firms and utility industry groups that lobbied the administration last year during deliberations over mercury rules in the Clean Air Act. The firm represents Cinergy Inc. and other major utilities and energy companies with a major interest in the outcome of the rule-making. Holmstead, an assistant EPA administrator, and his chief counsel, Bill Wehrum, worked for Latham & Watkins before joining the EPA.

There is nothing unusual about industry groups peppering government agencies with position papers and recommendations. Indeed, lawyers for Latham & Watkins served on an EPA mercury advisory group and submitted two detailed memos -- one dated March 8, 2002, that dealt with the challenges of regulating different grades of coal, and another, dated Sept. 4, that outlined a number of regulatory legal theories. However, some former EPA officials said it is rare for the agency to simply insert large chunks of an industry analysis into a proposed rule.

"The regulations are supposed to be drafted by the staff -- the people in the science program and

regulatory branches," said Robert Perciasepe, who headed the EPA air policy office during the Clinton administration. "I think it would be inappropriate" for the agency to borrow heavily from an industry memorandum, he said, "unless it was from a government contractor."

Martha Keating, a toxics scientist with the Clean Air Task Force and a former EPA employee, was the first to discover the similarities between some of the proposed rules and the law firm's memos. "It just illustrates the inside track the industry groups and some of these law firms have with the administration," she said.

Claudia M. O'Brien, lead writer of the Latham & Watkins memos, said it was "gratifying" that the EPA found the firms' analysis persuasive, but that "we didn't ask EPA to cut and paste our analysis into their [rule-making] preamble."

"It was a long rule-making process, and it's a big document done under a tight time frame," she said. "If they found an analysis persuasive, they adopted the analysis."

Until recently, the EPA appeared on track to issue new rules requiring the nation's 1,100 coal- and oil-fired power plants to meet a maximum achievable control technology (MACT) standard to sharply reduce mercury pollutants within three years. That approach met strong resistance from industry groups, which say the regulations would be excessively costly and would be impossible to meet with existing technology.

Instead, the administration has embraced a mandatory "cap-and-trade" program, similar to the program used to combat acid rain, begun in 1990. The new program, intended to reduce mercury emissions by nearly 70 percent by 2018, would allow utilities to buy emissions "credits" from cleaner-operating plants to meet an overall industry target without having to install new scrubbers in every plant.

To comply with a consent agreement, the EPA also proposed a modest MACT standard to reduce mercury emissions by 29 percent by the end of 2007 -- although Holmstead said that is not the administration's preference.

A third proposal would use a more novel legal interpretation of the Clean Air Act to launch a cap-and-trade program. In describing this alternative, the EPA borrowed heavily from one of the Latham & Watkins memos. According to Holmstead, the law firm's language was part of the public record and was passed along to the EPA by the White House budget office and the Energy Department.

The EPA used the other memo to describe at length plans to rank and regulate coal in "subcategories" based on the amount of mercury pollution they emit.

"Neither Bill [Wehrum] nor I had any idea this language came from Latham & Watkins," Holmstead said. "Our technical folks who did subcategorization used it."

© 2004 The Washington Post Company

(Attachment #69)

Submitted by the
Manistee Audubon Society

Common Dreams
NEWS CENTER
Breaking News & Views for the Progressive Community
www.commondreams.org

FOR IMMEDIATE RELEASE
JANUARY 30, 2004
1:16 PM

CONTACT: Sierra Club
Wendy Balazik, 202-675-2383

Sierra Club's Statement On Bush Administration's Mercury Proposal

WASHINGTON - January 30 - Statement of Carl Pope, Sierra Club's Executive Director.

"The Bush administration has once again put the interests of corporate polluters ahead of America's public health. A rule published in the Federal Register today makes official a proposal announced by the Environmental Protection Agency last December to permit power plants to emit higher levels of toxic mercury for the next decade and beyond. With mercury pollution affecting nearly one in twelve American women, it is astonishing that the Bush administration is proposing weak air pollution protections. And although the administration is required to solicit public input to make the mercury rule change official, the plan calls for only three public hearings and a 60-day public comment period. It's yet another example of the Bush administration elbowing Americans out of important decisions affecting their health.

"Strong protections against mercury pollution work. The Florida Department of Environmental Protection found that after dramatically reducing mercury emissions from incinerators in southern Florida, mercury levels in fish decreased to the point where consumption advisories for bass were removed.

"There is a better way. The Bush administration should strongly enforce the laws that we know work to protect our communities from mercury pollution, increase the number of public hearings about mercury, and extend the public comment period to a full 90 days. This way, more Americans will have the opportunity to register their complaints about this ill-conceived scheme."

###

17'' to Last

Good Evening.

My name is Brad Kolk and I live it at 486 4th Street in Manistee.

I'd like to start by thanking the members of the Planning Commission for their time, effort and patience in this matter. I now have a new respect for what you do for our community.

I am in support of bringing the Northern Lights project to Manistee. Four generations of my family have lived and worked here. My wife, Joan, and I have 4 teenagers. Our lives revolve around these young people and their friends. We hope more than anything they will be the 5th generation staying here or coming back from college to live and grow here.

Industry has always been a major factor in the growth and stability of our town. Northern Lights is an opportunity for us to give a boost to our local economy while our national economy continues to struggle.

My 2 sons will be going to West Shore Community College this fall. The part-time jobs for $8/hr. will certainly help them in college while they're living at home. But when it's time to buy their own homes and start living independently – we can all do the math and figure out it doesn't work - $100,000 for a home at $8/hr - it won't happen. Then where will our children go? Holland, Grand Rapids, Detroit or one of the other cities I've heard mentioned so often during these meetings – maybe even Houston!!

At this point, I am finding all of the references to Mr. Tondu being from Houston kind of humorous. Being a lifelong resident of Manistee, when I walked into the crowds of people the first night of the public hearing, I was surprised to be greeted by many, many unfamiliar faces holding up signs and wearing stickers against the Northern Lights project. Like I mentioned, I have lived in Manistee my entire life and also own a business here, but I didn't recognize most of these people. Yet when Joe Tondu stood up to speak, I thought "that's a familiar face!" Even though I don't know Mr. Tondu personally, I have crossed paths with him many times over the years.

During the past months I have heard many groups mention wind power. Our internet is also loaded with information on that as well, and I've spent time reviewing some of it I am convinced there would just be another public

hearing with an overwhelming negative reception if a wind developer approached us with a potential development. One only has to take a brief look at the opposition to a proposed wind project in Muskegon County to see that this outcry is not unique to Manistee or the Northern Lights project.

My oldest son works 25 miles away from home now. I fear this is only the beginning of my children traveling for employment.

I support the Northern Lights project as part of our plan to keep family growth in Manistee.

I again thank the Planning Commission for hearing my feelings. I know you will make good decisions for our community.

Thank you,
Bradley L. Kolk

NORTHERN LIGHTS PROJECT
MANISTEE SALTWORKS DEVELOPMENT CORPORATION
PUBLIC HEARING – FEBRUARY 19 – MARCH 4, 2004
Before the MANISTEE CITY PLANNING COMMISSION
By Dana Schindler as Advanced Citizen Planner

Many of us attended the Citizen Planner Series this past summer offered by MSU Extension in conjunction with the Michigan Society of Planning Officials. We learned our decisions must not be based on opinions, persuasions, favoritism or bias. If a letter circulated by a member of this Commission is any indication, there is concern that this decision could be based on contempt for the general citizenry and constituents who have, in fact, no "special interest" -- for it is not the citizens who have a vested interest in this coal plant, but the applicant. The citizens come bearing reasonable concern and constructive question. IN CONTRAST I HAVE BEEN CHAGRINED BY THE NOTABLE ABSENCE OF P.C. MEMBERS FROM THIS HEARING WHOSE CONTINUED LACK OF PRESENCE CAN ONLY BE DESCRIBED AS INCOMPETENCE, INDIFFERENCE OR OUTRIGHT DISTAIN FOR THE PROCESS and/or CITIZENRY

It is the responsibility of this Planning Commission to render its judgment based on findings of fact.

A finding of fact is *not* the Environmental Assessment placed before you that has been written by the applicant or consultants on its payroll.

All written assessments and a multitude of oral presentations by the applicant before this Commission, community service organizations and other boards and committees over the past three years are, de facto, *special interest* narratives. A presentation or assessment by any applicant is a treatise of persuasion. It is not objective. Nor is it offered as complete in fact, but often lacks information and ignores specifics --for example in the application before you -- that tiny little matter of a non-existent tax base. It does not serve an applicant's purpose of persuasion to disclose all the downfalls and shortcomings of a project, for its effort is to persuade you to approve the application.

It is your responsibility to seek objectivity. A decision that relies heavily on the applicant's assessment, limits PC knowledge to exactly that which the applicant wants you to hear – a glowing, simplistic, non-specific portrayal.

Findings of fact, not off-the-cuff opinion or judgment, must be applied to the general discretionary standards before you: compatibility, impact, compliance, infrastructure, health safety and welfare.

Findings of fact have been placed before you by citizen comments based on research with trips taken to Lansing, Cadillac, Chicago, Holland and elsewhere in search of accurate information. Citizens who have presented before you have actually read the Special Use Application, Joe's "assessment" and applications to the DEQ. The comments have been studied and intelligent.

(Attachment #71)

If you are not going to base your decision on the science presented to you from those without vested interest who have presented here, then findings of fact upon which to base a decision must come from independent, objective, outside reviews – in this case a *full* independent Environmental Impact Study and a full independent Economic Impact Study. How, in fact, can a community service fee begin to be assessed without an independent, comprehensive economic study? And how can environmental impact be determined without securing a classified "attainment" or "non-attainment" status.

The PC's environmental review *must not pass the buck* to a State agency that is underfunded, understaffed and overworked – an agency that is forced by law to rely on standards that are outdated and do not protect the public health, as research of the past 20 years clearly indicates, and as has been presented to you. ***The responsibility to protect the health, safety and welfare of this community falls on your shoulders.***

The Michigan Society of Planning Officials, MSU Extension, Michigan Townships Association and others recommend an Escrow Policy to facilitate objective assessment. The PC selects the consulting expert; the applicant pays. The PC would not be acting arbitrarily by asking specific applicants for independent review at applicant expense. Neither would the PC be implementing a reactive rule that hinders a multi-million dollar Corporation. It would be implementing a policy that affords the PC the means to *responsibly* make a decision that protects the economy and welfare of the people you have been commissioned to represent and protect. *It is the people to whom you owe your allegiance. For the corporation it is the cost of doing business.*

The applicant is a Corporation that wants to build a $114,000,000 coal burning plant that will impact the global community -- not just Manistee, but our entire county, contiguous and non-contiguous states and other continents – with a major impact on our county for the immediate near future of a half-century, and for hundreds of years to come if the scientists, experts and medical doctors who have testified before you are correct. Is this PC so egocentric that it is willing to gamble the statements of the scientists and doctors who have testified before you that *have no vested interest in this project and are not being paid by the applicant?* Relieve yourself of this burden. Do not be so egocentric that you think you have gleaned sufficient knowledge and background from the applicant to make this decision, and do not shortchange and insult the people who are participating in this process in the only way open to them.

It is my understanding there has been a request for a 12 point EIS. Is it enough? You are again limited by your own knowledge or more precisely, lack of knowledge. How do you know what you have asked for completes the picture? You also have an ethical obligation to request input from contiguous Planning Commissions.

Place a full review in the cost of independent experts. The applicant is a developer. He is not an expert in the areas upon which you must make your decision. The cost of a full independent study is a pittance for the corporation, and if it has nothing to hide it will not try to intimidate you as it did in Filer Township with the threat that such action will drive away good business. In fact, red flags should be raised 400 feet into the air if there is any balking.

Prior to making a decision your responsibility is to secure a full, independent, objective, Environmental Impact Study and a full, independent, objective, Economic Impact Study. THE APPLICATION BEFORE YOU MAY BE COMPLETE, BUT IT IS INADEQUATE.

The standards for determining if a Special Use Permit is granted do not revolve around the immediacy of 50 jobs. The determination revolves around *your* responsibility to provide for the overall well being of this community for generations yet to come.

Attached are copies of Filer Township's Escrow Policy and the 2002 MTA escrow seminar handout.

(Attachment #71)

FRED HOISINGTON of GOZLING ZUBAK comments on Rezoning from Dense Residential to Heavy Industrial in Filer Township in anticipation of the Northern Lights - Filer Version

"Incompatable, inadequate buffer for towering size of proposal, inconsistent with our Comprehensive Plan & destructive to property Value"

Mr. Jordan withdrew his rezoning request

Date: June ___, 2003

Charter Township of Filer
2505 Filer City Road
Manistee, MI 49660
231/723-3138; fax 231/723-3191

ESCROW POLICY

In an effort to place the cost of processing an application for Planning Commission or Township Board action where it belongs, on the applicant, the Township has established an Escrow Policy. The escrow policy shall apply to actions for any of the following:

a. Special uses (including site plan review when a part of special use review)

b. Planned unit developments

c. Site condominiums

d. Private roads

e. Rezoning or zoning amendments

f. Permits under Chapter 29, hydrogen sulfide ordinance

The basic application fee covers the following:

1. Applicant's appearance at regular meetings

2. Mailing and Legal Notices required for a public hearing

All other expenses directly incurred in executing and processing the application shall be paid from an escrow account. These expenses include, but are not limited to the following:

1. Costs related to subcommittee meetings

2. Costs related to special meetings

3. Fees related to review, research, consulting, drafting, or meeting appearances by Township Attorney

4. Costs incurred for outside professional consultants for review and consultation on application

5. Township staff time

6. Additional public hearings, required mailing and/or legal notices in the newspapers

The escrow fees will be established at $500.00 increments commencing with the existing filing fee. The initial fee shall be provided at the time of application. The application will not be processed without this escrow fee. Any excess funds will be refunded with no interest accumulating on those funds. The Township Board shall maintain records and authorize

(Attachment #71)

I. Escrow fees

A. What are they?

B. These are in addition to fixed fees

C. The advantages of utilizing an escrow fee policy

1. Lessens the subsidizing of development by township taxpayers
2. Tends to make developers more reasonable
3. Tends to "punish" developers who are unprepared, play games or operate in bad faith
4. Gives those citizens serving on township bodies more professional assistance and tends to lead to more informed decision making
5. Tends to discourage property owners and developers who are not serious

D. Statutory authorization

1. Zoning—MCLA 125.295
2. The Cannon Township lawsuit – *See* Cornerstone Investments, Inc v Cannon Twp, 231 Mich App 1 (1998); *rev'd*, 459 Mich 908 (1998); *on remand*, 239 Mich App 98 (1999)

E. When should they be applicable?

1. Zoning:
   (a) Special uses
   (b) Site plans
   (c) Planned unit developments
   (d) Rezonings
   (e) Significant variance proceedings
   - The Paragon case
2. Land divisions

F. Setting up accounts to hold the escrow fees

G. Periodic statements sent to the applicant

H. Refunds of excess amounts to the applicant

I. What can these funds be used to pay for?

1. Only fees and services directly related to the particular matter.
2. Township attorney fees
3. Township planner fees
4. Township engineering fees
5. Extra meetings and miscellaneous costs

J. Appeal process

K. Replenishing the escrow fund if it runs low

L. Must be reasonable!

1. Otherwise, subject to court challenge
2. Be careful not to prompt a backlash

II. The importance of imposing reasonable fees for township zoning and building services

A. Prudent financial practices

B. Setting fees high enough prevents township taxpayers from subsidizing developers and development

III. Procedures for adopting fees in general

A. Ordinance authorization

1. Building and other codes
2. Zoning ordinance
3. Other ordinances (mining ordinance, licensing ordinance, liquor control ordinance, land division ordinance, etc.)
4. Example:

   The township board shall by resolution establish fees for the administration of the township's zoning ordinance, including all proceedings and matters that may arise hereunder. A listing of current fees shall be available for review by the public during office hours at township hall. Such fees may be changed from time to time by resolution of the township board. The applicant shall pay all applicable fees upon the filing of any application, any proposed site

disbursement of escrow funds. The escrow balance shall not fall below 20% of the initial fee. An additional deposit of $500.00 minimum shall be required to continue the review. Additional amounts above $500.00 may be required at the discretion of the Chairperson of the Planning Commission or Township Board.

Any action before the Planning Commission or Township Board must have a current balance in the project's escrow fund. Any balance owing will be cause for the action to be removed from the current agenda and the applicant will not be heard until such time as the funds are current.

No building permit or final approval shall be granted until escrow funds are paid in full.

The Planning Commission or Township Board may, at their sole discretion, waive this escrow policy for a particular application.

G:\WPFILES\RAL\Files\4831.00 Misc\06-20.01 Escrow Policy.wpd

(Attachment #71)

Re: MTA Annual Convention on Escrow Policies

Date: 8-03

HOW TO SAVE YOUR TOWNSHIP MONEY– ESCROW ZONING AND BUILDING FEES

* * *

MICHIGAN TOWNSHIPS ASSOCIATION ANNUAL CONVENTION
Grand Rapids, Michigan
Wednesday, January 16, 2002
Concurrent Sessions: 1:00-2:15 p.m.
2:45-4:00 p.m.

By: Jeffrey V.H. Sluggett
Clifford H. Bloom
Law, Weathers & Richardson, P.C.
Bridgewater Place
333 Bridge Street, N.W., Suite 800
Grand Rapids, Michigan 49504-5360
(616) 459-1171

plan, or any other request or application under this ordinance for which a fee is prescribed. In addition to regularly-established fees, the township board, in its discretion, may also require an applicant to submit to the township (prior to township review of an application or proposed site plan) an amount of money determined by the township to be a reasonable estimate of the fees and costs which may be incurred by the township in reviewing and acting upon such application or related matters. The township shall not charge fees or assess costs to the applicant for the time expended by township employees (except when authorized under appropriate provisions of the Freedom of Information Act) or for incidental costs and expenses, but may charge or assess the applicant for all other reasonable costs and expenses incurred by the township during and in connection with the review process and other related proceedings, whether or not the application is granted. Such costs and expenses to be charged or assessed to the applicant, for reimbursement of the township's reasonable costs and expenses, may include but shall not be limited to township attorney fees, township engineering fees, costs and fees for the services of outside consultants, fees and expenses of other professionals who may assist the township, costs and fees for studies and reports pertaining to the matters in question, special meeting costs, and other reasonable costs and expenses. Such monies shall be retained by the township for reimbursement of such costs and expenses. Any monies paid or deposited by an applicant which are not used or spent by the township shall be refunded to the applicant.

B. Implementation resolutions

1. Do not put fixed fees in ordinances—too difficult to change
2. Be as detailed as necessary
   (a) Specific fees
   (b) Use a "catch all" fee at the end
3. Publicizing the fees
   (a) Posting at township hall
   (b) Include in handout materials
   (c) Posting on the township's website (if any)

IV. Fixed zoning and building department fees

A. Statutory authorization

1. Building and other codes—authority has been given under the Michigan Construction Codes, but must still adopt a resolution
2. Zoning fees—MCLA 125.295

"125.295. Fees for zoning permits; additional taxes

Sec. 25. For the purpose of providing funds to carry out this act, the township board of an organized township may require the payment of reasonable fees for zoning permits as a condition to the granting of authority to erect, alter, or locate dwellings, buildings, and structures, including tents and trailer coaches, within a zoning district established under this act, both for the purpose of obtaining advance information as to building operations, locations, and proposed uses, and for the purpose of defraying the cost, in whole or in part, of the enforcement of this act in the township, and if the board has incurred or expects to incur any expense of public funds in carrying out this act, shall, for that purpose, in addition to the revenues of the fees, levy a sufficient tax, in addition to other taxes now authorized by law, upon the real and personal property subject to taxation in the township, and the taxes shall be collected as other taxes are collected. When the taxes or fees are collected, they shall be applied to the payment of any indebtedness incurred by the township subject to this act, and to no other purpose. However, the taxes assessed, levied, and collected shall not cause the limit of taxes established by law to be exceeded."

B. Fees must be reasonable and there can be no "profit"

1. Sanctions by the Michigan Bureau of Construction Codes
2. Can a township double fees where a violation occurs?

C. When fees should be collected

1. Up front
2. Revocation of a permit for failure to pay fees

D. Refund policies

1. This should be set by township board resolution
2. Take into account costs already incurred by the township

(Attachment #71)

Issues of Concern for the City of Manistee Planning Commission Regarding the Tondu Application for the Northern Lights Power Plant Special Use Permit;

A Request for Rejecting the Application

Wednesday, March 3, 2004

Dear Chairperson Yoder and Members of the Manistee Planning Commission:

As a consultant on behalf of the Little River Band of Ottawa Indians and as a concerned citizen in my own right, I would like to call upon this honorable Commission to reject the Special Use Permit (SUP) Application of the Tondu Corporation for the proposed Northern Lights Power Plant project for a variety of reasons and on a number of grounds. The following outline is briefly indicative of the scope of the problematic issues with this application specifically and with the development of this project generally. Certain of these outline topics will be further addressed in subsequent submissions to you.

We ask that you fully consider all aspects of this proposal, not just those issues contained in the SUP application, with regard to overall welfare of the entire region, the impacts on human health and the environment, the recent trajectory of the City of Manistee regarding the tourism industry, the Master Plan, the impacts to City infrastructure and services, the overall impacts that this type of construction would have on attainment of Governor Granholm's "Cool City" status, and the effect of the approval of this project within the 1836 Treaty Reservation Boundaries of the Little River Band of Ottawa Indians on the indigenous cultural rights and resources of the area.

We ask that you support the majority will of your constituency and exert your due rights and abilities to reject this Special Use Permit

Sincerely,

Robert M. Powell
Powell & Associates Science Services.
Consultant to the Little River Band of Ottawa Indians

(Attachment #72)

Issues of Concern

1) Public Health and Safety Issues (*acute impacts*)
   a) During Demolition/Construction
      i) Transport and disposal of any hazardous building contents
      ii) Potential for asbestos disturbance/dispersion during demolition
   b) During Operation
      i) Storage of large quantities of hazardous chemicals onsite
      ii) Need for onsite health and safety plans, MSDS sheets, etc.
      iii) Need for maintaining a HazMat team to deal with emergencies
      iv) Need for an evacuation plan for the power plant and the surrounding neighborhoods
      v) Need for the ability to do rapid predictive modeling of air transport and alerting in the event of a spill
2) Environmental Issues (*acute and chronic impacts*)
   a) Demolition/Construction process issues
      i) Releases of contaminants from the shoreline and bottom sediments to the lake during dredge operations
      ii) Impact to groundwater of penetrating contaminated soils and sediments during construction of support piers for the NLPP. Could serve as contaminant conduits.
      iii) Management of solidified salt (NaCl, primarily) in the building walls and skins (Baseline Environmental Assessment, BEA, 2000) and other locations around the site
      iv) Impacts to the many observation (monitoring) wells on the site; how will these wells be sampled/managed/ protected/ secured/ retired?
      v) Site landforming, building construction and landscaping essentially creates a barrier to further assessment or remediation of site contaminants
   b) Inadequacies of the Environmental Assessment (EA)
      i) Powell report (in your possession)
      ii) Sagady report (in your possession)
      iii) The EA relies by reference on previous BEAs that are inadequate for fully assessing the contaminant scenario at the site
      iv) There is evidence of insufficiently assessed contaminants in the site soils
         (1) The sparse data available strongly hint at heavy metals contamination including arsenic at the site, possibly beginning with early tannery operations
   c) Added air pollution in a county that should clearly be designated non-attainment
      i) Mercury
      ii) Radionuclides
      iii) NOx, SOx, ozone, etc.
      iv) LRBOI/Sagady petition for non-attainment to USEPA is clear and conclusive about this status.

d) Increased water pollution in an already highly contaminated lake
   i) Contaminant deposition on land surfaces with runoff, erosion, and groundwater infiltration during rainfall and snowmelt
   ii) Deposition directly onto the lake
   iii) Incorporation of contaminants into the sediments, benthic organisms, fish and subsequently other wildlife (e.g., eagles) and humans
e) Thermal pollution to the lake due to discharge of process waters and the impact of the temperature increases on both lake biota and contaminant activity
f) NOTE: The PC has the ability to impose stricter environmental standards than MDEQ or EPA
   i) EPA and MDEQ regulations are not based entirely on science or the highest attainment of human health but are highly politicized and include economics as a major factor—they are compromises
   ii) The PC is ultimately responsible to the citizens of Manistee, not to corporations, especially not to those outside the state
   iii) The PC and City Council are the first line of defense for health, safety and protection of human health and the environment

3) Negative Impacts on the City and County (Financial and Otherwise)
   a) Construction of the NLPP is at variance with the City of Manistee's move towards a resort destination – at odds with the Master Plan
   b) Tondu's avoidance of taxation along with extremely low fees to the City
   c) No evidence of fees to be paid to the County
   d) No electricity for the City of Manistee in the negotiation, none of the wattage or the electricity sales will benefit the City of Manistee or its people
   e) Potential wastewater treatment load increases
   f) Wear and tear on streets and bridges
   g) Impacts on emergency vehicle movement
   h) Hazmat team required
      i) Increased staffing of fire and police departments
      ii) Expensive specialized equipment is needed
      iii) Training for current and additional personnel
      iv) Increased danger to personnel
   i) Manistee is currently negotiating fees with a business that evaded taxation by Filer City until adjudication by a taxation tribunal after years of legal battles. Why even bother to negotiate with such an entity?
4) Numerous discrepancies in Tondu's arguments, submissions and advertisements
   a) Misstatements
   b) Errors of omission

(Attachment #72)

Health and Safety Issues of Concern with Regard to Operation of the Northern Lights Power Plant;

A Request for Rejecting the Tondu Corporation Special Use Permit Application

Thursday, March 4, 2004

REFERENCE: Powell & Associates Document # MPC-001-02-25-2004, Addressing Outline Sections 1 b), "Public Health and Safety Issues During Operation" and 3, "Negative Impacts on the City and County (Financial and Otherwise)."

FROM: Robert M. Powell on behalf of the Little River Band of Ottawa Indians

Dear Chairperson Yoder and Members of the Manistee Planning Commission:

There are numerous issues of concern, many of which in and of themselves should be sufficient for you to reject the Special Use Permit (SUP) application for construction and operation of the Northern Lights Power Plant (NLPP). One of these is the issue of maintaining the public health and safety during operation of the NLPP. While the impacts to the citizenry and the City resources could be quite large, the applicants have not adequately addressed these issues.

During operation of the NLPP large quantities of extremely hazardous materials will be stored onsite. There are a large number of these materials; Table 1 lists a few of the more significant.

Table 1 Selected Hazardous/Dangerous Substances Stored On-Site at NLPP

Substance	Total Volume On-Site	Description
15% Sodium Hypochlorite	15,800 gallons	Concentrated bleach, poisonous vapor, oxidizer, corrosive.
Sulfuric Acid	10,800 gallons	Strong Diprotic Acid
19% Ammonia, aqueous	17,000 gallons	Poisonous, corrosive alkaline solution, inhalation danger
Hydrogen Gas	25,000 standard cubic feet (scf)	Flammable, explosive mixed with air/other oxidizers.
Various "proprietary" chemicals	Various quantities	Unstated

The storage of these materials at the proposed power plant will necessitate a state of readiness and preparedness by both the operators of the plant and by City services. Onsite health and safety plans will be required for OSHA compliance, along with access to material safety data sheets (MSDS) for all chemicals stored and used on the site. A few plant workers will probably receive a small amount of training, possibly as little as four hours, to "qualify" them for handling these materials in an understanding and safe manner. Should any significant releases or accidents occur it will likely fall upon the domain and purview of the City to provide services capable of managing the incident.

Because of these issues the City should consider a wide range of activities and infrastructure additions/modifications to protect the lives and health of its citizens. These would include the need for an evacuation plan for the areas surrounding the power plant, the need for detailed maps and up-to-date storage information for location, quantities, and toxicity of chemicals at the site, a means for doing rapid predictive modeling of the contaminant releases (either via in-house or contracted expertise) including direction, speed and toxicity, and the development of a HazMat team to control, manage and clean up toxic spills and releases. It is our understanding that there is no nearby HazMat team to handle emergencies such as those that could occur at the NLPP or, for that matter, at other industries operating in the area. Should the NLPP be approved it is incumbent upon the City of Manistee to increase staffing of the fire and possibly the police departments with personnel fully trained in all aspects of hazardous materials release management, from first responder through final cleanup. There will also be a need to obtain all the necessary equipment, to contract baseline and ongoing training for current and added personnel and there will be in increased risk to those personnel should NLPP incidents occur.

As planners for the City you are aware of the other negative impacts to the City in terms of future growth and planning and County infrastructure. In recent years the City has moved fairly successfully towards rising from its aged heavy industrial ashes and becoming a resort destination. The approval and construction of the NLPP is obviously at odds with such a vision for reasons of aesthetics, health and safety, and environmental impacts and appears to be in conflict with your master plan. On the other hand, remediating and redirecting the uses of Manistee Lake and its shorelines from contaminant-generating fossil-fuel based industrial operations to tourism, fishing, and efficient light-industrial and technical uses would help Manistee move towards a modern economic base and "cool-city" status.

Your alternative is to approve the construction of a contaminant-generating power plant that will dominate the shoreline and anchor the south end of Manistee Lake for the foreseeable future into the 19th century industrial technologies such as those currently there, which have nearly killed the lake and its potential for recreation and tourism. Accompanying an approval will come wear and tear on the roads and bridges in Manistee, inhibition of emergency vehicles and tourist traffic, a potentially huge additional wastewater treatment load, and the certainty of increased air pollution. All this will come with an inappropriately low fee for the city, vague intimations that perhaps

(Attachment #72)

some electricity will be provided to Manistee (after opponents discovered there was none planned for Manistee), and apparently no taxes to the county for county services. All of this will come following City negotiations with a company that evaded taxation by Filer City until adjudication by a taxation tribunal after years of legal battles. It is nearly beyond comprehension by an observer from outside the cultural and environmental milieu of Manistee, such as myself, that a Planning Commission would approve a permit that would lead to construction in a set of circumstances such as this.

As a consultant on behalf of the Little River Band of Ottawa Indians and as a citizen of the State of Michigan, I request that you deny this permit application for the reasons cited above and many others that have been delineated for you both by myself (Powell & Associates Document # MPC-001-02-25-2004) and by numerous other citizens and organizations.

Thank you for your consideration,

Robert M. Powell
Powell & Associates Science Services,
Consultant to the Little River Band of Ottawa Indians

the nation ~~including the construction industry~~.

What better way to help Michigan workers get back to work than to be able to construct this project?

~~The plant is designed to burn low-sulfur - - not natural gas fueled electricity. It is projected to save the people of Michigan over $50 million per year.~~

(Attachment #73)

We don't need to be reminded of the August 2003 blackout. It reinforced our belief that Michigan needs to invest in additional base load generating capacity.

The construction of this plant will provide low-cost electricity for residents and businesses in our state. It will help spur economic development and create new jobs for Michigan.

This project will grow more business for

(Attachment #73)

My name is ~~Tom Boensch~~ Jeff Cole, ~~Secretary/Treasurer of~~ field representative for the Michigan State Building and Construction Trades Council. ~~We~~ represent more than 80,000 union construction workers in Michigan, many of whom live on the west side of the state. many in the Manistee Area

I am here tonight to lend support to the Northern Lights Project.

This project will create approximately 60 new full time positions.

Construction of the plant will require over 2.5 million work hours of construction labor over a three and one half year period and will provide over $112 million in construction wages.

No one needs to tell us that our state is economically challenged. Michigan's unemployment rate is one of the worst in

local suppliers and service providers.

It will be a selling point for other development in western Michigan.

The plant will be an asset for the citizens and businesses who need reliable power to function.

I urge you to grant the special use permit for the Northern Lights project
Thank you.

mbopeiu459afl-cio 11/20/03

(Attachment #73)

February 19, 2004

Dear Manistee County Board of Commissioners and Planning Commission

We strongly oppose the proposed Northern Lights power plant. Although we live seventy five miles as the crow, or should we say pollution, flies from the proposed plant, we have a direct interest in speaking out. It is well documented that the air borne contaminants from this plant will affect the air we breathe here in Suttons Bay. Nothing we are aware of justifies or excuses the adverse environmental impact this plant would have.

Economically, the plant may directly create some 50 middle income jobs, but the indirect costs from rising medical expenses, from the businesses and homeowners choosing to get away from this pollution belching plant and the reduction in property values and taxable income will quickly outweigh the job creation. If you don't believe this to be the case, we suggest you look to South Bend, Indiana, which is still feeling the effects of a pollution plant it approved 10 years ago.

Energy wise, clean alternatives such as biomass and wind turbines are the future, not old technology coal-burning pollution factories.

Environmentally, the state's recent acquisition of six miles of shoreline just north of Manistee was, quite literally, one of Michigan's most significant acquisitions ever. Please do not compromise the citizens' right to enjoy this new shoreline treasure.

Thank you for considering our views.

Matthew Posner and Marian Kromkowski
3500 Putnam
Suttons Bay, MI 49682

(Attachment #74)

Dear to whom it may concern;

I am Adam Eckerson, a senior at Brethren High School. And I am writing this letter to inform you as a group my opinion about the coal plant in Manistee. This coal plant shouldn't go where there is a place just starting to heal from all of the other companies that are there or was there in the past. For an example Manistee Lake has a layer on the bottom that has nothing except things that are dead. The DNR and DEQ call this black liquor; this is a sludge that has no use for either the aqua environment or to use. And adding a coal plant that adds mercury, sulfur dioxide, nitrogen oxide and carbon dioxide, why have our community affected by these deadly pollutants. We need to take care of what we have and what we will have in the future. With this decision you don't only affect us now, but you decide for several generations. I am aware that you have been hit with many facts about why or why not we should put a coal plant in Manistee. I want to just hit you with some more from the Sierra Club. That the emissions of Sulfur Dioxide and Nitrogen Oxide alone are responsible each year in the United States for 30,100 deaths, 20,100 hospitalizations, 603,00 asthma attacks and 5,130,00 lost work days. And we are putting a coal power plant for about forty six jobs. When we have the Little River Casino, when that expands we will have forty six jobs easily. I just want to throw that little fact about a coal plant. I would like to end with that we should not build a coal plant in Manistee. It is wrong to make the decision for people that aren't born yet and the choice for destroying our environment for power we don't use.

Thanks,

Adam Eckerson
219 North Snyder Rd.
Wellston, MI 49689

Dear Plan Commission,

I am a student from Brethren High School. I believe that this plan will not be beneficial in the long run in the long run. In the short term it would be good for the town of Manistee but will pollute and bring birth effect in the future that is why this plant should never be built.

Brethren Student