

OhioEPA
Division of Surface Water

Response to Comments

Project: FirstEnergy Bayshore Plant, National Pollutant Discharge Elimination System (NPDES) Permit

Ohio EPA ID #: 2IB00000

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Ohio EPA held a public hearing on December 4, 2008, regarding the FirstEnergy Bayshore Plant's National Pollutant Elimination System (NPDES) Permit. This document summarizes the comments and questions received at the public hearing and/or during the associated comment period, which ended on December 11, 2008.

Ohio EPA reviewed and considered all comments received during the public comment period. By law, Ohio EPA has authority to consider specific issues related to protection of the environment and public health. Often, public concerns fall outside the scope of that authority. For example, concerns about zoning issues are addressed at the local level. Ohio EPA may respond to those concerns in this document by identifying another government agency with more direct authority over the issue.

In an effort to help you review this document, the questions are grouped by topic and organized in a consistent format.

Comments on Public Information / Outreach

Comment 1: Many members of the public were not able to have their questions asked and answered during the hearing. Ohio EPA should investigate if the public would best be served by locating and/or scheduling these public hearings such that concerns could be

addressed. Ohio EPA must also rectify the deficiency in the December 4 hearing, either through holding a new formal hearing or through informally making Ohio EPA staff available in person to answer the public's questions at another time and place, and advertising this opportunity to members of the public well in advance.

Response 1: To the best of Ohio EPA's knowledge, all attendees were provided an opportunity to ask questions and receive answers. We are aware that at least one individual wished to have more than the allotted time for comments and questions during the public information session preceding the public hearing. We are investigating alternative methods to communicate with the public and concerned citizens, and provide information in a manner that would assist the public in understanding the subject matter or issues prior to a public hearing.

Comments on Health Effects of Mercury and Environmental Justice

Comment 2: **Lucas County already suffers from abnormally high rates of disease. According to US EPA's environmental justice geographic assessment tool, the county is in the 93.3 percentile for cancer risk, 88.3 percentile for neurological hazard risk, 88.4 percentile for respiratory hazard risk, and 97.2 percentile for diesel PM hazard risk. The sensitive nature of the surrounding community in public health terms makes it even more essential to strictly control mercury effluent, even at high cost.**

Response 2: As a recipient of federal funding, Ohio EPA is under a legal obligation to comply with Title VI of the Civil Rights Act. We have fully reviewed the guidance developed by U.S. EPA for states regarding environmental justice. Under U.S. EPA's Title VI implementing regulations, States are prohibited from using criteria or methods of administering its program that have the effect of subjecting individuals to discrimination because of their race, color or national origin. As a result, States may not issue permits that are intentionally discriminatory or issue permits that have a discriminatory effect based on race, color or national origin.

We meet our legal obligations and implement federal guidance through both our technical review and our public involvement activities on permit applications. Further, while we do not have a specific environmental justice policy to follow, we consider all comments raised regarding environmental justice to ensure we comply with Title VI.

Ohio EPA considers this area to have environmental justice concerns. We understand that there are likely to be subsistence fishers in this area. The Bayshore Plant will be required to reduce the mercury discharge to the maximum extent possible using pollution prevention techniques and the existing treatment plant. (See response #4.)

Comment 3: Mercury bio accumulates in fish. Ohio currently has a Maumee River/Lake Erie mercury fish consumption advisory. If ever there was a case for a mercury standard to be lowered or at a minimum sustained, it is for the mercury discharged in the waters from the Bayshore Power Plant. Mercury is a problem for the fish and the people that eat them.

Response 3: Authorizing coverage under the mercury variance does not affect the water quality standard for mercury. Instead, it provides a discharger a higher limit for a limited time period while strategies designed to decrease the mercury concentrations are implemented. (See response #4.) Ohio EPA shares your concern regarding the potential health effects associated with mercury in the environment. However, we believe that the mercury variance is a reasonable alternative for facilities discharging wastewater, which will continue to provide adequate protection for wildlife, human health, and aquatic life.

Comment 4: FirstEnergy should be required to meet the discharge limits in their current NPDES permit and should be held accountable if they do not. Mercury is a neurotoxin that has been proven to cause developmental delay and mental retardation in fetuses and young children. Presently, one in six American women has such high mercury levels in her body that she cannot safely bear children; the situation is even worse in populations that rely heavily on fish for sustenance. The cost of compliance must be balanced with the extraordinary public health threats of lowered intelligence, permanent learning and cognition problems from mercury contamination.

Response 4: The Bayshore Plant will be required to reduce its mercury discharge to the maximum extent possible using pollution prevention techniques (i.e., a Pollutant Minimization Program) and the existing treatment processes. Ideally, these methods will achieve the 1.3 ng/l limit, but it is not known whether this limit will be met within the term of the proposed permit. It may take longer than one permit cycle to meet the mercury standard.

Current treatment technology vendors generally cannot guarantee that discharges will consistently meet water quality standards for any type of

plant, which was one of the factors leading to the availability of the mercury variance. (See also response #20.)

Comments on the Mercury Variance Application

Comment 5: The variance request states that requiring a mercury limit of 1.3 ng/l would cause widespread social impacts. The Bayshore Plant already causes widespread social and economic impacts with its fish kills at the intakes structure and preventing the water from freezing in the winter. The Bayshore Power Plant is believed to be the greatest fish killing plant in the Great Lakes and the heated water discharged from this plant contributes to the growth of algae, a major problem in Maumee Bay and Western Lake Erie.

Response 5: Information available at the time the mercury variance was developed showed that meeting the water quality-based limit of 1.3 nanograms per liter (ng/l) through end-of-pipe treatment technology (i.e., treatment options designed to remove mercury from the wastewater prior to discharge) would cause widespread social and economic impacts. (See response #16 and response #17.) Ohio EPA is concerned about the rates of fish impingement and entrainment (I/E) at the Bayshore facility, and has had concerns associated with potential impacts from the thermal discharge. The current NPDES permit renewal for the facility proposes strategies designed to reduce I/E, and Ohio EPA continues to investigate possible links between the thermal discharge and negative environmental impacts observed in Maumee Bay.

Comment 6: The PMP submitted by FirstEnergy does not address best management practices that could be put in place on the ash pond. Pursuant to the Clean Water Act, a water quality standards variance may not be issued if the standards could be attained by implementing cost-effective best management practices.

Response 6: With revisions made to the original mercury variance application and the proposed requirements included in the draft NPDES permit, Ohio EPA believes that best management practices (BMPs) are adequately addressed in the plan of study and pollutant minimization program. (See Part II of the draft NPDES permit for the Bayshore Plant.

Comment 7: The Ohio EPA should reject FirstEnergy's request for a mercury variance for the simple reason that FirstEnergy has already laid out a viable strategy for reducing mercury inputs. FirstEnergy should aggressively implement this strategy and try to meet the legal limit in this way. For its part, Ohio EPA should provide a powerful

incentive for implementation of this strategy by keeping and enforcing the current mercury limits in the NPDES permit under threat of penalty for violation.

Response 7: Even though FirstEnergy has proposed a strategy for reducing the mercury discharge, the success of this strategy is not guaranteed. There is a limited amount of experience to draw upon from other facilities which have attempted to reduce mercury concentrations through implementation of BMPs and pollution minimization programs (PMPs). Although we believe that mercury concentrations can be reduced through BMPs, we are unsure how quickly this will occur. Since Ohio EPA cannot impose a limit which the discharger is unable to meet or there is not a reasonable expectation that it can be met during the term of the permit, we believe that allowing a slightly higher discharge concentration by authorizing the mercury variance is appropriate.

Comment 8: The plan submitted by First Energy does not include goals with specific lower mercury concentrations as the PMP is implemented.

Response 8: Rule 3745-33-07 of the Ohio Administrative Code, which provides the authority for granting a mercury variance, does not require goals with lower mercury discharge concentrations as the PMP is implemented. Instead, information must be submitted annually showing mercury concentrations of the wastewater prior to any treatment and immediately before discharge to state surface waters. The implementation of the plan of study and resulting PMP as required by the regulation cited above is designed to reduce mercury concentrations over time, and is expected to achieve reductions. However, we do not know how quickly this will occur. (See response #7.)

Comment 9: Increasing the discharge limit provides no incentive to reduce pollution. The need to complete a pollution minimization program is not the same thing as a regulatory incentive to reduce mercury discharges.

Response 9: Establishing a discharge limit which is lower than the existing discharge concentration does provide a good incentive for a facility to reduce the discharge of a pollutant. For most pollutants as necessary, Ohio EPA establishes a permit limit which will meet water quality standards in the receiving waters, then allows sufficient time (perhaps two to three years) to meet this limit if the current discharge exceeds the limit.

Ohio EPA determined that following a similar approach for mercury was not feasible because cost-effective treatment options were not available for mercury. (See response #4 and response #5.)

Comment 10: I urge the Ohio EPA not to allow the FirstEnergy Bayshore Power Plant to dump unsafe levels of mercury into the shores of Maumee Bay and Western Lake Erie. FirstEnergy has requested a permit to increase their mercury wastewater discharge limit to nearly twelve times that of the Great Lakes Water Quality Standard.

The variance as I understand it would require FirstEnergy to meet an annual average discharge of 12 nanograms per liter, which is almost twice the current discharge level. I am completely opposed to the granting of a variance.

Response 10: FirstEnergy is not requesting to increase mercury discharge. The company requested the variance to allow for time to reduce mercury discharges, since it may not be feasible to meet the water quality standard prior to the expiration of this permit.

In order to be eligible for a mercury variance, a discharger must certify that it can meet an annual average discharge concentration of 12 ng/l, or will meet this limit by the expiration date of the permit. However, the proposed Bayshore Plant permit also includes a 30-day average limit for mercury of 11 ng/l. As the plan of study and PMP for the variance is implemented, we would expect the discharge concentration for mercury to decrease. If FirstEnergy determines that Bayshore is unable to meet the water quality standard for mercury when the permit is renewed in five years, the new variance-based limit would be calculated using the more recent discharge data, which could result in a lower mercury limit than currently proposed.

Comments on the Mercury Variance Process

Comment 11: Ohio EPA should halt the waiver review process unless and until FirstEnergy perfects the waiver. If FirstEnergy pursues an amended waiver, Ohio EPA should provide an opportunity for public, third-party experts, and other interested parties to review and comment on the FirstEnergy's mercury waiver request prior to further consideration.

Response 11: FirstEnergy has submitted an amended variance application. Ohio EPA used this amended application and added requirements to the plan of study and subsequent PMP which would be implemented by the company. We encourage the submittal of all comments from third-party experts and interested individuals during the public comment period.

Comment 12: Will EPA require that the power plant be upgraded in any way in order to make it more efficient as a condition of granting the variance? If the facility were more efficient and therefore burned less coal, less mercury would be discharged into the environment.

Response 12: Assuming that all other factors remained unchanged, improving the efficiency of the electric generation process would reduce the quantity of mercury discharged into the environment. However, Ohio EPA does not have the authority to impose such requirements on facilities.

Comment 13: The background concentration may be impacted by the mercury emitted into the air by the Bayshore Plant. Ohio EPA should require Bayshore to hire an independent contractor to determine how much mercury is falling into the water and soils adjacent to the plant, and use this information to make an informed decision on the mercury variance.

Response 13: Air deposition from coal-burning power plants has been identified as a major source of mercury found in soil and surface water. As a result, we would expect that the background mercury concentration levels measured in Maumee Bay may be influenced by the air emissions from the Bayshore Plant. While determining the portion of the mercury background concentration contributed by the Bayshore Plant would provide interesting information, such a study would be difficult since many factors (e.g., wind patterns, Maumee Bay and Lake Erie flow directions, other possible sources of mercury, etc.) would need to be included in the analysis. Finally, the regulations for mercury variances in the Ohio Administrative Code make no provisions for considering the source of background mercury or the intake water concentration for initial coverage under the variance.

Comment 14: The mercury variance procedure is designed to provide time-limited relief to NPDES permitted facilities in order that they avoid severe economic hardship in the absence of economically-feasible “end-of-pipe” technologies to reduce mercury emissions. It is not intended to serve as a free pass to allow the permitted facilities to abdicate their responsibility to reduce those emissions, but as an opportunity for the facility to continue operations while identifying achievable and environmentally protective mercury limitations and cost-effective best management practices and technologies to meet the water quality standards. Therefore, the OEPA should deny FirstEnergy’s variance request to remove mercury emissions limits.

Response 14: The major source of mercury in the wastewater discharged from many coal-burning power plants is one or more ponds containing fly ash.

FirstEnergy's Bayshore Plant currently manages its fly ash with a dry-handling system so the fly ash does not come in contact with wastewater. Given that the Bayshore Plant has already removed this major source of mercury from its discharge, Ohio EPA believes that the amended plan of study represents a reasonable approach to further reduce mercury concentrations in the wastewater. (See response #11.)

Comment 15: Ohio EPA must explain how it defines “substantial and widespread social and economic impacts,” especially if any quantitative value is assigned to societal impacts per unit of mercury pollution. If Ohio EPA decides not to quantify societal impacts per unit of mercury pollution, this decision must be justified, given the explicit intention of the mercury variance is to “prevent substantial and widespread social and economic impacts.”

Response 15: In the context of the mercury variance, “substantial and widespread social and economic impacts” can be defined as the effects which would occur based upon the results of the studies conducted for Ohio EPA in 1997. (See response #16 and response #17.) In a broader context, one of the conditions for granting an individual variance under rule 3745-33-07(D) of the Ohio Administrative Code is “...substantial and widespread economic and social impact.” This rule directs Ohio EPA to consider several factors when evaluating the potential for substantial and widespread economic and social impact, resulting from implementing measures capable of attaining the water quality standard. These factors include:

- costs and cost-effectiveness;
- reduction in concentrations and loadings;
- type and magnitude of adverse or beneficial environmental impacts; and,
- overall impact on employment at the facility and on the economy of the area in which the discharger is located.

Comment 16: The externalized social and economic impacts of elevated mercury discharges far outweigh the cost to FirstEnergy of installing whatever technology is necessary to comply with the law. Before granting a mercury variance to FirstEnergy, Ohio EPA must require that the company undertake a study to investigate the externalized cost of elevated levels of mercury in the plant's effluent to the communities immediately surrounding the plant, and compare this figure with the cost of installing pollution control technology.

Response 16: Ohio EPA does not have information showing that the "...externalized social and economic impacts of elevated mercury discharges far outweigh the cost to FirstEnergy of installing..." mercury removal technology necessary to meet the water quality standard of 1.3 ng/l. Based upon studies conducted for the State of Ohio in 1997, Ohio EPA concluded that requiring dischargers to meet the water quality standard (WQS) for mercury by installing end-of-pipe treatment technology would result in "...substantial and widespread social and economic impact." [Rule 3745-33-07(D)(10) of the Ohio Administrative Code] This rule also states that the Director of Ohio EPA has, "...determined that the increased risk to human health and the environment associated with granting the variance compared with compliance with the WQS absent the variance is consistent with the protection of the public health, safety, and welfare." The findings by the Director in the context of the mercury variance relieve an individual discharger from conducting a study comparing the cost of treatment to the increased risk to human health.

Comments on Treatment Technologies for Mercury Removal

Comment 17: To remove a higher percentage of mercury from wastewater, the company would have to install extremely costly technology that would substantially impact costs.

Response 17: Based upon a study conducted in 1997, available technologies were estimated to have, "...annualized costs for typical industrial or POTW flows on the order of \$10 to \$100 million per pound of mercury removed." [Ohio Environmental Protection Agency and Foster Wheeler Environmental Corporation and DRI/McGraw-Hill, *Assessing the Economic Impact of the Proposed Ohio EPA Water Rules on the Ohio Economy*, April 24, 1997.]

Comment 18: How much mercury is removed annually using the current treatment technologies?

Response 18: Assuming a median discharge rate of 1.2 million gallons per day, a median concentration prior to treatment of 19.7 ng/l and a median discharge concentration of 4.8 ng/l, the existing treatment system removes approximately 25 grams of mercury per year.

Comment 19: Why are standards being made if you are allowing variances to a company which can afford the cost of meeting the low standard? The technology is available to meet the standard or else the standard would not be set at this level.

Response 19: The water quality standards are based upon studies designed to show the concentrations which will protect all the beneficial uses associated with surface water: public water supply, contact recreation, wildlife uses and aquatic life uses. Available treatment technology is not used to establish water quality standards. (See response #17 for information on the cost of treatment technology.)

Comment 20: Bayshore should look at new technology that is more economical than the reference 1990's unsupported statement of \$10 m to reduce a pound of mercury discharged into the water. The Mercury Sorbent Report at the Lausche Plant has estimated cost of \$60-70,000 per pound of mercury reduction – substantially less than the apparently outdated \$10 million per pound mercury reduction cost per pound the Bayshore Plant estimates.

FirstEnergy has not demonstrated that alternative treatment techniques are not available for solids and wastewater. It should be required to do so as a condition of granting the waiver. Additionally, FirstEnergy provided no technological or economic data related to industry research into treatment technologies. Streamlined variance application procedures have been available to FirstEnergy at least since the year 2000. While the streamlined procedures were initially designed to ensure that facilities not be economically harmed, FirstEnergy must not be allowed to use them as a shield to avoid having to make even reasonable, practical and cost-effective efforts to meet water quality standards. Effective and affordable technologies to reduce mercury and other toxic emissions are being developed and perfected each year. Coal-fired power plants in the U.S. can choose from a variety of new technologies, whether designed to capture a different pollutant, installing mercury-specific technology, at significantly lower costs than just five years ago.

Response 20: Considerable research into mercury removal technologies has been undertaken since the Foster-Wheeler study conducted in 1997. (See response #17.) This research is ongoing as a number of companies continue to investigate more efficient approaches for removing mercury. However, the information available to Ohio EPA at this time shows that:

- The efficiency of removal is dependent upon the pollutants in the waste stream. For example, waste streams which are high in chlorides or waste streams containing a high percentage of dissolved mercury tend to present more difficulty.

- Removal technology currently being considered is typically evaluated for relatively low flow rates (i.e., much less than 1 million gallons per day).
- Vendors for mercury removal technology are generally unwilling (and perhaps unable) to guarantee effluent concentrations less than 12 ng/l, and especially less than 1.3 ng/l, based upon the use of their systems.
- Mercury removal technology continues to be expensive.

Ohio EPA believes that the dissolved vs. particulate mercury data FirstEnergy would be providing under conditions of the mercury variance, may allow a more informed decision to be reached regarding the feasibility of end-of-pipe treatment options at the Bayshore Plant in the future.

Comments on Unique Aspects of Maumee Bay and Western Lake Erie

Comment 21: Granting a variance would result in lowering the water quality buffer between the current permit the chemical-specific water quality criteria developed to protect aquatic life and human health. Lake Erie is a major source of drinking water for many communities in northwest Ohio and this precious water source must be protected. Ohio EPA should be further restricting these pollutants, not allowing further degradation.

Response 21: Ohio EPA believes that the mercury variance, and Bayshore's proposed variance-based limit in particular, continues to protect human health and the environment. In addition, implementation of the PMP should reduce the mercury discharge concentration over time.

Comment 22: 1.3 parts per trillion is the water quality-based effluent limit – the limit that scientists have established in the Great Lakes basin as what is necessary to protect human health and the environment. It should not be discarded lightly. Lake Erie is the shallowest and warmest lake, so the WQBEL should probably be even lower for Lake Erie.

Response 22: Ohio EPA developed the mercury variance option with a great deal of deliberation, analysis, debate and overall effort. All sides of this issue were evaluated before concluding that the alternative for a general mercury variance should be offered in Ohio regulations.

Comment 23: EPA should make the best effort possible to try to look at the overall area, to take into consideration the fact that the Lake is fairly shallow, and a major waterway provides runoff to the Lake. EPA should look at the source of mercury.

Response 23: The shallow nature of the western basin of Lake Erie and Maumee Bay in particular, should not affect the availability of mercury in the water column unless the mercury is in particulate form, or attached to particles in the water. Deeper waters may induce greater settling of particulate form mercury, but would not likely affect mercury availability if it is dissolved. Ohio EPA believes that it will very useful to characterize the particulate vs. dissolved fractions in Bayshore's discharge in order to determine more appropriate mercury reduction strategies in the future. (See response #20.)

Comment 24: Bayshore should be required to do modeling for the impacts of mercury and other regulated discharge constituents for Maumee Bay. The impacts of the discharges in Maumee Bay are greater than Western Lake Erie because there is far less water to 'dilute' the mercury and other regulated chemicals, etc.

Response 24: Water quality-based limits for mercury and other pollutants considered to be bioaccumulative in the food chain can longer be determined using available dilution waters after November 15, 2010. For this reason, facilities in the Lake Erie basin will be required to meet the water quality standard of 1.3 ng/l for a monthly average limit at the point of discharge unless a mercury variance authorizes a higher limit.

The shallowness of Maumee Bay may suggest that some alternative modeling approach is more appropriate for other pollutants. Although Ohio EPA has given more thought to the development of an alternative model for Maumee Bay, this effort would be difficult and require considerable resources which are not currently available.

Miscellaneous Comments

Comment 25: First Energy is uninterested in being socially and environmentally responsible – this particular plant has been non-compliant for various environmental standards for 12 consecutive quarters.

Response 25: The quarters of non-compliance refer to an on-going U.S. EPA investigation into modifications of the facility, and whether these modifications triggered a new source review; these do not refer to exceedances of the air pollution control permit limits.

U.S. EPA had requested information from FirstEnergy on the modifications; when the company did not respond within the allotted time, U.S. EPA took enforcement action, issuing an administrative order (May 2008) followed by a consent order (July 2008) to collect this information. FirstEnergy sent parts of the information requested to U.S. EPA on December 12, 2008, January 2, 2009, and May 1, 2009. U.S. EPA indicated that some information remains to be submitted under these orders.

With regard to surface water discharges, this facility has a good compliance record in recent years. From January 2006 through November 2009, the Bayshore Plant has reported only three sample results which were numeric violations of permit limits.

Comment 26: Do mercury levels spike after chemical metal cleanings?

Response 26: The Bayshore Plant normally hauls the metal-cleaning wastewater offsite for disposal. According to information provided from the Bayshore Plant, metal-cleaning wastewater has not been discharged from a facility outfall since September 1994.

Comment 27: How much money will First Energy spend to implement the PMP?

Response 27: That information is not available to Ohio EPA.

Comment 28: How often does EPA verify the monitoring data outside the outfalls that First Energy provides, and will this increase or decrease in frequency if the variance is issued?

Response 28: Ohio EPA typically conducts monitoring at the Bayshore Plant whenever the NPDES permit is being renewed. It is unlikely that granting coverage under the mercury variance will result in changing Ohio EPA's sampling practice.

Comment 29: The water quality criteria developed by scientists – that is believed should keep us healthy and safe should be maintained [sic]. There should not be a variance. Instead, we need innovation. First Energy should use innovation to reduce the mercury discharge.

Response 29: Based upon the information available to Ohio EPA from other coal-burning power plants located in Ohio and other states, the plan of study to be implemented as a condition of the mercury variance includes a reasonable list of strategies for reducing the mercury concentration in the discharge. (See response #14.) As more information is obtained to

characterize the mercury in Bayshore's bottom ash pond, innovative approaches may be employed to further reduce mercury.

Comment 30: The variance would be an effective step backwards in where our local, regional, and national communities need to move in relation to energy policy. Rejecting the variance limit allows the market to operate the way that it should. Coal is currently one of the most, if not the most, polluting sources of energy.

Response 30: Other forms of energy are certainly acknowledged to be less polluting with a smaller impact regarding greenhouse gases and climate change. However, the mercury variance was not developed to address energy policy in the United States. Since the mercury variance is legally available to dischargers as an alternative to meeting the water quality based limit, Ohio EPA is compelled to grant coverage under the variance to any permittee meeting the requirements in the rule.

Comment 31: If OEPA choosed [sic]to allow a limit that exceeds the 1.3ng/l, then OEPA should require Bayshore/First Energy to pay into a fund that would study mercury in fish in this area and ways to reduce the mercury in fish and the waters.

Response 31: The Ohio Administrative Code does not provide authority for Ohio EPA to impose this type of requirement.

End of Comments