

ENVIRONMENTAL DEFENSE

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ATTENTION: EPA Public Docket No. OAR 2002-0056

Re: Comments on EPA's "Proposed National Emission Standards for Hazardous Air Pollutants; and, in the Alternative, Proposed Standards of Performance for New and Existing Stationary Sources: Electric Utility Steam Generating Units," Published on January 30, 2004 (69 Fed. Reg. 4652)

and

"Supplemental Notice for the Proposed National Emission Standards for Hazardous Air Pollutants: and, in the Alternative, Proposed Standards of Performance for New and Existing Stationary Sources: Electric Utility Steam Generating Units," Published on March 16, 2004 (69 Fed. Reg. 12398)

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1. Introduction

Environmental Defense greatly appreciates the opportunity to comment on the EPA's Proposed Rule to regulate mercury emissions for electric utility steam generating units ("Utility Units"). 69 Fed. Reg. 4652 (Jan. 30, 2004) and 69 Fed. Reg. 12398 (March 16, 2004). We are submitting these comments on behalf of our some 400,000 members across the country.

On January 30, 2004, the U.S. Environmental Protection Agency proposed emissions limits for mercury and nickel at coal- and oil-fired electric utility units. EPA also co-proposed a cap-and-trade program under sections 111 and 112 of the Clean Air Act for mercury emissions from coal-fired electric utility units. On March 16, 2004, EPA issued a supplemental notice providing proposed rule language, proposed state plan approvability criteria, and a proposed cap-and-trade rule.

Environmental Defense strongly believes that as an acutely toxic air pollutant, mercury should be controlled to the fullest extent possible. In these comments, we cite in depth analyses detailing the availability of control mechanisms for mercury at electric utilities and justifications for a nation-wide application of a uniform MACT standard, as opposed to EPA's proposed division between bituminous, subbituminous and other coal ranks. Based on these arguments, we recommend a single MACT standard to reduce mercury emissions from power plants by 90% in 2007. Also, EPA's proposal to erect a trading regimen for mercury is a manifest violation of the Clean Air Act and undermines the rudimentary public health protections intended by Congress in listing mercury as a hazardous air pollutant under section 112 of the Clean Air Act. In addition, we find EPA's brief mention of other hazardous air pollutants from power plants to be a serious shortfall in this proposal. Specifically, arsenic and dioxins are known human carcinogens and the potential health risk associated with their emission from power plants should be taken seriously. The EPA has failed to adequately address this important public health concern.

All of the documents cited in these comments are hereby incorporated by reference as part of the administrative docket for on the proposed mercury rule . The following attachments are enclosed in this comment letter:

1. Bull Mountain Mine Coal Analyses, Classification of Coals by Rank ASTM Standard D388e1, performed by James R. Kuipers, P.E., April 2, 2004, Exhibit 41 In The Matter of the Maximum Achievable Control Technology Approval for the Air Quality Permit for the Roundup Power Project (Permit No. 3182-00) before the Montana Board of Environmental Review, Case No. 2003-17 AQ
2. Environmental Defense, *Out of Control and Close to Home: Mercury Pollution from Power Plants*, 2003.
3. Environmental Defense and Western Resource Advocates, *Mercury Air Pollution: The Case for Rigorous MACT Standards for Subbituminous Coal*, May 2003.
4. EPA, Office of Research and Development, *Control of Mercury Emissions from Coal-Fired Electric Utility Boilers*, February 2004 memorandum.

5. Tom Hamburger & Alan C. Miller, Mercury Emissions Rule Geared to Benefit Industry, Staffers Say, LA Times, March 16, 2004.
6. Iowa Department of Natural Resources, Prevention of Significant Deterioration (PSD) Permit Review Technical Support Document for Issuance of PSD Permits for Project Number 02-528, Plant Number 78-01-026, 21 April 2003.
7. Mahaffey, Kathryn R., EPA, "Methylmercury: Epidemiology Update," Presentation at Fish Forum, San Diego, 2004.
8. Middleton, *Mercury - A Local Concern/ An International Issue*, December, 2003.
9. Sjostrom, Sharon, et al., Full-Scale Evaluation of Mercury Control at Great River Energy's Stanton Generating Station Using Injected Sorbents and a Spray Dryer/Baghouse, to be presented at the 2002 Air Quality III Conference
10. Memo from Jeffrey Cole at RTI, to Bill Maxwell at EPA, Summary and Evaluation of the Recent Studies on Speciated Nickel Emissions from Oil-fired Electric Utilities and the Potential Health Risks of Those Emissions, 8 February 2002.

2. Review Process Flawed

Prior to the issuance of these rules, EPA convened a Utility maximum achievable control technology (MACT) Working Group to provide input to the agency on developing standards for mercury and other air toxics from power plants. This group involved utilities, states, scientists, public interest groups, including Environmental Defense, and other interested parties. The advisory committee met for nearly two years. A cornerstone product of the Utility MACT Working Group was the recommendation for modeling analyses to inform the agency on the most effective and efficient ways to reduce mercury from the power sector, and the results of such modeling were to be presented at a Working Group meeting scheduled for April 15, 2003.

However, on April 1, 2003, EPA abruptly cancelled the upcoming meeting and the working group never heard from EPA in a formal way again. The abandonment of thorough analysis and disbanding of the Utility MACT Working Group calls into question the integrity of the rulemaking process and undermines EPA's public credibility as a steward of Americans' public health. It is impossible for EPA to adopt the most - effective policy for reducing mercury without conducting the multiple modeling runs needed to explore the different pollution control options, as the work group had recommended.¹ In sum, EPA cannot reasonably arrive at a determination about effective control options because a reasonable range of controls have never been evaluated or meaningfully considered. This is a deviation from reasoned rulemaking.

¹ Tom Hamburger & Alan C. Miller, "Mercury Emissions Rule Geared to Benefit Industry, Staffers Say," *LA Times*, 16 March 2004.

2.1. *Recommendations for Core Modeling Analysis*

In order to develop a rule that is fully based on reasoned analyses and good science, and will remedy the shortcomings of its flawed stakeholder process, EPA should conduct the following analyses:

- **Multiple Modeling Runs.** EPA should conduct and evaluate multiple modeling scenarios to explore various reduction levels and configurations of the rule. EPA should use the recommendations by the Utility MACT Working Group on the IMP analyses and possible control levels, as a reference point as it renews its commitment to follow through with needed modeling analysis. Multiple modeling runs can enable the agency to construct cost-effectiveness curves for various control options that can help the agency and the public appreciate the costs of each increment of reductions. Also, multiple modeling runs can help the agency identify effective and efficient ways to configure the mercury rule.
- **Include IAQR.** EPA should include IAQR co-benefits in model scenario assumptions. Failure to include the anticipated IAQR co-benefits would make the costs of mercury reductions artificially high and would be misplaced.
- **Include High Performing Technologies.** EPA should incorporate high performing control technologies in its model assumptions. Assuming power companies would only choose from technologies that are currently on the market would artificially raise the cost of mercury reductions and is unreasonable. It is clear that power plants that burn bituminous or sub-bituminous coal will be able to install control that could reduce mercury emissions in excess of 90%, and the industries ability to innovate and develop cost-effective technologies should be reflected in the model analysis. Modeling of new, high performing technologies is consistent with the beyond-the-floor provisions of the air toxics program.

3. Strong Public Health Reasons for Rigorously Regulating Mercury Emissions at Power Plants

3.1. *Harmful Health Effects of Mercury*

Mercury in its various forms is a highly toxic heavy metal. Elemental mercury and inorganic mercury compounds are released into the air from power plant smokestacks and other sources. Once airborne, the various forms of mercury undergo additional chemical transformation and are widely deposited either directly or with precipitation over a wide area.

Mercury deposited into the inland water bodies and coastal areas is of greatest concern to human health. This deposited mercury is transformed by bacteria in the lake and stream sediments into methylmercury. The methylmercury is then accumulated up the food chain. Generally, predator fish at the top of the food chain (e.g, pike, bass, shark and swordfish) contain methylmercury approximately 1 to 10 million times greater than dissolved methylmercury concentrations found in surrounding waters. By ingesting

contaminated fish, hundreds of thousands of Americans are exposed to unsafe levels of methylmercury. As of 2002, 45 of the 48 contiguous United States had mercury advisories and over half of these 45 states have all of their waters under advisories.² According to EPA, “[t]he number of states that have issued mercury advisories has risen steadily from 27 in 1993 to 45 in 2002.”³

Methylmercury is a neurotoxin that damages the brain and nervous system. Those most at risk from methylmercury are children and fetuses of mothers who eat mercury-contaminated fish during pregnancy. Prior to more representative population measurements provided by the National Health and Nutrition Evaluation Survey (NHANES), the National Academy of Sciences estimated that 60,000 children were born with blood mercury levels exceeding the safety threshold of 5.8 parts per billion each year. When more comprehensive data were collected through NHANES, that estimate was revised to some 300,000 children born with elevated mercury levels. A more recent analysis took into consideration pooled data indicating that fetal mercury levels exceeded maternal mercury levels by a ratio of 1.7, leading to a new estimate of 630,000 children born annually with umbilical cord blood mercury levels above 5.8 parts per billion.⁴ Clearly, the more data that are collected on methylmercury exposure, the better our understanding of the severity of the problem, and the more it is clear that harmful exposure is extensive.

In addition, new studies published since the National Academy of Sciences review confirm that methylmercury exposure in adults is associated with increased risk of heart attacks.⁵ Additional studies of the Faroe Islands cohort also indicate fetal exposure to methylmercury is associated with cardiac abnormalities in children as well in addition to deficits in attention, language, verbal memory, spatial function, and motor speed development.⁶ Researchers have also associated fetal methylmercury exposure with detectable neurological impairments in children at age 14 years, and separately find that postnatal methylmercury exposure appears capable of causing additional neurological impairments, distinct from those observed during fetal development.⁷ While methylmercury's mode or modes of action are not fully characterized, it is clear that the toxicity of methylmercury is not limited to the nervous system. It is likely that as with lead, additional studies will substantiate the occurrence of adverse effects at lower and lower levels of exposure.

² Paulette Middleton, prepared for Environmental Defense, *Mercury - A Local Concern/ An International Issue*, 2003.

³ USEPA Factsheet Update: National Listing of Fish and Wildlife Advisories EPA-823-F-03-003, May 2003, 5.

⁴ Kathryn R. Mahaffey, EPA, “Methylmercury: Epidemiology Update,” Presentation at Fish Forum, San Diego, 2004, and Kathryn R. Mahaffey et al., “Blood Organic Mercury and Dietary Mercury Intake: National Health and Nutrition Examination Survey, 1999 and 2000,” *Environmental Health Perspectives* 2004 112: 562-570.

⁵ Guallar et al., *New England Journal of Medicine*, 2002, 347:1747-1754.

⁶ Grandjean et al., *J Pediatr* 2004;144:169-76.

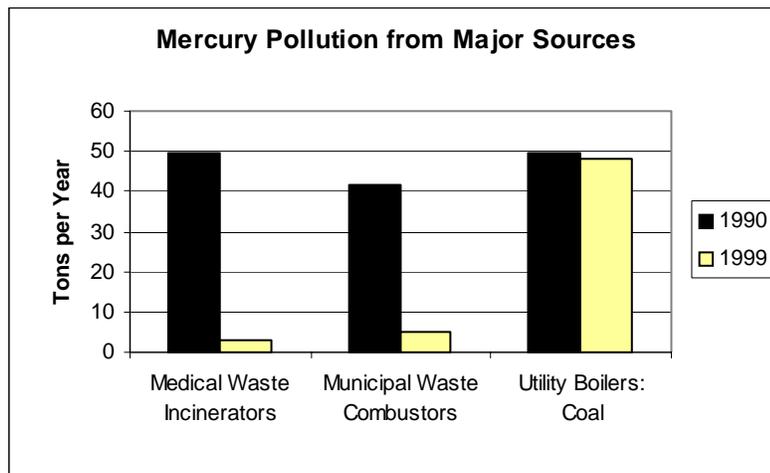
⁷ Murata et al., *J Pediatr* 2004;144:177-183.

New studies published since the National Academy of Sciences review demonstrate additional adverse effects of low-level methylmercury exposure beyond abnormal neurobehavioral testing. Studies from the Faroe Islands cohort suggest that fetal exposure to methylmercury is associated with abnormal cardiac autonomic activity and abnormal brainstem evoked responses in 14 year-old children.^{8,9} These abnormal results are less likely than neurobehavioral testing to be influenced by social or cultural factors. Another recent study confirmed that methylmercury is associated with increased risk of heart attacks in adults.¹⁰ While methylmercury's mode or modes of action are not fully characterized, the toxicity of methylmercury is not limited to the nervous system. It is likely that as with lead, additional studies will substantiate the occurrence of adverse effects at lower and lower levels of exposure.

3.2. Power Plants Are an Important Source of Mercury

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. 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). 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%. These sectors provide a model for reductions that could be made in the power plant sector.¹¹

Figure A. Mercury releases from major sectors in the United States.



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

⁸ Grandjean et al., *J Pediatr* 2004;144:169-76.

⁹ Murata et al., *J Pediatr* 2004;144:177-183.

¹⁰ Guallar et al., *New England Journal of Medicine*, 2002, 347:1747-1754.

¹¹ Environmental Defense, *Out of Control and Close to Home: Mercury Pollution from Power Plants*, 2003.

In the face of this serious health threat, the international community and individual states have taken steps to regulate mercury emissions. For example, the United Nations Environment Program (UNEP) Governing Council urges all countries to identify populations at risk and reduce human-generated mercury releases. As a result, many nations have initiated measures to reduce mercury pollution. In North America, the U.S. and Canada Great Lakes Water Quality Agreement calls for the elimination of mercury from the Great Lakes. In addition, the New England governors and Eastern Canadian premiers adopted a Mercury Action Plan to reduce mercury pollution in that region. Connecticut, Massachusetts, New Hampshire, New Jersey, and several states in the Midwest have either already adopted state standards to reduce mercury pollution from power plants or are aggressively pursuing them. The imperative for and viability of strong national emission standards is all the more manifest considering the action internationally and domestically.

3.3. Local “Hot Spots”

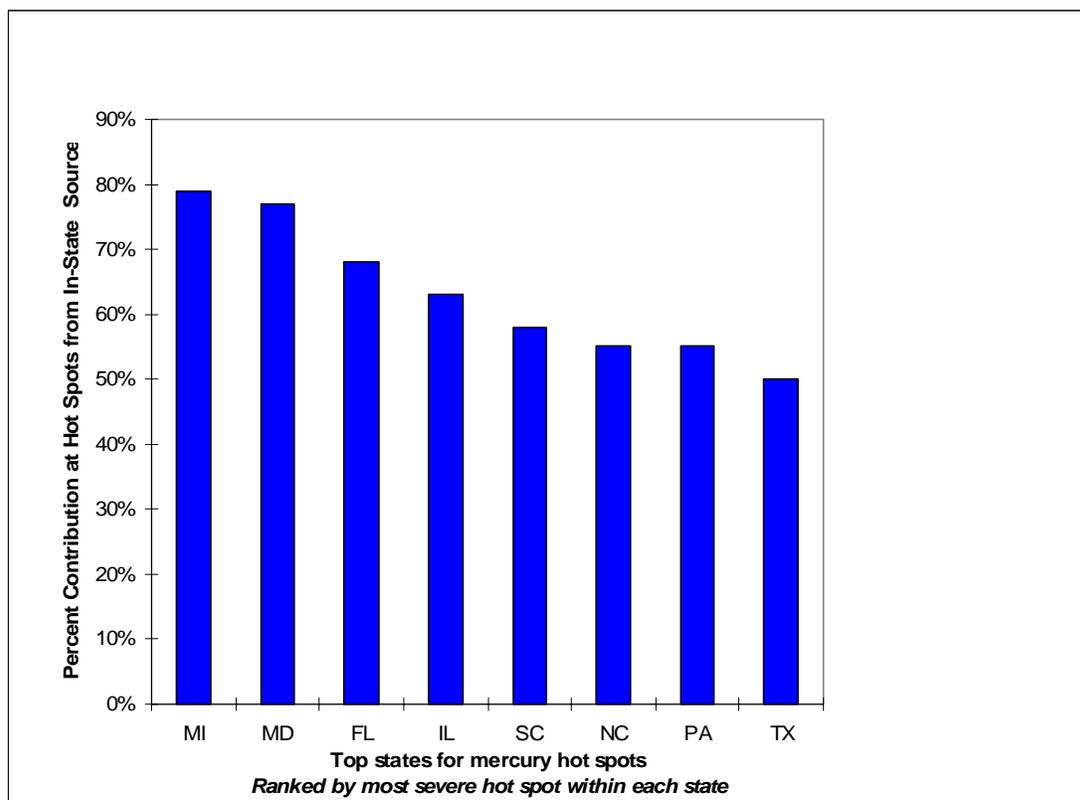
Depending on mercury's physical state, it can travel a long way before it is deposited in the environment. However, modeling shows that significant amounts of mercury in waters across the nation come from pollution sources within the United States. Sources in the United States contribute to local mercury “hot spots” (locations where mercury deposition is high) and add to global mercury pollution levels,¹² leading to contaminated water, fish that are not healthy for consumption, and brain damage in infants.

Local emissions of mercury are largely responsible for mercury deposition hot spots, 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, in-state sources contribute more than 50% of the pollution to sites in the top 8 worst hot spot states.¹³

¹² 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).

¹³ Environmental Defense, *Out of Control and Close to Home: Mercury Pollution from Power Plants*, 2003.

Figure B. Local Pollution Sources Predominate at Mercury Hot Spots



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

Another powerful example of the relationship between local sources and mercury deposition is illustrated by south Florida. Due to tighter standards on medical waste incinerators and municipal waste combustors that took effect in mid 1992, Florida’s total estimated local emissions of mercury declined by about 93% between 1991 and 2000. Wet deposition of mercury declined in South Florida by about 25% since 1993. During this same time period concentrations of mercury in fish and wading birds have also decreased significantly, 60-75% since the early 1990s. These data strongly suggest that local reductions of mercury yield reductions in mercury concentrations in local biota. 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.¹⁴ As demonstrated by Florida’s experience, reducing local deposition will lower concentrations in United States water bodies, reduce contamination in fish and other biota, and improve public health.

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, 86. www.floridadep.org/labs/mercury/index.htm. Last updated November 2003.

The mercury deposition research in the Florida Everglades, and in lakes in Wisconsin and southern Ontario also indicate that the majority of mercury converted into methylmercury is from recent deposition, rather than cycling from the sediment, suggesting that reducing mercury emissions from all coal-fired electric generating units remains a critical need for reducing exposure and improving the health of damaged ecosystems.¹⁵

3.4. *Reduction Levels and Timing*

Prior national policy decisions have resulted in other major sources of mercury pollution, such as medical waste incinerators and municipal waste combustors, slashing their emissions by 90%. Coal-fired power plants can use achievable, cost-effective control technology to make comparable reductions within a decade. The first phase of EPA's proposed rule, a mere 30 percent reduction in mercury by 2010, will be achieved as a collateral benefit from EPA's proposed Clean Air Interstate Rule. The 70% reduction by 2018 for Phase II falls well short of the reductions required for the waste incinerators. With no direct investments required to reduce mercury emissions until 2018, a new generation of children will needlessly be exposed to high levels of mercury pollution even though solutions are readily available today.

4. MACT

4.1. *Proposed MACT for Existing Power Plants Are Unreasonable And Contrary To Law*

The Clean Air Act requires that emission standards for existing sources be no less stringent than the "average emission limitation achieved by the best performing 12 percent of the existing sources (for which the Administrator has emissions information)." CAA § 112(d)(3). This is known as the "MACT floor" for existing sources. However, section 112(d)(2) of the CAA also mandates that such emission standards require "the maximum degree of reduction in emissions of hazardous air pollutants" that is determined to be achievable for existing sources considering costs, any non-air quality health and environmental impacts, and energy considerations. EPA has failed to address both of these statutory requirements in its proposed section 112 MACT standards for existing EGUs.

EPA has collected mercury emissions data for about 80 coal-fired power plant units. Based on the top 12% of existing units, the MACT floor emission rate should reflect about 91% mercury control.¹⁶ The environmental stakeholders in EPA's utility MACT workgroup recommended a mercury MACT floor for existing units of 0.21 lb/TBtu.¹⁷

¹⁵ U.S. Geological Survey, Aquatic Cycling of Mercury in the Everglades (ACME) Project: Synopsis of Phase I Studies and Plans for Phase II Studies, Presented at the Greater Everglades Ecosystem Restoration Conference, December 2000.

¹⁶ See Mercury Emissions for Coal-Fired Power Plants: The Case for Regulatory Action, Northeast States for Coordinated Air Use Management, October 2003, p. 3-2.

¹⁷ See Recommendations for the Utility Air Toxics MACT, Final Working Group Report, October 2002.

Yet, EPA's proposed MACT standards for existing sources fall far short of the average emission limitation of the top 12% of existing sources. First, EPA has subcategorized the proposed standards based on the rank of coal burned which, as discussed, is not technically or legally justified. Second, EPA has applied a confusing and unreasonable variability analysis to the existing source data, resulting in a MACT floor limit that is many times higher than the emission rates actually being achieved at the top existing units. EPA has also proposed a 12-month rolling standard, which provides even more flexibility in meeting the emission limit. Indeed, the 12-month averaging time of the proposed emission limit should provide more than enough leeway to account for the variability of mercury in coal. The resulting standard, if promulgated by EPA, will thus not likely require actual mercury reductions at most existing coal-fired power plants.

Not only has EPA failed to comply with the mandates of section 112 in determining the MACT floor for existing units, EPA also ignored the wealth of information on available mercury control technologies to reduce mercury emissions to the maximum degree that is achievable. Activated carbon injection (ACI) has been extensively tested in several full-scale tests and pilot-scale tests and a recent long-term test performed at the Gaston power plant. Full scale testing performed by ADA-ES along with testing performed by EPRI showed that high levels of mercury control, at least 90%, could be achieved on a cost-effective basis at coal-fired power plants with ACI regardless of the rank of coal burned, with the utilization of modern particulate matter control equipment (i.e., a fabric filter baghouse or a polishing baghouse downstream of an electrostatic precipitator).¹⁸

Various types of sorbents have been under development to improve the mercury reduction efficiency of sorbent injection systems. For example, a study with iodine-impregnated carbon has shown high levels of mercury removal at a plant burning lignite coal¹⁹ and that study was relied on by the Iowa Department of Natural Resources to require high levels of mercury control at the subbituminous coal-fired proposed unit 4 of the Council Bluffs power plant.²⁰ ADA-ES and CH2MHill have also developed and tested amended silicates as a sorbent to be used for mercury control. Test results have shown that this sorbent is at least as effective as activated carbon in removing mercury but it does not contaminate the flyash, thus reducing the overall cost of mercury control.²¹ Many other sorbents are available and have been tested that can achieve high levels of mercury control.

¹⁸ Results from Four Full-Scale Field Tests of ACI for Control of Mercury Emissions. Presentation to the Utility MACT Working Group, March 4, 2003, Michael D Durham, ADA-Environmental Solutions, conclusions.

¹⁹ Sjostrom, Sharon; Ebner, Tim; Slye, Rick; Full-Scale Evaluation of Mercury Control at Great River Energy's Stanton Generating Station Using Injected Sorbents and a Spray Dryer/Baghouse, presented at the 2002 Air Quality III Conference.

²⁰ See Prevention of Significant Deterioration (PSD) Permit Review Technical Support Document for Issuance of PSD Permits for Project Number 02-528, Plant Number 78-01-026. Iowa Department of Natural Resources, Environmental Services Division, Air Quality Bureau, pp. 43-45. (Technical Support Document for Council Bluffs Unit 4 permit).

²¹ See information under Amended Silicates <http://www.adatech.com/default.asp>.

EPA's January 30, 2004 proposed rulemaking erroneously found that ACI for mercury control at EGUs is "not available on a commercial basis." See 69 Fed.Reg. 4676. As the mercury expert in Environmental Defense's appeal of the Roundup power plant MACT permit, Dr. Praveen Amar (who served on EPA's utility MACT workgroup), explained before the Montana Board of Environmental Review, ACI has been used successfully for the past 7-8 years on municipal waste combustors. Transferring the technology to EGUs is quite straightforward and in fact has been done in several government-funded full-scale tests on EGUs including the recently completed year-long test at the Gaston power plant.

Vendors such as ADA-ES have indicated that ACI is available now for use in EGUs. (See, e.g., www.adaes.com). Further, the state of Iowa has required use of ACI (or other sorbents) at the new Unit 4 of MidAmerican Energies' Council Bluffs power plant in a MACT approval for that unit, and construction has commenced on that unit with no appeal of the MACT Approval brought by MidAmerican Energies or any other party. In other words, the company has agreed to the mandate by the state of Iowa. In fact, the company itself proposed to use ACI. Other power plants have proposed to use ACI as well including Xcel Energy which has proposed use of ACI at its new 750 megawatt unit at the Comanche power plant in Pueblo, Colorado.

In the new source review context, EPA has long enunciated its interpretation of available technology. EPA's interpretation of language under virtually identical provisions of the Clean Air Act, such as section 169(3), directly bears on EPA's interpretation here. In the October 1990 New Source Review Workshop Manual, EPA describes when a technology is considered available. Specifically, the Manual states "a technology is considered 'available' if it can be obtained by the applicant through commercial channels or is otherwise available within the common sense meaning of the term." (Page B.17). EPA further explained the concept of "availability" by describing the process commonly used for bringing a control technology from concept to commercial product as follows:

- concept stage;
- research and patenting
- bench scale or laboratory testing
- pilot scale testing
- licensing and commercial demonstration; and
- commercial sales.

See pages B.17 - B.18 of the Manual.

Because ACI has been used for years on municipal waste combustors, it has been tested extensively on coal-fired EGUs in several full-scale as well as pilot scale tests, and because it is required to be installed at the currently being constructed Council Bluffs power plant under a federally enforceable permit, ACI technology has clearly reached the commercial availability stage for EGUs. Thus, for EPA to assert this technology is not commercially available is manifestly unreasonable and contrary to law.

There are also several other mercury control technologies that could be employed at coal-fired power plants as detailed in EPA's October 2003 "Performance and Cost of Mercury and Multipollutant Emission Control Technology Applications on Electric Utility Boilers." For example, K-fuel is coal that is treated by a pre-combustion process that improves the quality of the coal, increasing the heat content of the coal, and removing some of the sulfur and NO_x precursors as well as mercury. The first K-fuel production plant is being built at the Black Thunder Mine in Wright, Wyoming and construction is to be completed in the latter half of this year. Information on K-fuels can be found on the company's website at <http://www.kfx.com/>. The company claims the processed K-fuels can result in up to 70% reduction in mercury emissions, as well as 30% lower emissions of SO₂ and NO_x. EPA's proposed rulemaking did not even mention K-fuel.

EPA also ignored other available mercury control technologies in its proposed rulemaking that are discussed in its October 2003 mercury control guidance document. These technologies include electro catalytic oxidation (ECO) technology and advanced dry flue gas desulfurization.

In summary, EPA's proposed MACT standards fail to comply with the law because the proposed emission limitations do not, at the minimum, reflect the MACT floor for existing sources and because the proposed limits do not reflect the maximum degree of reduction of mercury that can be achieved.

4.2. *Proposed Mact for New Power Plants Are Less Stringent Than the Level Of Control Achieved At the Best Controlled Similar Source*

EPA has also failed to meet the basic requirements of the CAA in its proposed MACT standards for new EGUs. Specifically, for new sources of hazardous air pollutants, EPA is bound by the CAA to ensure that "the maximum degree of reduction in emissions that is deemed achievable for new sources in a category or subcategory shall not be less stringent than the emission control achieved in practice by the best controlled similar source." CAA § 112(d)(3).

Until EPA promulgates a MACT rule for EGUs or rescinds its finding to regulate EGUs under section 112, states are required to perform case-by-case MACT determinations for new EGUs. Under regulations promulgated by EPA at 40 C.F.R. Part 63, Subpart B, states are bound to the same requirement in section 112(d)(3) – that the emission limitation imposed be no less stringent than the emissions control achieved in practice by the best controlled similar source.

EPA's January 30, 2004 proposed rulemaking fundamentally failed to adequately demonstrate that the MACT emission limits proposed for mercury are at least as stringent as the level achieved in practice by the best controlled similar source – meaning the best controlled coal-fired EGU.

The rigorous emissions standards required by law for new sources reflects Congress's recognition that new sources have the ability to easily and most cost-effectively meet rigorous emission limitations. In the case of mercury, for example, new EGUs are well-positioned to install an activated carbon injection system in the design of the plant (i.e., without having to retrofit). Such sources will be using state-of-the-art criteria pollutant controls as well which will further improve the ability to achieve high levels of mercury control regardless of the rank of coal burned. All new coal-fired EGUs will be required to install fabric filter baghouses, which are the most effective available measure in removing particulate mercury including the carbon-bound mercury particles created through activated carbon injection. Further, all new coal-fired EGUs will be required to install selective catalytic reduction (SCR) for removal of NO_x which has also been shown to help oxidize mercury, allowing it to be more readily captured in downstream sulfur dioxide controls (which will also be required of any new EGU) as well as in the baghouse. Thus, EPA's emission limits for new EGUs must meet the rigorous legal standards under section 112.

As discussed above, mercury control technologies and methods are available now and EPA should have considered those technologies in its proposed MACT standards for new units. Extensive full-scale testing of activated carbon and other sorbent injection systems have shown that high levels of mercury control can be achieved at coal-fired power plants on a cost-effective basis regardless of rank of coal burned. Contrary to EPA's claims, such technology is available now and is being required at a coal-fired power plant currently under construction. Further, other mercury control technologies are available, such as K-fuels. Yet, EPA failed to meaningfully consider all available control technologies and likewise failed to set its proposed mercury emission limit based on the maximum degree of reduction in mercury emissions that can be achieved.

Even if it is appropriate to subcategorize MACT emission limitations for EGUs based on coal rank (which, as discussed, we vigorously believe is unreasonable and contrary to law), EPA's proposed emission limits do not reflect the level of control being achieved at the best controlled similar source because EPA applied a confusing and unreasonable "variability" analysis to the levels of control achieved at the best controlled sources, which resulted in limits that were much greater than what these sources actually emitted. For example, although the best controlled subbituminous coal-fired EGU, Unit 2 at Clay Boswell, achieved a controlled mercury emission rate of 0.66 lb/TBtu, this emission rate (which ultimately formed the basis for EPA's proposed MACT limit for new subbituminous EGUs) was increased 3 times to 1.99 lb/TBtu after EPA applied its "variability analysis." Thus, the new source MACT emission limit for subbituminous coal-fired EGUs proposed by EPA is not at least as stringent as the level of control achieved at the best controlled similar source. The same is true for all other new EGU MACT limits proposed by EPA.

While EPA may assert that its variability analyses are necessary to reflect the worst foreseeable circumstances, EPA's 12-month averaging time for its proposed mercury MACT emission limits will provide more than enough buffer to address the worst foreseeable circumstances.

Thus, for the reasons discussed above, EPA's proposed MACT standards do not even meet basic statutory requirements for new EGUs under section 112 of the CAA.

4.3. *The MACT Standards Should Be Consistent Across the Nation*

Western electric utility interests have recommended, and EPA has proposed, a separate MACT standard for mercury based on the attributes of western coal. The argument is based on the misplaced contention that mercury emissions are not a significant environmental problem in the West and that available mercury control technologies, when applied to power plants burning western subbituminous coal, are costly and ineffective. However, EPA's proposed disparate mercury emission standards based on rank of coal burned are unjustified when technology is available that would enable all coal-fired power plants, regardless of the type of coal burned, to meet high levels of mercury control.

Under EPA's January 30, 2004 proposal, existing coal-fired electric utility units using subbituminous coal would be held to an emission limit of 5.8 pounds per trillion British thermal unit (lb/TBtu) (61×10^{-6} pounds per Megawatt hour (lb/MWh)) mercury compared to a 2.0 lb/TBtu (21×10^{-6} lb/MWh) mercury emission limit for bituminous-fired units. Furthermore, emission limits for new coal-fired electric utility units would be 20×10^{-6} lb/MWh (equivalent to roughly 2.0 lb/TBtu) for subbituminous-fired units compared to 6.0×10^{-6} lb/MWh (equivalent to roughly 0.61 lb/TBtu) for bituminous-fired units. Thus, EPA's proposed MACT standards would allow existing plants burning subbituminous coal to emit almost three times as much mercury as plants burning bituminous coal, and new plants burning subbituminous coal could emit more than three times as much mercury as a new bituminous-fired coal power plant.

The primary rationale that EPA has offered for subcategorizing coal-fired power plant MACT standards based on coal type is based on its misguided claim that boilers are specifically designed for a specific rank of fuel.²² Yet, as discussed below, many electrical generating facilities burn more than one rank of coal in the same boiler. Further, even if it is true that a boiler is designed only for a certain rank of coal, EPA failed to provide any technical rationale of why coal rank should define the allowable mercury emissions that a power plant can emit. Although EPA stated that "the Hg emissions from some ranks of coal are easier to control than those from other ranks,"²³ EPA provided no data in its proposed MACT rulemaking to indicate that the mercury emissions from plants burning subbituminous coal cannot be controlled to the same extent that such emissions can be controlled from plants burning bituminous coal.

Environmental Defense and Western Resource Advocates have produced a white paper entitled, *Mercury Air Pollution: The Case for Rigorous MACT Standards for Subbituminous Coal*, which indicates that there is no technical justification for a separate

²² 69 Fed.Reg. 4665.

²³ 69 Fed.Reg. 4666.

subcategory of mercury MACT standards for plants burning subbituminous coal. A copy of this paper is attached and incorporated herein. Specifically, this paper finds that:

- Full-scale and pilot-scale studies demonstrate that 90% mercury reduction is achievable at effectively the same costs irrespective of whether a plant burns bituminous or subbituminous coal, using activated carbon injection, and an ESP and “COHPAC” baghouse for particulate collection. Indeed, 45% of western power plants are equipped with ESPs and could be retrofitted with these compact polishing baghouses.²⁴
- Today’s mercury emission reduction performance shows that an average of 72-75% mercury control is achievable before any injection of activated carbon or other sorbents at western facilities burning subbituminous coal that are equipped with fabric filters. 42% of western power plants are equipped with fabric filters, and sorbent injection to enhance mercury removal could be implemented at these facilities.
- Subcategorizing the mercury MACT standard based on coal type would not just affect the West but would have far-reaching impacts because there are many power plants across the country burning western subbituminous coal. In fact, power plants could get locked into burning one type of coal in order secure the financial benefits of burning a dirtier fuel.
- Many power plants across the country burn both bituminous and subbituminous coal and the amounts of each coal type utilized can vary greatly month-to-month and year-to-year. This will make it difficult if not insurmountable to design and implement a subcategorized mercury MACT standard that is in fact enforceable.
- The West, as with the East, has significant mercury deposition and associated environmental problems. In fact, total mercury concentrations in New Mexico far exceed total mercury concentrations measured anywhere in the East (see Figure 1), and total mercury wet deposition in other parts of the West is similar to levels observed in parts of the Midwest and Northeast (see Figure 2). Likewise, fish consumption advisories due to mercury are not confined to the East and have widespread impacts on western water bodies (see Table 1).

Since this paper was issued in May 2003, there has been a full-scale test of activated carbon injection for mercury control at Great River Energy’s Stanton Generating Station.²⁵ While this power plant burns North Dakota lignite coal, the characteristics of the coal that affect mercury speciation and, ultimately, mercury capture, (such as chlorine

²⁴ U.S. EPA, 2002. Control of mercury emissions from coal-fired electric utility boilers: interim report including errata dated 3-21-02. EPA 600/R-01-109. April. Ps. 6-19 and EPA Information Collection Request data (as reported in Middleton 2002).

²⁵ Sjostrom, Sharon, et al., *Full-Scale Evaluation of Mercury Control at Great River Energy’s Stanton Generating Station Using Injected Sorbents and a Spray Dryer/Baghouse*, to be presented at the 2002 Air Quality III Conference.

content) are similar to many subbituminous coals. In fact, as discussed further below, the Iowa Department of Natural Resources determined that the North Dakota lignite coal was similar enough to Powder River Basin subbituminous coal that the Department based its mercury MACT emission limitation for a new subbituminous coal-fired power plant on the results of this Stanton study. The Stanton study found, on average, 81% mercury removal could be obtained with the use of activated carbon and a spray dryer/baghouse combination. With the use of iodine-impregnated activated carbon, an impressive 97% mercury removal efficiency was measured. This test provides further evidence that high levels of mercury control can be achieved with currently available control technology, no matter what rank of coal is being burned – even lignite.

In June of 2003, the Iowa Department of Natural Resources (IDNR) issued a notice of MACT approval for the construction of Unit 4 at MidAmerican Energies' Council Bluffs power plant. The new unit is to be a coal-fired electric utility steam generating unit burning subbituminous coal from the Powder River Basin of Wyoming. The IDNR required that MidAmerican Energies meet an emission limit reflective of an 83% reduction in mercury emissions, to be achieved by the use of activated carbon or other sorbent injection. The IDNR determined that activated carbon injection was commercially available. Further, the IDNR relied on the Stanton study discussed above to determine that sorbent injection technology would work on the Powder River Basin subbituminous coal to be burned at the Council Bluffs plant to remove mercury by at least 83%, since the IDNR found that the North Dakota lignite coal and Powder River Basin subbituminous coals had similar characteristics. The IDNR also stated that MidAmerican did not present any information to eliminate the use of sorbent injection to meet at least an 83% reduction in mercury based on costs or based on other non-air quality health or environmental or energy impacts. Indeed, the company did not appeal the Notice of MACT Approval and has, in fact, recently broken ground and commenced on-site construction. The IDNR's actions and the company's acceptance of the MACT Approval provide a relevant example that high levels of mercury control can be achieved regardless of the rank of coal to be burned. Thus EPA's proposal to allow a different mercury emission standard for subbituminous coal power plants is not warranted.

Further, as discussed in greater detail in the attached ED/WRA White Paper, many coal-fired power plants do not simply burn one rank of coal. In fact, a review of data submitted to the Federal Energy Regulatory Commission (FERC) shows that the fraction of subbituminous coal to other ranks of coal burned can vary greatly month-to-month as well as year-by-year. In reviewing the coal data submitted with its Information Collection Request, EPA found that almost one-quarter of the coal-fired power plants blended different ranks of coal.²⁶ To deal with this issue, EPA has proposed an equation to calculate a hybrid mercury emission limit based on the electricity output due to each rank of coal burned at a facility. The hybrid emission limit would fall somewhere between the EPA's proposed bituminous coal power plant emission limit and its lignite power plant emission limit. However, EPA has not provided any technical rationale to indicate that such facilities that burn blends of different coals cannot meet lower mercury emission limitations. Current scientific literature suggests that it is not the coal rank that

²⁶ 69 Fed.Reg. 4665.

affects mercury control, but other factors such as chlorine content that help to oxidize mercury so it can be more readily captured in SO₂ and particulate matter control equipment. Yet, EPA's equation simply assumes that facilities that blend coal ranks cannot meet EPA's more stringent mercury emission limit associated with the higher rank coal, without providing any data to support such a finding.

In addition to the problems associated with facilities that burn more than one rank of coal, there are some coals that cannot be classified under the ASTM standard. A perfect example of this is the proposed Roundup Power Plant in eastern Montana, which is planned to be a mine-mouth facility obtaining its coal from the nearby Bull Mountain Basin. A review of almost 300 coal sample analyses from various points across the Bull Mountain Basin found that the majority of the samples could not be classified under the ASTM standard as either bituminous or subbituminous coal, as the samples fell into the gray area of "high volatile C bituminous/subbituminous A" coal.²⁷ Yet, EPA's proposal fails to address how its subcategorized MACT standards would apply to such a facility.

In summary, the EPA has failed to provide any technical rationale for allowing power plants that burn subbituminous or lower ranked coals to be allowed to emit three or more times as much mercury as power plants firing bituminous coal. This approach unfairly subjects those who live near power plants burning lower rank coal too much higher levels of mercury emissions. EPA also must recognize the implementation issues associated with such subcategorization based on coal rank for facilities that burn blends of coal or for which the coal cannot be properly classified. Technology is currently available that can achieve high levels of mercury control on a cost-effective basis regardless of the rank of coal to be burned. Thus EPA's approach is unjustified and lacking in any reasoned basis.

Environmental Defense therefore recommends that EPA's final MACT standards for mercury achieve substantial reductions in mercury emissions at all coal-fired electric utility power plants irrespective of the rank of coal.

²⁷ Bull Mountain Mine Coal Analyses, Classification of Coals by Rank ASTM Standard D388e1, performed by James R. Kuipers, P.E., April 2, 2004, Exhibit 41 In The Matter of the Maximum Achievable Control Technology Approval for the Air Quality Permit for the Roundup Power Project (Permit No. 3182-00) before the Montana Board of Environmental Review, Case No. 2003-17 AQ.

5. Mercury Trading

5.1. *Scientific and Policy Concerns*

Although cap-and-trade systems are often an excellent policy tool for securing pollution reductions in a cost-effective manner, a cap-and-trade program for mercury patently violates the Clean Air Act (see section 4.2 below), is contrary to good public policy and is not sufficiently protective of public health.

The proposed cap-and-trade program for mercury differs from other cap-and-trade programs in a number of significant ways and as a result is not protective of public health. First, cap-and-trade programs for other pollutants have additional safeguards in place to protect the public health, such as NAAQS for criteria pollutants and control technology limits under New Source Review and New Source Performance Standards. Even if a hot spot were to occur due to an acid rain or NO_x SIP Call cap and trade system, the NAAQS provide a backstop to protect public health and secure additional needed reductions. There are no similar protections for mercury emissions. Second, there are significant differences in the characteristics of mercury as compared to the pollutants involved in past programs. Mercury, one of the most poisonous forms of pollution, is an air toxin with acute health effects, which raises different concerns compared to trading pollutants that only produce chronic effects. Additionally, mercury biomagnifies and bioaccumulates in fish. In other words, it becomes more concentrated as it moves up the food chain to humans and other animals that consume fish. Also, mercury does not break down and disperse like criteria pollutants, but rather persists in ecosystems causing long-term problems.

In addition, a significant amount of mercury pollution deposits close to the power plant source, creating pollution hot spots, which put local populations at risk of exposure. With a trading approach, it is quite conceivable that some power plants upwind from bodies of water with contaminated fish may never install controls to reduce mercury pollution, purchase allowances that allow increased utilization and higher mercury emissions, or make only meager pollution cuts. Thus, the local communities surrounding these sources and especially those dependent on locally caught fish as a part of their diet may not benefit from any reduction in mercury emissions and could conceivably experience increased emissions. Indeed, a 2003 study highlighted that 10% of participants in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) in New York City still ate locally caught fish and shellfish from polluted waters.²⁸ This raises issues of environmental justice in addition to the risks to the public health. Plant-by-plant reductions, as compared to a cap-and-trade program, ensure that no communities are left unprotected. EPA's answer to this issue is to re-evaluate the effects of the cap-and-trade program on local hot spots after the program's implementation in 2018.²⁹ This would leave local communities at risk from mercury emissions for another fourteen years or longer, an unacceptable outcome and contrary to

²⁸ Bienenfeld LA, Golden AL, Garland EJ. *J Urban Health*. 2003 Jun; 80(2):349-58.

²⁹ 69 Fed. Reg. 4686-4687.

Congress's intent in listing mercury as a hazardous air pollutant under section 112 of the Clean Air Act.

Also, Environmental Defense has begun to look at how stack height and trading can impact local deposition and mercury hot spots. Our initial analysis shows that the 33% largest mercury emitting power plants have stacks heights (on average 150 meters tall) about twice as tall as the 33% lowest emitting power plants (on average less than 70 meters tall). However, short smokestacks can contribute to more local deposition. Based on engineering estimates we know that maximum deposition concentrations downwind from a plant is about inversely proportional to the square of the stack height.³⁰ To the extent that trades shift emissions from larger to smaller facilities, for each pound of mercury traded from an average large emitter to an average small emitter, the maximum local deposition is an estimated 4 times greater -- that is twice the stack height squared equals 4. This adds additional health concern about an unrestricted mercury trading program.

5.2. Proposed Trading Program Violates the Clean Air Act

Mercury has long been pointedly listed by Congress as a hazardous air pollutant under section 112 of the Clean Air Act. In December 2000, EPA found that the regulation of hazardous air pollutant (HAP) emissions from coal-fired and oil-fired Utility Units was appropriate and necessary and accordingly added Utility Units to the list of source categories under CAA §112(c).³¹ Since 1990 the air toxics program has focused on reducing emissions of toxic air pollutants from source categories through the implementation of technology-based emissions standards as required in section 112(d). The MACT standard regulates HAPs at source categories using a source-by-source approach to limit emissions. Under this regulatory process, EPA is required to promulgate a MACT standard for mercury emissions under CAA §112(d) for Utility Units. Most importantly, the EPA has no authority under the CAA to implement a cap-and-trade program to regulate these emissions.

5.2.1. EPA has no authority under Section 112 to implement a cap-and-trade program

EPA did propose a MACT standard for Utility Units in its January 30, 2004 Proposed Rule, however, EPA "believes it has the authority to leave the December 2000 'appropriate and necessary' finding in place . . . [and] promulgate, under section 112(n)(1)(A), a cap-and-trade program" for mercury.³²

EPA's interpretation of CAA §112 as allowing a cap and trade program for utility units, instead of a MACT standard, is contrary to the plain statutory text and legislative history of the Act. EPA argues that Congress intended to regulate HAP emissions from Utility

³⁰ Cooper, C. David, and Alley, F.C., Air Pollution Control Approach: A Design Approach, Waveland Press, 1994, p. 625.

³¹ 65 Fed. Reg. 79825, 79830, 30 December 2000.

³² 69 Fed. Reg. at 4661.

Units in alternative ways from CAA §112(d) because §112(n) required “EPA to develop alternative control strategies for HAP emissions.”³³ EPA interprets the language of CAA §112(n) as saying that Congress intended EPA to use alternative controls, such as a cap-and-trade programs, for HAP emissions from Utility Units.

EPA’s reliance on CAA §112(n)’s charge for “alternative control strategies” ignores the context of this phrase in the paragraph and its natural meaning. Section 112(n)(1)(A) states as follows:

The Administrator shall perform a study of the hazards to public health reasonably anticipated to occur as a result of emissions by electric utility steam generating units of pollutants listed under subsection (b) The Administrator shall develop and describe in the Administrator's report to Congress *alternative control strategies for emissions which may warrant regulation under this section* [emphasis added].³⁴

Under this paragraph, the Administrator must study the public health hazards of all HAPs listed under CAA §112(b) emitted from Utility Units. In this same report, the Administrator must develop and describe control strategies for these different hazardous emissions to remedy the risk to the public health. A plain language interpretation of “alternative control strategies” would reveal that it refers to examining the suite of available technologies for controlling emissions that may warrant regulation under section 112. This was precisely EPA’s interpretation of this text back in 2000.³⁵ The language does not intimate that EPA has broad discretion to use any control strategy to regulate HAPs at Utility Units and does not operate as a far-reaching exemption to the plain language and structure of section 112, as EPA’s interpretation under the proposed mercury rule requires. Rather, Congress intended for EPA to develop and describe various control strategies under the traditional processes of CAA §112 for several alternative HAPs, including mercury, to reduce the public health hazards of emissions from Utility Units. If Congress intended for EPA to break with the traditional rigors employed to protect the public from HAPs under CAA §112(d), it would have stated so. In fact, the passage is plainly keyed to examining control strategies for emissions that may merit regulation under the terms of section 112. It is, therefore, not at all an exemption to the basic requirements of section 112 but expressly applies to the regulation of any emissions warranting regulation under section 112.

Furthermore, Congress pointedly included mercury emissions as an air toxin under CAA §112(b) with the intent that mercury emissions would be regulated under the rigorous MACT standard in compliance with CAA §112(d) in order to sufficiently protect the public health.³⁶ Congress was aware of the severe health threats each of these HAP emissions posed to the public when it established the initial CAA §112(b) list. EPA purports to justify abandoning a MACT approach by asserting that “a MACT approach

³³ 69 Fed. Reg. at 4661.

³⁴ 42 U.S.C. §7412(n)(1)(A).

³⁵ 65 Fed. Reg. at 79828.

³⁶ 42 U.S.C. §7412(b)(1).

will not stimulate innovation in Hg control technology” like cap-and-trade programs, and could even “inhibit” innovation,³⁷ the agency offers no evidence that MACT standards inhibit control technology innovation. In fact, a strict technology standard will only force the adoption of control technologies, it provide power companies and control technology vendors significant incentive to innovate and find the most cost-effective control to meet the standard. Ultimately, however, whether the standard inhibits innovation is for Congress to decide, not EPA. Simply put, EPA may not blithely cast aside Congress’s carefully crafted protections under the HAPs program and MACT requirements based on its own policy preferences or whims.

Finally, the legislative history of the Act supports a finding that CAA §112(n) does not provide EPA authority to develop a cap-and-trade program to control mercury emissions from Utility Units. Rather the intent of the provision was to develop a standard for HAP emissions from Utility Units using the deliberately designed requirements under CAA §112(d). The following statement from Senator Heflin during the Senate debate on S.1630 supports this conclusion:

Based on [required Utility Unit studies under CAA §112(n)], EPA will be able to determine if there is a need to set a human health based standard for mercury emissions under section 112(d)(4). On that point, I would like to submit for the Record a letter from Senator Durenberger, the author of much of this provision in the air toxics title which deals specifically with mercury emissions from powerplants. This letter specifically outlines the *importance of subsection (d)(4) with respect to mercury emissions from this source* [emphasis added].³⁸

Both Senators intended for EPA to regulate mercury emissions from Utility Units under CAA §112(d). There is no discussion of using an allowances trading program to regulate these emissions in the legislative history of the Act, and given that such a strategy would be a fierce and radical break from CAA §112’s regulatory scheme, Congress would have explicitly given EPA this authority. Indeed, the 1990 Clean Air Act amendments, by marked contrast, DID include a congressional prescribed emissions allowance trading program: for SO₂ to abate acid rain. This program was extensively debated and designed with extraordinary care. It spans numerous pages of the federal code. To read an emissions allowance trading program into a few passing terms in section 112, when contrasted with the vast provisions of Title IV that the same Congress dedicated to this subject is ludicrous. Under a plain language reading of CAA §112, and supported by legislative history and as contrasted with the trading program erected under Title IV, Congress intended HAP emissions from Utility Units to be regulated under the traditional MACT standard, if found to be appropriate and necessary.

³⁷ 69 Fed. Reg. at 4688.

³⁸ 1990 CAA Leg. Hist. 7140.

5.2.2. EPA’s determination of “appropriate and necessary” under CAA §112(n) does not allow for regulation of mercury emissions at Utility Units under CAA §111.

In the alternative to promulgating a cap-and-trade program for mercury emissions under CAA §112, EPA discovers new authority under section 111 of the CAA to promulgate this program. EPA proposes that its December 2000 finding of “appropriate and necessary” to regulate coal-fired and oil-fired Utility Units under CAA §112 was wrong. Specifically, EPA states that CAA §112(n)’s finding of “necessary” requires EPA to only regulate Utility Units under CAA §112 for HAPs if all other possible authorities, once implemented, could not adequately address such HAPs.³⁹ EPA concluded that because HAP emissions could be regulated under CAA §111(b), (d), for new and existing sources respectively, a finding of “necessary” for regulation under CAA §112 was not needed. Under this interpretation, EPA could promulgate its cap-and-trade program for mercury emissions under the authority of CAA §111. This interpretation flies in the face with any natural reading of section 112.

The last sentence of section 112(n)(1)(A) states “The Administrator shall regulate electric utility steam generating units *under this section*, if the Administrator finds such regulation is *appropriate and necessary after considering the results of the study* required by this subparagraph [emphasis added].”⁴⁰ (The study referred to in this section was a “study of the hazards to public health reasonably anticipated to occur as a result of emissions by electric utility steam generating units of pollutants listed under subsection (b) after imposition of the requirements of this Act.” *Id.* EPA has focused in on the phrase “after imposition of the requirements of this Act” to interpret a finding of “necessary” to allow EPA to scour the CAA to determine if HAPs could possibly be regulated outside of the rigors of section 112. This was not the intent of Congress. The unambiguous natural reading of the passage in question is to require a consideration of EPA has erroneously seized upon is to require a consideration of whether it is necessary and appropriate to regulate mercury to protect public health *not* whether some plausible passage elsewhere in the statute could be found to regulate mercury. EPA’s bizarre interpretation is well beyond the bounds of credulity.

When enacting CAA §112(n) in 1990, Congress was aware of the numerous regulations that Utility Units would have to comply with. Congress intended section 112(n) to determine whether after the imposition of these other regulations, which may reduce HAPs at Utility Units, the remaining HAP emissions would be hazardous to public health and therefore need to be regulated “under this section [112].” This is supported by legislative history as expressed by Congressman Oxley, member of the conference committee:

As we all know, the utility industry has been singled out for regulation under the acid rain provisions. The utility industry may also face additional controls for NO[x] emissions for ozone control, and revised

³⁹ 69 Fed. Reg. 4683-4684.

⁴⁰ 42 U.S.C. §7412(n)(1)(A).

PM-10 controls. All of these programs will result in substantial reductions in emissions of conventional and potentially hazardous air pollutants. . .

Under the existing section 112 of the Clean Air Act, EPA has addressed the question *whether additional regulation of powerplants is necessary* to control air toxic emissions to protect the public health [emphasis added].⁴¹

So the threshold finding under section 112(n) is whether “additional regulations” for HAP emissions are necessary to protect public health after regulations for acid rain, ozone and PM-10 (non-HAP regulations) are implemented. The “appropriate and necessary” language in this section was intended to be a public health threshold finding – not an investigation into whether any other provision of CAA might apply to regulate HAPs. The question of “necessary” is a determination of whether the remaining HAP emissions at Utility Units, after all other non-HAP regulations are implemented, pose a hazard to the public health and require additional regulation. This finding of “appropriate and necessary” was made in December 2000 and the last sentence in CAA §112(n)(1)(A) makes clear that the “additional” regulations would be promulgated under CAA §112. Congress unambiguously intended additional regulations of Utility Units for HAPs to be promulgated under the public health-protective rigors of CAA §112.

In addition, EPA’s proposed regulation of a CAA §112(b) listed HAP under CAA §111 constitutes a de facto delisting of mercury subject to substantive and procedural requirements under §112.⁴² Congress plainly intended all listed HAPs to be regulated under §112:

This new approach [§112] towards regulation of both routine releases of hazardous air pollutants relies on technology-based standards rather than risk-based standards. . . .

Specifically, the bill lists 189 toxic pollutants and allows EPA to add or delete pollutants from the list.

Any major source emitting more than 10 tons per year of any one pollutant on the list or 25 tons of any combination, must reduce its emissions using maximum achievable control technology -- MACT.⁴³

Accordingly, Congress intended all listed HAPs to be subject to the regulatory scheme of §112. Under this scheme, EPA is authorized to change the listing status of a HAP *only* in accordance with the specific criteria and procedures of §112(b)(3). EPA’s Proposed Rule, however, regulates a HAP outside of CAA §112 without meeting these requirements, which directly contravenes the delisting protections outlined in the CAA.

⁴¹ 1990 CAA Leg. Hist. 1416 (discussion of Conference Report for CAA Amendments of 1990).

⁴² 42 U.S.C. §7412(b)(3).

⁴³ Senate Debate on Clean Air Conference Report, 1990 CAA Leg. Hist. 1028.

In conclusion, EPA has no authority under either CAA §112(n) or §111 to implement a cap-and-trade program to address the serious threat of mercury emissions from Utility Units. Instead EPA is required to implement a MACT standard for mercury emissions at Utility Units and to meet the rigorous pollution control levels required by the MACT program.

6. Recommendation on Mercury

Environmental Defense recommends a single MACT standard to reduce emissions by 90% in 2007. Environmental Defense strongly recommends that EPA eliminate its proposed cap-and-trade program and implement a single MACT standard to reduce mercury emissions at power plants. EPA itself has found that an activated carbon injector with an electrostatic precipitator and a retrofit fabric filter, or a fabric filter alone, have the potential to achieve 90% reduction in mercury emissions.⁴⁴ Such a standard would be consistent with similar requirements for municipal and medical waste combustors, which have successfully reduced mercury pollution from these sources by 90%. In addition, EPA should expedite its mercury reductions and return to the originally envisioned proposal of requiring compliance with a MACT standard by 2007. This proposal is both feasible and in the best interest of public health.

7. Nickel Controls from Oil-Fired Units

As documented in EPA's February 8, 2002 draft memo, Nickel compounds are carcinogenic.⁴⁵ This memo documents at length the latest scientific and toxicological understanding of nickel compounds. According to the memo, the NIEHS National Toxicology Program found in 1998 sufficient evidence to rate nickel and seven nickel compounds as reasonably anticipated to be human carcinogens. These compounds include: nickel acetate, nickel carbonate, nickel carbonyl, nickel hydroxide, nickelocene, nickel oxide, and nickel subsulfide. In its 9th Report on Carcinogens (RoC), NIEHS expressed the risk as "reasonably anticipated to be human carcinogens based on sufficient evidence of carcinogenicity" for the compounds listed above. The NIEHS considers this review of nickel and nickel compounds complete. For the 10th RoC, the NIEHS will review metallic nickel and nickel alloys.

According to EPA data⁴⁶ there are emissions data for 12 oil-fired units. Emissions data are presented for 15 heavy metals, but no other HAPS. 3 of these units have ESPs and 1 has a Jet Pulse Fabric Filter. This data is summarized in the table below. Note that three

⁴⁴ EPA, Office of Research and Development, *Control of Mercury Emissions from Coal-Fired Electric Utility Boilers*, memorandum February 2004, 13 and EPA December 4, 2001 presentation at Edison Electric.

⁴⁵ Memo from Jeffrey Cole at RTI, to Bill Maxwell at EPA, Summary and Evaluation of the Recent Studies on Speciated Nickel Emissions from Oil-fired Electric Utilities and the Potential Health Risks of Those Emissions, February 8, 2002.

⁴⁶ Trace Metal HAPS from Oil-fired Units, EPA excel document, <http://www.epa.gov/ttn/atw/combust/utiltox/utoxpg.html>, December 2001

of the data points are taken from the same facility (site 13) with different control devices. Also, note that the worst performing unit on the list has an ESP, but it did not appear to be working during the test period.

Nickel Emissions – Outlet Data (lbs/trillion BTU) in order of performance	Controls
1.60	Site 13 w/Jet Pulse Fabric Filter
50.50	ESP
238.00	Uncontrolled
306.01	ESP
347.70	Uncontrolled
362.52	Uncontrolled
383.18	Uncontrolled
407.53	Uncontrolled
526.05	Uncontrolled
800.62	Uncontrolled
1353.88	Site 13 w/NO _x controls
1399.37	Uncontrolled
1827.15	Site 13 uncontrolled
2167.47	ESP (with only 3.7% capture rate)

Based on Section 112 (d) (3) (a), the top 12% of the data set would result in the standard being established from the average of the top 2 facilities. On this basis, the MACT standard would result be 26.05 lb/TBtu or its output-based equivalent that is preferable. Industry has argued that the best performing of these data points is from a pilot test. Environmental Defense believes that this jet pulse fabric filter data point should be used as it demonstrates what can be achieved with available technology. Even if EPA were to exclude the fabric filter pilot data point, the standard would be 144 lb/TBtu or its output-based equivalent.

Based on the above calculations, EPA’s proposed standard of 210 lbs/TBtu or its 0.002 lb/MWh should be strengthened. Environmental Defense strongly supports an output-based standard to reward efficiency and we commend EPA for pursuing this approach. In addition, the standard for new facilities should be considerably more stringent than for existing facilities.

8. Control of Other Hazardous Air Pollutants From Power Plants

EPA's January 30, 2004 proposal only briefly addresses other hazardous air pollutants (HAPs) from power plants and inappropriately discounts the setting of MACT standards for any non-Hg and non-Ni metallic HAP. In this proposal, EPA based its conclusions to not address any of these HAPs on its 1998 *Study of Hazardous Air Pollutant Emissions from Electric Utility Steam Generating Units - Final Report to Congress* (Utility RTC). However, this Report to Congress does raise important health concerns about other toxic air pollutants. In addition to mercury and nickel, the report identifies that, "...there are potential concerns and uncertainties that may need further study..."⁴⁷ The other pollutants referred to here are arsenic and dioxins.

Concerning arsenic, citing the Executive Summary for this 1998 report, EPA stated that there were, "...several uncertainties associated with both the cancer risk estimates from arsenic and the health effects data for arsenic, and that further analyses were needed to characterize the risks posed by arsenic emissions from Utility Units."⁴⁸ Indeed, the Report to Congress outlined the severe cancer risk associated with this HAP. The report explains,

Inhalation exposure to inorganic arsenic has been strongly associated with lung cancer in humans. Human exposure to inorganic arsenic, via ingestion, has been associated with an increased risk of several types of cancer, including skin, bladder, liver, and lung cancers. Oral exposure to inorganic arsenic has also been associated with noncancer effects, including effects to the central nervous system, cardiovascular system, liver, kidney, and blood.⁴⁹

Despite the compelling health risk information in the Utility RTC and the stated need to further determine the risks of arsenic emissions from the electric utility industry, it is not clear that EPA has taken any further action in the last six years since this report. EPA has not explained in the January 30, 2004 proposal how it plans to address arsenic emissions from the electric power industry and whether it plans to promulgate MACT standards for this HAP as well.

In addition to EPA's lack of clarity regarding arsenic, the January 30, 2004 proposal also addresses dioxins. In this proposal, EPA quotes the Utility RTC regarding dioxins. The proposal states, "EPA concluded that the quantitative exposure and risk results for such HAP 'd(id) not conclusively demonstrate the existence of health risks of concern associated with exposures to utility emissions either on a national scale or from any actual individual utility.'"⁵⁰ However, the language before and after this quotation that

⁴⁷ Utility RTC, Fact Sheet, 3.

⁴⁸ 69 FR 4656.

⁴⁹ Utility RTC, Executive Summary 11-5.

⁵⁰ 69 FR 4656.

EPA failed to include in its Federal Register action, presents this information in a much different light. The excerpt in its entirety states:

This analysis of noninhalation exposures to dioxin emissions is a screening analysis. Thus, these quantitative exposure and risk results, because of the many modeling and analytic uncertainties, are very uncertain and do not conclusively demonstrate the existence of health risks of concern associated with exposures to utility emissions either on a national scale or from any actual individual utility. The lack of measured data around these sources precludes a comparison with modeled results. These results do suggest that exposures and risks of concern cannot at present be ruled out and that there is a need for development of additional scientific information to evaluate whether risk levels of concern may exist.⁵¹

As explained above, the outcome of the analysis in the Utility RTC for dioxins was to conclude that the emissions of these HAPs from the electric utility sector were of potential concern and needed to be studied further. Again, it is not clear whether EPA has done any further analysis in the six years since this report and the January 30, 2004 proposal does not explain why EPA is not taking action on proposing a MACT standard for dioxins.

In sum, EPA offers no reasoned basis for declining to establish MACT standards for dioxin and arsenic from EGUs. We recommend that EPA take immediate action to address the public health risks associated with these contaminants and establish protective MACT standards for both pollutants.

9. Conclusion

EPA scientists recently announced that the number of newborns with unsafe levels of mercury in their blood was much higher than previously thought. New analysis estimates that between 1999 and 2000, 630,000 U.S. newborns had unsafe levels of mercury in their blood, compared with the original estimate of 320,000. Based on EPA's own analyses, millions of children in the U.S. will be born over the next decade with mercury in their blood at unsafe levels, putting them at risk of impaired learning and memory and other health problems. Other polluting industries have already been required to dramatically clean up their mercury pollution. EPA should craft a rule that protects the health of today's children from harmful mercury pollution.

⁵¹ Utility RTC, Volume 1, EPA-453/R-98-004a, January 1998.