U.S. PIRG

FACT SHEET

Available, Affordable Solutions: Reducing Power Plant Mercury Emissions

To comply with the law and protect public health, EPA should reduce mercury emissions from power plants swiftly and by the maximum achievable amount. Fortunately, technologies to achieve these reductions are already available and cost-effective.

Nearly five years ago, in 2000, EPA found that "there are cost-effective ways of controlling mercury emissions from power plants. 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."[1] While EPA now claims that technological and cost factors preclude reductions beyond its cap-and-trade plan,[2] the Congressional Research Service found that "[a]nalysis by other experts came to a different conclusion."[3]

*Effective Mercury Control Technology Already Exists

Effective technology already exists to substantially reduce mercury emissions from power plants using all major types of coal. Numerous full-scale tests of activated carbon injection (ACI), a control technology that has reduced mercury emissions from medical and municipal waste incinerators by more than 90% since the mid-90s, have shown similar success in reducing power plant mercury emissions. Examples include:

- Alabama Power's multi-unit Gaston plant, which obtained up to 90% reductions for a boiler burning bituminous coal;
- Sunflower Electric's Holcomb Station in Kansas, which reported reductions in excess of 90% on subbituminous coal; and
- Great River Energy's Stanton Station in North Dakota, which reported up to 81% control with untreated carbon and up to 96% control with brominated carbon on a boiler burning lignite coal.[4]

As two power company representatives, the Electric Power Research Institute, the U.S. Department of Energy (DOE), and ADA-ES, a leading pollution control company, concluded: "Recent full-scale field tests have proven the effectiveness of activated carbon injection for reducing mercury emissions. The technology is ideally suited for use on existing coal-fired boilers . . . ."[5]

Moreover, while ACI is currently the leading mercury control technology, there are many other methods of reducing mercury from coal-fired power plants. Substantial reductions in mercury emissions can be achieved simply by optimizing pollution controls that have already been installed on power plants to reduce the pollutants that form soot and smog. Indeed, the EPA's Office of Research and Development found that fabric filters already installed on power plants could achieve 90% mercury reductions for bituminous coal and 72% reductions for subbituminous coal and that adding a scrubber increased mercury reductions on bituminous coal to 98%.[6] In addition, several control technologies other than ACI are currently available or in various stages of development and testing.[7]

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[1] Environmental Protection Agency (EPA), "EPA to Regulate Mercury and Other Air Toxics Emissions from Coal- and Oil-Fired Power Plants" (fact sheet), 14 December 2000.
[2] Proposed Rule, 69 Fed. Reg. 4651, 4698, 30 January 2004; Cap-and-Trade Rule, 70 Fed. Reg. at 28606, 28614, 18 May 2005; Cap-and-Trade Rule Preamble, 15 March 2005, pp. 45-46, 63, 67, available at http://www.epa.gov/air/mercuryrule/pdfs/camr_final_preamble.pdf.
[3] James E. McCarthy, *Mercury Emissions from Electric Power Plants: An Analysis of EPA's Cap-and-Trade Regulations*, 15 April 2005, CRS-13 ("*CRS Report*").
[4] National Wildlife Federation, *Getting the Job Done: Affordable Mercury Control at Coal-Burning Power Plants*, October 2004, p.16 ("*Getting the Job Done*"); National Wildlife Federation, "Controlling Mercury from Power Plants: Current State of Technology" (fact sheet), January 2005, p.3 ("Controlling Mercury from Power Plants").
[5] *CRS Report*, CRS-13, quoting Michael Durham et al., "Full-Scale Results of Mercury Control by Injecting Activated Carbon Upstream of ESPs and Fabric Filters," paper presented at PowerGen 2003, Las Vegas, NV, 9-11 December 2003, p.9.
[6] *CRS Report*,, CRS-13, citing EPA, Office of Research and Development, "Control of Mercury Emissions from Coal-Fired Electric Utility Boilers" (white paper), 2 March 2004, available at http://www.epa.gov/ttn/atw/utility/hgwhitepaperfinal.pdf.
[7] *Getting the Job Done*, pp. 6, 16-18 & Table 6; "Controlling Mercury from Power Plants," pp.1-3.

*Mercury Control Technology Is Commercially Available Today

Several power plants have already agreed to install mercury control technology to reduce their mercury emissions. For example, in August 2005, ADA-ES announced a contract to install ACI at a 790-megawatt power plant being built in the Midwest that is expected to burn subbituminous Powder River Basin coal.[8] A few months earlier, in May, Rocky Mountain Power agreed to install either ACI or a similar technology approved by Montana's Department of Environmental Quality for a new power plant, the Hardin Generating Station.[9] And in March, the San Juan Generating Station, a 1600-megawatt power plant located in Farmington, New Mexico that emits hundreds of pounds of mercury per year, agreed to install ACI and expects reductions of up to 80%.[10] Moreover, a power plant under construction in Iowa is installing ACI to meet the terms of a state air pollution permit, and one in Michigan has begun to install a multipollutant control that will use sorbent injection to reduce mercury.[11]

*Mercury Control Technology Is Affordable

Using EPA data, the National Wildlife Federation (NWF) estimated that installing mercury control technology to achieve 90% mercury reduction at power plants would cost the average household about 69 cents to $2.14 per month in five coal-dependent states: Illinois, Michigan, Ohio, Pennsylvania, and North Dakota.[12] NWF also estimated the average monthly cost per household for all 50 states using low-end and high-end estimates by the DOE and the Institute for Clean Air Companies of 0.1 cents and 0.3 cents per kilowatt hour.[13] Based on this range, the average monthly household cost for each of the 50 states ranged from one cent to $1.05 on the low end and from two cents to $3.16 on the high end.[14]

Furthermore, several recent studies have shown substantial benefits from reducing power plant mercury emissions—benefits greater than both the EPA's estimated benefits of $50 million per year and its estimated costs to utilities and electricity users of $750 million per year by 2020.[15] The Mt. Sinai School of Medicine, which assessed the economic impact of U.S. power plant mercury emissions on the developing fetal brain, found that such emissions cost $1.3 billion per year in diminished economic productivity due to loss of IQ.[16] The Harvard Center for Risk Analysis, which monetized both neurological and cardiovascular impacts of reducing power plant mercury emissions using targets in the Bush administration's "Clear Skies" initiative, estimated benefits ranging up to $3.5 billion annually at an emissions level of 26 tons of mercury per year and $5.2 billion annually at 15 tons per year.[17] The estimates included benefits associated with IQ increases as well as avoided cardiovascular events and premature mortality.[18] Finally, the EPA's own water office, which assessed the benefits of reducing U.S. mercury emissions by 30-100% and likewise included both neurological and cardiovascular impacts, estimated benefits in the Southeastern U.S. ranging from $600 million to more than $2 billion.[19]

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[8] ADA-ES, "ADA-ES Awarded Contract to Provide Mercury Control System for New Power Plant" (press release), 2 August 2005; Daniel Cusick, "Mercury Control Technology to Be Installed at Commercial Scale," *Greenwire*, 2 August 2005.
[9] Clair Johnson, "Hardin Plant Foes, Backer Reach Pact," *Billings Gazette*, 4 May 2005, available at: http://www.billingsgazette.com/index.php?display=rednews/2005/05/04/build/state/40-plant.inc.
[10] Grand Canyon Trust and Sierra Club, "San Juan Power Plant to Cut Air Pollution" (press release), 10 March 2005, available at http://www.sierraclub.org/environmentallaw/lawsuits/viewCase.asp?id=249.
[11] Government Accountability Office, *Emerging Mercury Control Technologies Have Shown Promising Results, but Data on Long-term Performance Are Limited*, May 2005, p.18.
[12] *Getting the Job Done*, pp. 5-6.
[13] Id. at pp. 21 & A-19.
[14] Id. at pp. A-19 & A-29.
[15] Cap-and-Trade Rule, 70 Fed. Reg. at 28639, 28642 (projecting annual costs to power industry of $160 million in 2010, $100 million in 2015, and $750 million in 2020 while monetizing social benefits from reducing mercury exposure from freshwater fishing at no more than $3 million and stating that EPA did not quantify other types of benefits). See also "EPA Ignores Own Water Office Study," *Associated Press*, 28 April 2005 (reporting that "[l]ast month, the EPA publicly estimated the annual benefits to the country of the cleanup program at $50 million a year. The agency said the cost to utilities and electricity users would increase annually to $750 million a year by 2020.").
[16] Leonardo Trasande, Philip J. Landrigan, and Clyde Schechter, "Public Health and Economic Consequences of Methyl Mercury Toxicity to the Developing Brain," *Environmental Health Perspectives* 113(5): 590, March 2005.
[17] 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 ("*Harvard Study*").
[18] *Harvard Study*, Executive Summary pp. xviii-xix. Specifically, the study estimated the annual benefit associated with IQ increases at $75-194 million at the 26-ton level and $119-288 million at the 15-ton level and the annual benefit associated with avoided cardiovascular events and premature mortality at $48 million to $3.3 billion at the 26-ton level and $86 million to $4.9 billion at the 15-ton level. Id.
[19] Douglas Rae and Laura Graham, EPA Office of Wetlands, Oceans, and Watersheds, *Benefits of Reducing Mercury in Saltwater Ecosystems: A Case Study*, January 2004, Executive Summary p. ES-1, available at http://cleanairnow.org/pdfs/officewatermerc.pdf.