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Testimony for the Pennsylvania Environmental Quality Board Regarding Pennsylvania's State-Specific Mercury Reduction Rule

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Thank you to the Environmental Quality Board for the opportunity to testify on the important issue of reducing mercury emissions from coal-fired power plants and Pennsylvania's state-specific mercury reduction rule. As you may know, PennEnvironment is a statewide non-profit, non-partisan environmental advocacy organization with more than 18,000 citizen members across the state. PennEnvironment has been active on mercury pollution issues at the state and national level, and has worked to educate the public and decision makers on this issue. We were involved in the Pennsylvania Department of Environmental Protection's (DEP) Mercury Rule Workgroup, and PennEnvironment was one of the original petitioners signed onto the petition submitted by Citizens for Pennsylvania's Future on August 9, 2004, urging the state to take state-level action to cut mercury pollution from Pennsylvania's coal-fired power plants.

Summary: Given the public health and environmental threats posed by mercury pollution from Pennsylvania's coal-fired power plants, the Bush administration's weakening of the Clean Air Act's federal mercury pollution reduction requirements, and the availability of mercury pollution control technologies, PennEnvironment supports DEP's state-level proposal to cut mercury pollution from Pennsylvania's coal-fired power plants by 90 percent by 2015. We urge the state to move forward in implementing this much-needed proposal, and reject attempts to incorporate mercury pollution "credit" trading into the proposal.

My testimony will focus on the following aspects of the mercury pollution issue: the public health impacts of mercury, environmental impacts of mercury pollution, the Bush administration's so-called "Clean Air Mercury Rule", the issue of mercury "hot spots", and mercury control technologies.

The Public Health Impacts of Mercury Pollution: Mercury is a bioaccumulative toxin that builds up in body tissue. Rain, snow, and dust particles "wash" mercury out of the air onto land and into waterways, where some of it is converted to methylmercury, a form that is especially toxic to humans and wildlife.[1] The primary way that people in the U.S. are exposed to methylmercury is by eating contaminated fish,[2] which absorb mercury from water through their gills and from eating plants, organisms and other fish.[3] As of 2003, Pennsylvania was one of 19 states with statewide freshwater fish consumption advisories due to methylmercury. These

[1] U.S. Environmental Protection Agency (EPA), *Mercury Study Report to Congress*, December 1997.
[2] EPA, *Mercury Study Report to Congress*, December 1997.
[3] EPA, *Mercury Study Report to Congress*, December 1997.

advisories warn people—especially children and women of child-bearing age—to limit their consumption of certain types of fish or fish from specific water bodies.[4] Mercury can also pass through the human placenta to developing fetuses and through breast milk to nursing infants.[5]

A potent neurotoxin, mercury poses significant human health hazards. Mercury can affect multiple organ systems, including the nervous, cardiovascular, and immune systems, throughout an individual's lifetime. In 2000, the National Academy of Sciences Committee on the Toxicological Effects of Methylmercury found the evidence of neurodevelopmental effects of mercury "extensive." The panel stated, "Chronic, low-dose prenatal [methylmercury] exposure from maternal consumption of fish has been associated with more subtle end points of neurotoxicity in children. Those end points include poor performance on neurobehavioral tests, particularly on tests of attention, fine-motor function, language, visual-spatial abilities (e.g., drawing), and verbal memory." The panel concluded, "The population at highest risk is the children of women who consumed large amounts of fish and seafood during pregnancy. The committee concludes that the risk to that population is likely to be sufficient to result in an increase in the number of children who have to struggle to keep up in school and who might require remedial classes or special education."[6] Infants and children are at higher risk of problems associated with mercury exposure because their nervous systems continue to develop until about age 14.[7] EPA scientists estimate that one in six women of childbearing age has enough mercury in her body to put her child at risk, should she become pregnant. This figure is a doubling of previous estimates based on increasing evidence that methylmercury concentrates in the umbilical cord, exposing the developing fetus to higher levels of mercury than previously understood.[8] Adults exposed to mercury may experience neurocognitive defects similar to those seen in children exposed prenatally[9] as well as adverse effects on fertility and blood pressure regulation.[10] Mercury exposure also is associated with an increased risk of heart attacks.[11]

These public health problems also carry with them economic costs. For instance, the Harvard Center for Risk Analysis has estimated that a national cap on mercury emissions from power plants of 15 tons annually could save upwards of $5.2 billion each year due to reduced cardiovascular and neurological problems.[12]

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[4] U.S. PIRG Education Fund, *Fishing for Trouble*, June 2003.
[5] EPA, *Mercury Study Report to Congress*, December 1997.
[6] National Academy of Sciences, National Research Council, *Toxicological Effects of Methylmercury* (Washington D.C.: National Academy Press, 2000); EPA, *Mercury Study Report to Congress*, December 1997.
[7] EPA, *Mercury Study Report to Congress*, December 1997.
[8] Kathryn Mahaffey, Robert P. Cliffner, and Catherine Bodurow, "Blood Organic Mercury and Dietary Mercury Intake: National Health and Nutrition Examination Survey, 1999 and 2000," *Environmental Health Perspectives*, 112(5) 562-570, April 2004; Kathryn R. Mahaffey, U.S. EPA, "Methylmercury Epidemiology Update," Slide #9 of presentation given at the National Forum on Contaminants in Fish, San Diego, January 2004, available at http://www.epa.gov/waterscience/fish/forum/2004/presentations/monday/mahaffey.pdf.
[9] Ellen K. Silbergeld, Department of Environmental Health Sciences and Epidemiology, Bloomburg School of Public Health, Johns Hopkins University, testimony presented at EPA hearing on the regulation of utility mercury emissions, Philadelphia, 25 February 2004; Edna M. Yokoo et al., "Low Level Methylmercury Exposure Affects Neuropsychological Function in Adults," *Environmental Health*, 2(8), June 2003.
[10] National Academy of Sciences, National Research Council, *Toxicological Effects of Methylmercury* (Washington D.C.: National Academy Press, 2000).
[11] Eliseo Guallar et al., "Mercury, Fish Oils, and the Risk of Myocardial Infarction," *New England Journal of Medicine*, 347(22), 1747-1754, 28 November 2002.
[12] Study prepared for NESCAUM by Glenn Rice and James K. Hammitt, Harvard Center for Risk Analysis, *Economic Valuation of Human Health Benefits of Controlling Mercury Emissions from U.S. Coal-Fired Power Plants*, Executive Summary pp. xviii-xix.

The Environmental Impacts of Mercury Pollution: Beyond the public health threats posed by mercury pollution to humans through the consumption of mercury-contaminated fish, mercury pollution also poses a significant threat to our natural environment.

Looking first at mercury levels in fish, data from the U.S. Environmental Protection Agency's (EPA) ongoing National Study of Chemical Residues in Lake Fish Tissue revealed that in Pennsylvania, all 52 fish tested were contaminated with mercury, and 83 percent of predator fish composite samples were contaminated with mercury levels that exceed EPA's "safe" consumption limit for women (0.13 parts per million). Fish species tested in Pennsylvania included largemouth bass, yellow perch, carp, brown bullhead and bluegill.[13] Additional studies have found that mercury exposure in fish can result in embryo mortality in lake trout eggs; adverse effects on growth and development in early life stages; decreased spawning success; altered schooling movements; and acute toxicity (leading to death).[14]

But mercury's threat to our environment extends beyond fish populations—and beyond the aquatic environment. The best example of this was illustrated in a study released in 2005 by the BioDiversity Research Institute. The four-year study analyzed mercury levels in Northeastern waterways, vegetation and a variety of animal species beyond fish. Among the study's most alarming findings was mercury contamination in songbirds that do not eat fish—the animal traditionally sited as being the key point in nature's food chain with regard to mercury pollution. Also, concentration levels were highest in song birds older than two years, suggesting that concentration levels in the birds are increasing over time. Mercury contamination in birds has been linked to a variety of negative reproductive (fewer eggs produced and reduced chick survival), behavioral (decreased likelihood of hunting and exaggerated response to fright stimulus), and neurological (brain lesions, spinal cord degeneration, weight loss, and difficulty flying, walking and standing) effects in the birds.

The BioDiversity Research Institute's study also examined mercury levels in other species, including crayfish, salamanders, mink and otters. Of the mink and otters sampled, 36 percent exceeded the mercury level threshold for adverse effects and 1 percent exceeded the mercury level threshold for acute toxicity (leading to death).[15] Adverse health impacts in mink and otters due to mercury contamination include impairment of sensory and motor skills, and anorexia and weight loss.[16]

Beyond the negative impacts of mercury pollution on individuals within a variety of species, the other key aspect of mercury contamination in our environment is that it bio-accumulates as it moves up the food chain. Bioaccumulation is the process by which species at the bottom of the food chain, such as smaller fish and insects, usually have lower levels of mercury. But as these species are eaten by predator species, who are then eaten by larger predator species, the mercury concentration levels—and the chance of negative health impacts—increase with each level of the food chain. For example, the amount of methylmercury in predator fish at the top of the aquatic food chain can be 1 million to 10 million times greater than the concentration of methylmercury in the surrounding water.[17]

The Bush Administration's So-Called "Clean Air Mercury Rule": Reducing mercury from power plants is critical to reducing toxic mercury in the environment and in fish, and thus

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[13] Emily Figdor, PennEnvironment Research & Policy Center, *Reel Danger: Power Plant Mercury Pollution and the Fish We Eat*, August 2004; p. 1, 17-18, 21, 45.
[14] David Evers, BioDiversity Research Institute, *Mercury Connections: The Extent and Effects of Mercury Pollution in Northeastern North America*, 2005, Gorham, Maine; p. 7.
[15] Ibid, p. 7-18.
[16] David Evers, BioDiversity Research Institute, *Mercury Connections: The Extent and Effects of Mercury Pollution in Northeastern North America*, 2005, Gorham, Maine; p. 7.
[17] U.S. EPA, "Mercury Update: Impact on Fish Advisories" (fact sheet), June 2001.

protecting public health. Unfortunately, the Bush administration has promulgated regulations—the so-called "Clean Air Mercury Rule"—that give power plants until at least 2018 before having to make even modest mercury reductions and—even then—allow these plants to buy mercury credits rather than install controls to reduce their mercury emissions. Under the Clean Air Act, sources of hazardous air pollutants, including mercury, are required to reduce these toxic emissions by the maximum achievable amount within a three-year time frame. Working closely with the utility industry, the Bush administration has sought to avoid this requirement by removing power plants from the list of sources subject to this technology-based standard and promulgating a cap-and-trade system for mercury emissions instead.

Specifically, in March 2005, the EPA finalized a "delisting rule" that rescinds the agency's prior determination, in 2000, that it was appropriate and necessary to regulate power plant mercury emissions under Section 112 of the Clean Air Act.[18] Under Section 112, hazardous air pollutants, including mercury,[19] are regulated using a "maximum achievable control technology" (MACT) standard, and controls are required within three years after the EPA finalizes an applicable MACT standard by regulation.[20] Section 112 also requires that certain determinations be made before an industry may be removed from the list of sources subject to MACT standards, including that no industry source—e.g., a single power plant—emits hazardous air pollutants in amounts that adversely affect public health or the environment.[21] EPA, however, did not even attempt to make these determinations before removing power plants from the source list. Rather, the agency simply asserted that "EPA, in its expert judgment, concludes that utility [mercury] emissions do not pose hazards to public health."[22]

Delisting power plants as a source of hazardous air pollutants subject to MACT standards cleared the way for the EPA to adopt the so-called "Clean Air Mercury Rule", also announced in March and finalized in May 2005.[23] This rule allows power plants to delay even modest mercury emissions reductions until at least 2018. EPA promulgated the rule pursuant to Section 111(d) of the Clean Air Act, which has never been used to regulate a hazardous air pollutant.[24] Indeed, this is the first time that trading of a toxic air pollutant has ever been permitted in the U.S.

The so-called Clean Air Mercury Rule sets national caps on mercury emissions from power plants of 38 tons per year in 2010—a 21% reduction—and 15 tons—touted as a 70% reduction—in 2018. The EPA's own analysis, however, projects actual emissions of 24.3 tons as late as 2020—less than a 50% reduction.[25] Moreover, the Congressional Research Service has concluded that "full compliance with the 70% reduction might be delayed until 2030"—or beyond—due to the rule's banking provisions.[26] By comparison, compliance with the maximum

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[18] EPA, Revision of December 2000 Regulatory Finding on Emissions of Hazardous Air Pollutants from Electric Utility Steam Generating Units and the Removal of Coal- and Oil-Fired Electric Utility Steam Generating Units from the Section 112(c) List 70 Fed. Reg. 15993, 29 March 2005 (hereinafter "Delisting Rule").

[19] Mercury is listed as a hazardous air pollutant under the Clean Air Act, 112 (b)(1).

[20] Clean Air Act 112 (d).

[21] Clean Air Act 112 (c)(9).

[22] Delisting Rule, 70 Fed. Reg. at 16025.

[23] Standards of Performance for New and Existing Stationary Sources: Electric Utility Steam Generating Units, 70 Fed. Reg. 28605, 18 May 2005 (hereinafter "Clean Air Mercury Rule"). The Clean Air Mercury Rule is also available at http://www.epa.gov/air/mercuryrule/pdfs/camr_final_preamble.pdf (preamble) and http://www.epa.gov/air/mercuryrule/pdfs/camr_final_regtext.pdf (regulatory text).

[24] James E. McCarthy, *Mercury Emissions from Electric Power Plants: An Analysis of EPA's Cap-and-Trade Regulations*, 15 April 2005, CRS-6 (hereinafter "*CRS Report*").

[25] EPA, Office of Air Quality Planning and Standards, *Regulatory Impact Analysis of the Clean Air Mercury Rule*, March 2005, Table 7-3, p. 7-5, available at http://www.epa.gov/ttn/atw/utility/ria_final.pdf.

[26] *CRS Report*, p.7 & n.24.

controls standard for toxic air pollution under the Clean Air Act would have resulted in mercury reductions on the order of 90% nationally by 2008—from about 48 tons in 1999 to five tons per year in 2008.[27]

In addition to its weak and delayed national caps, the rule permits power plants to buy and trade mercury pollution credits rather than requiring every plant to make emissions reductions. Trading mercury credits is "very risky," according to prominent scientists, and would likely contribute to mercury "hot spots," areas with high levels of mercury deposition that I will discuss later on in my testimony.[28]

Both the delisting rule and the so-called Clean Air Mercury Rule are the subject of numerous legal challenges.[29] To date, 16 states—including Pennsylvania—have challenged one or both of the administration's mercury rules in court or petitioned the EPA for reconsideration of the delisting rule.[30] Numerous environmental advocates also have challenged the rules,[31] as have four national public health groups.[32]

Lastly, and perhaps most importantly, there have been many claims made by representatives from the utility industry and others that Pennsylvania power plants will be required under the so-called Clean Air Mercury Rule to achieve an 86 percent reduction in mercury emissions.[33] This is simply not true. Because Pennsylvania power plants will have the ability to avoid reducing their mercury emissions by purchasing mercury credits from power plants in other states, it is impossible to guarantee how much—or how quickly—Pennsylvania's plants will or will not reduce their mercury emissions under the so-called Clean Air Mercury Rule.

And if Pennsylvania's utilities' actions in similar trading programs for other pollutants is any indication, Pennsylvania's power plants will be the plants buying credits from other states—not the plants reducing their emissions. Specifically, DEP's finding that Pennsylvania facilities

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[27] In 2001, EPA indicated that a MACT standard would require national reductions in mercury emissions of 89%, 90% or 98% by December 2007, assuming promulgation of final MACT regulations by December 2004. See EPA, Presentation to the Edison Electric Institute (hereinafter "EPA Presentation to EEI"), 18 September 2001. The 48-ton figure is based on mercury emissions tests and comes from the EPA's 1999 Information Collection request. EPA uses the 1999 dataset as "baseline emissions" against which future reductions are compared.

[28] Hubbard Brook Research Foundation, Mercury Science Briefing (presentation to the EPA), 23 June 2004.

[29] Of the court challenges, all of the delisting cases have been consolidated under *New Jersey v. EPA*, No. 05-1097 (D.C. Cir.) (orders filed 5 May 2005, 10 June 2005, and 29 June 2005), and all Clean Air Mercury Rule cases have been consolidated under *New Jersey v. EPA*, No. 05-1162 (D.C. Cir.) (orders filed 9 July 2005 and 22 July 2005).

[30] Fourteen states—California, Connecticut, Delaware, Illinois, Maine, Massachusetts, Minnesota, New Hampshire, New Jersey, New Mexico, New York, Pennsylvania, Vermont and Wisconsin—filed suit as plaintiffs against both the delisting rule and Clean Air Mercury Rule. For Pennsylvania's filing, see *Commonwealth of Pennsylvania, Department of Environmental Protection,* No. 05-1104 (D.C. Cir.).

[31] The groups include Environmental Defense, National Wildlife Federation, and Sierra Club, represented by Earth Justice; Natural Resources Council of Maine, Ohio Environmental Council, and U.S. Public Interest Research Group, represented by Clean Air Task Force; Natural Resources Defense Council; and Chesapeake Bay Foundation, Conservation Law Foundation, and Waterkeeper Alliance.

[32] Four national public health groups moved to intervene in the litigation against the delisting rule on June 14, 2005., including Physicians for Social Responsibility, the American Nurses Association, the American Public Health Association, and the American Academy of Pediatrics.

[33] Douglas L. Biden, Electric Power Generating Association; Edward D. Yankovich, United Mine Workers of America; Donald Siegel, International Brotherhood of Electrical Workers; George Ellis, Pennsylvania Coal Association; Eugene Barr, Pennsylvania Chamber of Business & Industry; Al Neri, Envoi Communications; "Business, labor, coal industry coalition supports bipartisan move to cut mercury emissions from power plants by 86%" (press release). April 18, 2006.

are using the credit trading program for sulfur dioxide to emit roughly 460,000 tons of sulfur dioxide above what the state is allotted[34] offers little hope that Pennsylvania's power plants will be the plants exceeding the minimum requirements for mercury reductions under the so-called Clean Air Mercury Rule.

Mercury Hot Spots: Data released this spring in the Environmental Protection Agency's Toxics Release Inventory revealed that Pennsylvania's coal-fired power plants emitted roughly 6,700 pounds of mercury in 2004, the last year for which we have complete data from EPA. This ranked Pennsylvania second among states nationally for the highest power plant mercury emissions.[35] In 2003, Armstrong and Indiana County ranked first and fourth, respectively, out of all counties nationwide for the highest power plant mercury emissions. Four other Pennsylvania counties made the top 100 list nationally.[36]

These statistics provide the appropriate backdrop for the discussion of mercury "hot spots," and emphasize why it is imperative that we consider hot spots in our discussion of the need to cut mercury pollution in Pennsylvania. Mercury hot spots are those areas with mercury deposition higher than in surrounding areas, and there is both significant evidence that hot spots exist and that coal-fired power plants create hot spots in nearby communities. It follows that the communities near or in a mercury hot spot will face an increased public health threat due to increased mercury levels.

Countering the claim by some that global deposition (mercury pollution originating from outside of the United States) accounts for most of our mercury pollution problem, many studies suggest that in places where there are large local sources of mercury pollution, such sources account for 50 to 80 percent of mercury deposition. A 2003 study by Environmental Defense that examined EPA modeling data found that over 50 percent of the mercury deposition in Pennsylvania hot spots was due to local sources.[37] Regarding Pennsylvania specifically, even the Electric Power Research Institute, in its presentation before DEP's Mercury Rule Workgroup, said that less than 20 percent of mercury deposition within Pennsylvania originates from outside of the United States.[38]

Other studies reinforce that the deposition of mercury in the areas surrounding coal-fired power plants and other large sources can be very localized. Dr. Mark Cohen of the National Oceanic and Atmospheric Administration, in a presentation before DEP's Mercury Rule Workgroup, presented findings that upwards of 50 percent of the ionic mercury emitted from a stationary source can be deposited within 500 km (310 miles) of the source.[39]

Perhaps most significantly, initial results from an ongoing EPA study show that 67 percent of the mercury in rain collected at a monitoring site in Steubenville, Ohio originated from coal-burning power plants within 400 miles of the site.[40]

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[34] Pennsylvania Department of Environmental Protection (DEP), "86% Mercury Reduction Claim for Pennsylvania Under Federal Rule is Overstated" (press release). April 14, 2006.
[35] EPA, *TRI Explorer, Data Source: Release Year 2004 data set frozen on November 18, 2005 and released to the public April 12, 2006*, accessed via the internet on April 23, 2006.
[36] Supryia Ray, PennEnvironment Research & Policy Center, *Made in the U.S.A.: Power Plants and Mercury Pollution Across the Country*, September, 2005; p. 13, 22.
[37] Michael Shore, Environmental Defense, *Out of Control and Close to Home: Mercury Pollution from Power Plants*, 2003; p. 5.
[38] Leonard Levin, PhD, EPRI: "Atmospheric Fate and Transport of Mercury (Power Point presentation), presented at October 14, 2005 DEP Mercury Rule Workgroup Meeting; slide 23.
[39] Mark Cohen, PhD, National Oceanic and Atmospheric Administration, Air Resources Laboratory: "Local and Regional Deposition Impacts of Atmospheric Mercury Emissions" (Power Point presentation), presented at November 18, 2005 DEP Mercury Rule Workgroup Meeting; slides 2, 25.
[40] Darren Samuelson, "EPA study links fallout in Ohio to nearby coal-burning plants," *Greenwire* February 16, 2006. Available at: http://www.eenews.net/Greenwire/2006/02/15/#1. Accessed February 20, 2006.

Studies have also shown that when mercury emissions are reduced from a source, the surrounding environment shows lowered mercury levels. Specifically, a 2003 study by the state of Florida, the EPA and the U.S. Geological Survey found that the levels of mercury found in largemouth bass and other wildlife in the Everglades have declined about 80 percent since state and federal agencies required municipal and medical waste incinerators to cut their mercury emissions.[41] More recently, mercury levels in Massachusetts fish from lakes near a cluster of incinerators were found to have dropped by over 30 percent since Massachusetts enacted strict mercury pollution standards seven years ago for the nearby incinerators.[42]

The threat of hot spots means that the communities surrounding Pennsylvania's coal-fired power plants—and even those up to 400 miles away from a power plant—are at an increased risk of high mercury levels in their environment. For this reason, the environmental and public health communities have strongly opposed the mercury trading program put forth by the Bush administration in their so-called Clean Air Mercury Rule. In this trading program, power plants can avoid reducing their mercury emissions by buying credits from other plants in different locations.

It is largely because of the Bush administration's mercury policy allowing for mercury trading—and thus endangering Pennsylvania's environment and public health through the threat of hot spots—that PennEnvironment supports DEP's proposed mercury reduction rule, as it is a state-level mercury rule for Pennsylvania's coal-fired power plants that does not allow for mercury trading.

Mercury Control Technologies for Coal-Fired Power Plants: Thankfully, the technology exists to drastically reduce mercury pollution from Pennsylvania's coal-fired power plants, and mercury control technology companies are promising that technologies capable of even greater mercury reductions are on the way. But as far back as 2000, EPA stated that, "Technologies available today and technologies expected to be available in the near future can eliminate most of the mercury from utilities at a cost far lower than one percent of utility industry revenues."[43] Then, in 2001, EPA staff stated in a presentation before the Edison Electric Institute that current technologies could achieve 90 percent mercury reductions from coal-fired power plants by 2007, reducing power plants' annual mercury pollution from approximately 48 tons in 2000 to approximately 5 tons per year.[44] This testimony will walk through the mercury reduction capabilities achievable through both the use of pollution controls for other pollutants (often referred to as "co-benefits"), as well as technologies that are designed specifically for reducing mercury pollution.

With regard to co-benefits—the method of mercury reduction favored by DEP's proposed state-level mercury reduction rule—a 2004 report by the National Wildlife Federation examined the pollution control technologies being used by coal-fired power plants to meet federal pollution reduction requirements for pollutants such as particulates, sulfur dioxide and nitrogen oxides, and then examined the mercury reductions that could be met using these same technologies. By examining EPA data, the report found that several technologies designed for controlling pollutants other than mercury, were capable of achieving a co-benefit of 90 percent

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[41] Florida Department of Environmental Protection, *Integrating Atmospheric Mercury Deposition with Aquatic Cycling in South Florida: An Approach for Conducting Total Maximum Daily Load Analysis for an Atmospherically Derived Pollutant*, November 2003.

[42] Beth Daley, "Mercury down 32% in fish near Mass. Incinerators; Progress tied to emissions laws," *The Boston Globe*, April 3, 2006.

[43] EPA, "EPA to Regulate Mercury and Other Air Toxics Emissions from Coal- and Oil-Fired Power Plants" (fact sheet), December 14, 2000.

[44] EPA, "Supplementary Presentation for Edison Electric Institute on Mercury", December 4, 2001; p. 6. Available at http://cta.policy.net/epamercury.pdf. Accessed February 21, 2006.

mercury reductions at plants burning bituminous coal—the type of coal burned at the vast majority of Pennsylvania's coal-fired power plants. Specifically, the report found that fabric filters, and fabric filters with wet scrubbers were capable of achieving 90 percent and greater mercury reductions from plants burning bituminous coals.[45]

In a presentation before DEP's Mercury Rule Workgroup, David Foerter with the Institute of Clean Air Companies examined co-benefits achievable without using fabric filters. His research found that 80 percent mercury reductions were possible using wet scrubbers with an additive to help with mercury removal, and 90 percent and greater mercury reductions were possible using wet scrubbers with selective catalytic reduction technology. Mr. Foerter's presentation also included presentations on a number of other emerging multi-pollutant control technologies, capable of 80 to 90 percent mercury reductions as well as significant reductions in other pollutants.[46]

Regarding mercury-specific controls, DEP's Mercury Rule Workgroup heard several compelling presentations as to the availability of technologies that can achieve significant mercury pollution reductions at Pennsylvania's coal-fired power plants. The most promising of the mercury-specific technologies is known as activated carbon injection, or "ACI." This technology injects an absorbent carbon into the flue gas, absorbing and trapping the mercury before it escapes out of the smokestack. ACI technologies have achieved 90 percent reductions in full-scale tests at several power plants nationwide that burn bituminous coal.[47] A Workgroup presentation by Mike Durham with the Institute of Clean Air Companies also referenced a year-long test at a power plant burning bituminous coal that achieved 90 percent mercury removal. Mr. Durham also pointed out that an advantage of ACI is that it is a flexible control technology—the amount of activated carbon and the type of activated carbon used can be easily adjusted at each plant using the same hardware, depending on the desired pollution reduction levels.[48]

The Workgroup also heard a presentation from Sid Nelson of Sorbent Technologies Corporation, which manufactures and installs mercury pollution control technologies. Specifically, Sorbent Technologies specializes in adding substances such as bromine to the injected carbon to optimize the mercury removal of ACI systems. Mr. Nelson's presentation said that 80 percent mercury reductions would be achievable at Pennsylvania coal-fired power plants by 2008, and 90 percent reductions would be achievable and inexpensive by 2012.[49] This is consistent with a Workgroup presentation by Thomas Feeley with the National Energy Technology Laboratory, who cited field tests at plants using bituminous coal showing 80 percent reductions using ACI technologies.[50]

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[45] Michael Murray, Zoe Lipman, Felice Stadler, Catherine Bowes and Maureen Swanson, National Wildlife Federation, *Getting the Job Done: Affordable Mercury Control at Coal-Burning Power Plants*, October, 2004; p. 14.

[46] David Foerter, Institute of Clean Air Companies, Inc., "Availability of Mercury Control Technology" (Power Point presentation), presented at November 18, 2005 DEP Mercury Rule Workgroup Meeting; slide 4.

[47] Michael Murray, Zoe Lipman, Felice Stadler, Catherine Bowes and Maureen Swanson, National Wildlife Federation, *Getting the Job Done: Affordable Mercury Control at Coal-Burning Power Plants*, October, 2004; p. 15.

[48] Mike Durham, Institute of Clean Air Companies, "Advances in Mercury Control Technology" (Power Point) presented at November 18, 2005 DEP Mercury Rule Workgroup meeting, slides 18, 19, 36.

[49] Sid Nelson, Jr., Sorbent Technologies Corporation, "Sorbent Technology for Mercury Control" (Power Point), presented at November 18, 2005 DEP Mercury Rule Workgroup meeting; slide 19.

[50] Thomas J. Feeley, III, National Energy Technology Laboratory, "Department of Energy/National Energy Technology Laboratory's Mercury Control Technology R&D Program" (Power Point), presented at November 18, 2005 DEP Mercury Rule Workgroup meeting, slide 13.

Conclusion: Given the serious environmental and public health threat posed by mercury pollution in Pennsylvania, the availability of pollution control technologies to significantly reduce this mercury pollution, and the Bush administration's weakening of mercury protections at the federal level, PennEnvironment is supportive of DEP's state-specific mercury reduction rule to require 90 percent mercury reductions from Pennsylvania's coal-fired power plants by 2015, without mercury trading. Thank you again for the opportunity to testify on this issue.