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Mary Jo Stueve

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SOUTH DAKOTA PUBLIC
UTILITIES COMMISSION

Elc. Sec. I
5/19/06

Subject: EL05-022 Stueve Prefiled Testimony, Exhibits A-C, Exhibit Index

For any of you on the legal service list IN THE MATTER OF THE APPLICATION BY OTTER TAIL POWER COMPANY ON BEHALF OF BIG STONE II CO-OWNERS FOR AN ENERGY CONVERSION FACILITY PERMIT FOR THE CONSTRUCTION OF THE BIG STONE II PROJECT, EL05-022, please let me know if you will waive paper service and consider this e-serving as being served.

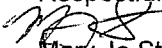
For purposes of Certificate of Service, I Mary Jo Stueve certify that on May 19, 2006 true and correct copies were e-mailed of my Direct Testimony (Stueve Exhibit 1.doc), Exhibits 1-A (doc), 1-B (PDF), 1-C (PDF) and Index Stueve Exhibits (doc), to the following email addresses, which includes persons set forth on the Legal Service List:

John.Smith3@state.sd.us; cwmadsen@bgpw.com; bgoodpaster@mncenter.org; tguerrero@lindquist.com; bgerhardson@ottertail.com; bruce.nilles@sierraclub.org; davidsonlaw@mchsi.com; dsasseville@lindquist.com; georgehays@mindspring.com; jmhaase@bgpw.com; j davidso@usd.edu; Karen.Cremer@state.sd.us; adam.lesley@johnsonpetersenlaw.com; oneill.michael@johnsonpetersenlaw.com; pat.gallagher@sierraclub.org; sanjay.narayan@sierraclub.org; tjwelk@bgpw.com; Patty.VanGerpen@state.sd.us

I further certify that one paper copy of all documents will subsequently be sent to the Commission promptly.

Please email or call if you want to be served a paper copy, or if you have any trouble opening or reading the attached documents. I will attend to your request promptly.

Respectfully,


Mary Jo Stueve
Pro Se

Dated this 19th Day of May, 2006

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Sioux Falls SD 57104
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State Coordinator
South Dakota
Clean Water Action
231 S. Phillips Ave., Suite 250
Sioux Falls, SD 57104

Phone: 605-978-9196
Fax: 605-978-9019
mjstueve@cleanwater.org

With more than 9,000 member households in South Dakota and 100,000 regionally, CWA has a long history of

2438

supporting citizen efforts to protect water resources, promoting sound solid waste management, pushing for agriculture policies that strengthen rural communities, and working for a transition to clean renewable energy.

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INDEX TO STUEVE'S PREFILED DIRECT TESTIMONY EXHIBITS

Label	Exhibit Description
Stueve Exhibit	1 – Prefiled Direct Testimony of Mary Jo Stueve
	1-A Resume
	1-B U.S. PIRG Fact Sheet
	1-C Comparison of EPA's Mercury Rule and STAPPA/ALAPCO's Model State and Territorial Air Pollution Program Administrators (STAPPA) Association of Local Air Pollution Control Officials (ALAPCO)

*Mary Jo Stueve
May 19, 2006*

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MAY 22 2006

SOUTH DAKOTA PUBLIC
UTILITIES COMMISSION

SOUTH DAKOTA PUBLIC UTILITIES COMMISSION

CASE NO. EL05-022

IN THE MATTER OF THE APPLICATION BY OTTER TAIL POWER COMPANY

ON BEHALF OF THE BIG STONE II CO-OWNERS

FOR AN ENERGY CONVERSION FACILITY SITING PERMIT FOR THE

CONSTRUCTION OF THE BIG STONE II PROJECT

DIRECT TESTIMONY

OF

MARY JO STUEVE

PRO SE

MAY 19, 2006

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TESTIMONY OF MARY JO STUEVE

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1 **BEFORE THE SOUTH DAKOTA PUBLIC UTILITIES COMMISSION**

2 **DIRECT TESTIMONY OF MARY JO STUEVE**

3 **I. INTRODUCTION**

4 **Name and address**

5 My name is Mary Jo Stueve, resident of South Dakota 196 E. 6th St., Sioux Falls. I
6 also maintain a home at 518 Saint Joseph Ave., Graceville, Minnesota and have
7 agricultural land in Big Stone and Traverse County, Minnesota.

8 **Employment**

9 I am currently employed by Clean Water Action as State Coordinator. Our office is
10 located at 231 S. Phillips Ave. STE 250, Sioux Falls. With more than 9,000 member
11 households in South Dakota and 100,000 regionally, Clean Water Action has a long
12 history of supporting citizen efforts nation wide to protect water resources, promoting
13 sound solid waste management, pushing for agriculture policies that strengthen rural
14 communities, and working for a transition to clean renewable energy.

15 **Educational background**

16 My education includes Master of Arts (2004) in International Policy Studies with a
17 Certificate in Nonproliferation from the Monterey Institute of International Studies,
18 Master of Public Affairs (2003) from the University of Minnesota's Hubert H.
19 Humphrey Institute of Public Affairs, and a Bachelor of Arts (1999) in Sociology and
20 Latin America Area Studies from the University of Minnesota, Morris.

21 **Work history**

22 My work history includes twenty-four years in family farm operations, two years as
23 General Manager with Carlson Oil Co., Inc., four years in health care and community

- 1 -

1 services, and graduate research work at the Center for Nonproliferation Studies
2 (CNS) in Monterey, California.

3 **Experience relevant to my testimony**

4 I am a mother of four, grandmother of three, with another grandchild due the end of
5 May and come from a family of six girls and four boys. I have volunteered
6 extensively over the course of thirty years in areas such as youth formation and
7 community service, social justice, affordable housing, international humanitarian
8 assistance and anti-poverty efforts in the United States, most recently with
9 AmeriCorps VISTA, Volunteer in Service to America. I have worked tirelessly over
10 the course of my life to improve socio-economic living conditions, inequalities,
11 housing and health conditions for families and communities in both rural and urban
12 settings in the United States as well as outside our borders in Mexico and Cuba.
13 Going back to school to acquire two Master Degrees I have studied and researched
14 extensively with colleagues from around the world, mid-career professionals such as
15 lawyers, government officials, NGO (non-governmental organization) program
16 officers, UN (United Nations) personnel and representatives and U.S. military
17 officers among others on issues related to *governance, accountability and leadership*
18 *for the common good.*

19 **II. DECISION TO PARTICIPATE**

20 I have sought to intervene as a party in this matter in order to protect and preserve
21 quality of life, health, and social and economic well-being, as an interested person
22 (49-41B-17 (3)). The proposed Big Stone II poses a threat of serious injury to the
23 environment and to the social and economic condition of inhabitants or expected

- 2 -

1 inhabitants, [including those yet to be born, especially the fetus] in the siting area and
2 beyond. Big Stone Lake is a diamond in the rough. Curtis Bailey, President of
3 Citizens for Big Stone Lake, wrote in the organization's 2005 brochure. "Along both
4 the Minnesota and South Dakota shores of Big Stone Lake, new areas are being
5 opened for development. Seasonal and permanent dwellings are being constructed at
6 an impressive rate. Unique and beautiful, our 27-mile lake has become a truly
7 desirable destination." The proposed Big Stone II plant will substantially impair the
8 health, safety and welfare of inhabitants and will unduly interfere with the orderly
9 development of the region (49-41B-22); especially with the risk of becoming a *toxic*
10 *hot spot* (Volume III: Fate and Transport of Mercury in the Environment, Mercury
11 Study Report to Congress, EPA-452/R-97-0005, December 1997) should project Co-
12 Owners implement purchase of mercury Cap-And-Trade allowances, a choice
13 acknowledged by Mr. Graumann at the Public Hearing in Milbank, South Dakota,
14 September 2005.

15 **III. PURPOSE AND SUMMARY OF TESTIMONY**

16 The purpose and summary of this testimony is to produce and submit to the
17 Commission's official docket file, for the public record, my objections regarding
18 granting a permit for the proposed Big Stone II project and to document sources
19 supporting such. Mercury poses unacceptable risk to our children, our health, our
20 environment, our future. To date, concerns regarding mercury have not been
21 adequately addressed nor studies performed specific to the 20 mile radius study area
22 (See Exhibit 5-1 Application for a South Dakota Energy Conversion Facility Siting
23 Permit, July 2005 "Community Impacts Study Area"). I find this unacceptable and

1 reason alone to deny permitting. The public has a right to know *beforehand* rather
2 after the fact.

3 **IV. SUPPORTING EVIDENCE AND RESEARCH**

4 It would be impossible to cite the vast body of scientific research supporting my
5 concerns regarding mercury. For the sources I refer to below I have provided hyper
6 links to full text whenever possible and in other cases have given an excerpt or author
7 abstract and citation. The following body of evidence shows that mercury poses great
8 risk not only to the environment but to quality of life, health, social and economic
9 well-being. The material facts contained in these studies deserve full consideration by
10 the Commission before granting a permit to the proposed Big Stone II.

11 Public Health and Economic Consequences of Methylmercury Toxicity to the
12 Developing Brain, the findings of the Center for Children's Health and the
13 Environment at Mount Sinai School of Medicine (pdf)

14 Leonardo Trasande,^{1,2,3,4} Philip J. Landrigan,^{1,2} and Clyde Schechter⁵

15 ¹ Center for Children's Health and the Environment, Department of Community and Preventive
16 Medicine, and ² Department of Pediatrics, Mount Sinai School of Medicine, New York, New
17 York, USA; ³ Division of General Pediatrics, Children's Hospital, Boston, Massachusetts, USA; ⁴
18 Department of Pediatrics, Harvard Medical School, Boston, Massachusetts, USA; ⁵ Department of
19 Family Medicine, Albert Einstein College of Medicine, Bronx, New York, USA

20 VOLUME 113 | NUMBER 5 | May 2005 • Environmental Health Perspectives

21

nundreds of thousands of American babies born each year and b) that this loss of intelligence exacts a significant economic cost to American society, a cost that amounts to at least hundreds of millions of dollars each year.

oiooa ratio is 1.7 times the maternal oiooa concentration, as described in the most recent and extensive meta-analysis on the matter (Stern and Smith 2003), these children are also bom with cord blood mercury concentrations a crua s social productivity is approximately \$4-9 million, as suggested by studies of willingness-to-pay (WTP) estimates of a life (Viscusi and Aldy 2004), then by the WTP methodology the true cost of methyl mercury toxicity may be much higher than our estimate. We also chose not to include other noncognitive impacts. Lead, for example, has been associated with criminality and antisocial behavior (Dietrich et al. 2001; Needleman et al. 1996, 2002; Nevin 2000; Stretesky and Lynch 2001). However, because these behaviors have not been described as yet for methyl mercury, we chose not to include such costs in our estimate.

Table 1. Cost of anthropogenic mercury (Hg) exposure using a logarithmic model.

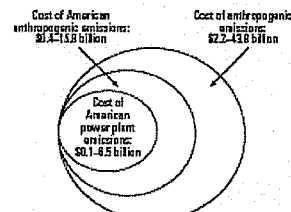
Variable	Segment of population (percentile)			
	90-92.1 Hg	92.2-94.9 Hg	95-99.3 Hg	≥ 99.4 Hg
Range of maternal total Hg concentration	4.84-5.8 µg/L	5.8-7.13 µg/L	7.13-15.0 µg/L	> 15.0 µg/L
Assumed maternal total Hg concentration	4.84	5.8	7.13	15
No. effect concentration (maternal total Hg)	3.41	3.41	3.41	3.41
IQ points lost at assumed concentration	0.76	1.15	1.80	3.21
Loss of 1 IQ point = decrease in lifetime earnings				
For boys, lifetime earnings (1.831% decrease)			\$1,032,002	
For girls, lifetime earnings (3.225% decrease)			\$763,468	
No. of boys in birth cohort affected	45,693	58,155	91,387	12,462
No. of girls in birth cohort affected	43,601	55,882	87,201	11,691
Lost income	\$1.1 billion	\$2.0 billion	\$4.4 billion	\$1.2 billion
Total cost = \$8.7 billion in each year's birth cohort				

Assumptions: EAF = 70%, main consequence = loss of IQ over lifetime.

Table 2. Sensitivity analysis: cost of anthropogenic methyl mercury exposure.

Variable	Base-case cost estimate (range)*
Children born to women with Hg > 4.84 µg/L, effect > 3.5 µg/L	
Logarithmic model	\$8.7 billion (\$4.9-13.9 billion)
Linear model, cord:maternal Hg ratio = 1.7	\$32.9 billion (\$20.9-43.8 billion)
Linear model, cord:maternal Hg ratio = 1	\$19.3 billion (\$12.3-26.8 billion)
Children born to women with > 5.8 µg/L, effect > 4.84 µg/L	
Logarithmic model	\$3.9 billion (\$2.2-6.3 billion)
Linear model, cord:maternal Hg ratio = 1.7	\$18.7 billion (\$11.9-24.9 billion)
Linear model, cord:maternal Hg ratio = 1	\$11.0 billion (\$7.0-14.6 billion)

Some will argue that our range of costs fails to incorporate the role of confounding factors in quantifying the economic consequences of methyl mercury exposure. It is true that efforts



1

2

Mercury Exposure Linked to Loss of IQ & Billions in Societal Costs

3

A study conducted at Mt. Sinai in New York shows that exposure to mercury in

4

the womb is associated with a loss in IQ, a loss that has long-term effects on our

5

society and could be costing us billions of dollars:

6

<http://www.healthylivingnyc.com/article/122>

7

Article Reviewed by Ansley Roche (Last accessed 05/18/2006).

8

1997 Mercury Study Report to Congress

9

This Mercury Study prepared by the U.S. Environmental Protection Agency

10


provides an assessment of the magnitude of U.S. mercury emissions by source,


11


the health and environmental implications of those emissions, and the availability


12


and cost of control technologies.


 [Mercury White Paper \(15KB\)](#) - Describes EPA's recent, ongoing, and planned actions to reduce mercury pollution.


 Volume I: Executive Summary (1.24MB)


 Volume II: An Inventory of Anthropogenic Mercury Emissions in the United States (1.57MB)


 Volume III: Fate and Transport of Mercury in the Environment (4.25MB)

 Volume IV: An Assessment of Exposure to Mercury in the United States (1.29MB)

 Volume V: Health Effects of Mercury and Mercury Compounds (1.15MB)

 Volume VI: An Ecological Assessment for Anthropogenic Mercury Emissions in the United States (2.91MB)

 Volume VII: Characterization of Human Health and Wildlife Risks from Mercury Exposure in the United States (727KB)

 Volume VIII: An Evaluation of Mercury Control Technologies and Costs (828KB)

1 **ANA and other health care groups sue EPA to prevent future mercury**
2 **exposure.** American Nurse, Jul/Aug2005, Vol. 37 Issue 4, p4-4, 1/3p; Abstract:
3 The article reports that in an unprecedented action, American Nurses Association
4 and three other leading health care groups filed a lawsuit against the U.S.
5 Environmental Protection Agency (EPA) on June 14 to force the federal agency to
6 strengthen its official rule on mercury pollution from coal-fired power plants.
7 According to widely accepted scientific research, mercury is a potent neurotoxin
8 that can cause developmental and learning disabilities, reduced IQ and impaired

1 motor skills in children, and altered sensation, impaired hearing and vision, and
2 motor disturbances in adults.; (AN 18297435)

3 <http://www.ana.org/pressrel/2005/pr0614.htm>

4 **STAYING AHEAD OF THE FEDS: EPA Proposes Cap-And-Trade to Cut**
5 **Back On Mercury Emissions, But Many States Think They Have a Quicker,**
6 **Better Solution. Larry Morandi, State Legislatures; Jun 2005; 31, 6; Research**
7 **Library, pg. 14**

8 **Inspector General Blasts EPA Mercury Analysis,** by: Stokstad, Erik, Science,
9 2/11/2005, Vol. 307 Issue 5711, p829-831, 2p, 1c; Abstract: This article reports
10 on environmentalism in the U.S. When the U.S. Environmental Protection
11 Agency (EPA) proposed such a cap-and-trade system last year, it argued that it
12 was the most effective way to cut back the 48 tons of mercury, a known
13 neurotoxin, emitted nationwide each year. Coal-fired power plants are responsible
14 for about 40% of all mercury emissions in the U.S., making them the largest
15 single source. No federal rules on mercury from power plants are in place yet,
16 although EPA determined in 2000 that regulation was appropriate and necessary;
17 (AN 16178054)

18 **Japan remembers Minamata.** By: McCurry, Justin. Lancet, 1/14/2006, Vol. 367
19 Issue 9505, p99-100, 2p, 1c; Abstract: This article reports on the 50 year
20 anniversary of the first patient being diagnosed in Japan's worst case of industrial
21 pollution. Over 900 people died and thousands of others were left permanently
22 disabled as the disease attacked their nervous system, causing blindness, seizures,
23 and a variety of sensory disorders. In total, about two million suffered health

1 problems from eating fish that was contaminated with mercury. The tragedy that
2 struck the seaside town of Minamata was entirely manmade. From 1932 to 1968,
3 Chisso Corporation, a local petrochemical and plastics maker, dumped an
4 estimated 27 tons of mercury into Minamata bay, poisoning fish and eventually,
5 the people who ate them.; DOI: 10.1016/S0140-6736(06)67944-0; (AN
6 19397624)

7 TED Case Studies, **Minamata Disaster**

8 <http://www.american.edu/TED/MINAMATA.HTM>

9 Senator Patrick Leahy's **Mercury Timeline**

10 http://leahy.senate.gov/issues/environment/mercury/hg_time.html

11 **City bans medical devices that contain mercury.** By: Sibbald, Barbara. CMAJ:

12 Canadian Medical Association Journal, 1/7/2003, Vol. 168 Issue 1, p78, 1/2p, 1c;

13 ...Centers for Disease Control and Prevention reported that 10% of American

14 women of child- bearing age had mercury concentrations above the level

15 considered safe for the developing fetus. It is estimated that coal-fired power

16 plants in the U.S. release 51 tons of mercury into the atmosphere there every year,

17 accounting for about one-third of the country's yearly airborne emissions.; (AN

18 8873686)

19 **Keep that mercury down!** American Nurse, Sep/Oct2005, Vol. 37 Issue 5, p4-4,

20 1/5p; Abstract: The article reports that the Pennsylvania State Nurses Association

21 (PA Nurses) recently took on the issue of mercury and its effect on the air

22 Pennsylvanians breathe. In her testimony at the state capitol, PA Nurses

23 Executive Administrator Michele Campbell, urged the Department of

1 Environmental Protection to move forward with a plan to decrease mercury
2 emissions by 90 percent by the year 2007. Pennsylvania's coal-fired power plants
3 are responsible for at least 83 percent of the state's mercury emissions to air, and
4 its power plants are some of the highest emitters nationwide.; (AN 18682385)

5 **Control mercury emissions now.** By: Uram, Eric; O'Donnell, Frank; Stadler,
6 Felice. Issues in Science & Technology, Fall2002, Vol. 19 Issue 1, p13, 3p;
7 Abstract: Comments on an article about the reduction of mercury pollution from
8 electric power plants in the U.S. Importance of controlling mercury emissions
9 from coal-fired power plants by the utility industry and regulators to public health
10 and wildlife; Issue raised on mercury emissions control; Contamination of food
11 supply in the country; Step taken by state governments to prevent mercury
12 pollution.; (AN 7592657)

13 USGS Water-Resources Investigations Report 03-4078

14 <http://nd.water.usgs.gov/pubs/wri/wri034078/>

15 Reconnaissance of Mercury in Lakes, Wetlands, and Rivers in the Red River of
16 the North Basin, North Dakota, March Through August 2001 Water-Resources
17 Investigations Report 03-4078 By Steven K. Sando, G.J. Wiche, R.F. Lundgren,
18 and Bradley A. Sether

19 Prepared in cooperation with the U.S. Army Corps of Engineer

20 **V. FOR CONSIDERATION: REGULATING MERCURY: A MODEL RULE**
21 **FOR STATES AND LOCALITIES**

22 NEW PROPOSALS TO CONTROL MERCURY CONTAMINATION.

23 November 2005 Full Report available from:

- 9 -

1 State and Territorial Air Pollution Program Administrators (STAPPA) Association of Local Air
2 Pollution Control Officials (ALAPCO)
3 444 North Capitol Street, NW, Suite 307, Washington, DC 20001
4 Telephone: (202) 624-7864; Fax: (202) 624-7863
5 Web site: www.4cleanair.org; E-mail: 4cleanair@4cleanair.org

6 (Excerpt)

7 Under the auspices of the State and Territorial Air Pollution Program
8 Administrators (STAPPA) and the Association of Local Air Pollution
9 Control Officials (ALAPCO), the state and local regulators have
10 developed a “model rule” that could be adapted by air agencies around the
11 nation. It would require that electric power companies eliminate up to 95
12 percent of their toxic mercury emissions by 2012. This flexible cleanup
13 strategy would have two phases, with interim controls – and associated
14 emission reductions – required by 2008.

15 This model rule calls for far deeper cuts in toxic mercury emissions from
16 electric power plants than federal rules issued this year by the U.S.
17 Environmental Protection Agency (EPA) and would require the cleanup to
18 be achieved more than a decade earlier. Unlike the federal approach, the
19 state/local plan would not permit power companies to “trade” mercury
20 emissions: <http://www.4cleanair.org/FinalMercuryModelRule-111405.pdf>

21 This concludes my testimony. I look forward to the Commissions’ full review and
22 consideration.

Mary Jo Stueve
5-19-2006

PROFESSIONAL SUMMARY Community and alliance building skills in the volunteer and non-profit sector at the local, state and international levels, creative leadership, effective advocacy and advanced research and communication skills markedly as Education Representative at the Preparatory Committee for the 2005 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons at the United Nations in New York, May 2004.

EDUCATION

- 2004 Master of Arts in International Policy Studies, Monterey Institute of International Studies
Certificate in Nonproliferation, Monterey Institute of International Studies
- 2003 Master of Public Affairs, University of Minnesota
- 1999 Bachelor of Arts in Sociology & Latin America Studies, University of Minnesota

EMPLOYMENT

- 2005-present State Program Coordinator
Clean Water Action / Clean Water Fund
Sioux Falls, South Dakota
- 2003-2004 Teaching Assistant in Comparative Politics for Maria Morgan, USA Contractor
Defense Language Institute, Monterey, California
- 2002-2003 Research Assistant, Center for Nonproliferation Studies
Education Group, Monterey, California
- 1999-2000 Health and Housing Specialist
Health Care for the Homeless/HouseCalls Saint Paul, Minnesota
- 1995-1997 Office Manager- Physical Therapy Aide- Certified Nursing Assistant
Graceville Health Center, Graceville, Minnesota
- 1988-1990 General Manager Convenience-Store Chain
Carlson Oil Company Incorporated Graceville, Minnesota (owner died, company sold)

NATIONAL SERVICE

- 2004-2005 *AmeriCorps**VISTA, Congregational Organizer / Web Editor
Metropolitan Interfaith Council on Affordable Housing (MICAHA), Minneapolis, Minnesota

STUDENT AMBASSADOR & INTERNATIONAL VOLUNTEER

- 2002 Student Project for Amity among Nations (SPAN) Student Ambassador to Cuba
- 1999 U.S. Women's Delegation to Cuba for the International Women's Conference; Humanitarian Aid
Volunteer with U.S. Latin America Medical Aid Foundation (MEDAID); Cross-cultural Community
Volunteer with Global Volunteers to San Juan Texas / Mexico border area

COMMUNITY & YOUTH VOLUNTEER SERVICE

- 1989-1998 Youth formation educator, service project coordinator with Saint Peter's Parish, Dumont, Minnesota
(Parish Closed June 2004)

HONORS & CERTIFICATES Resolving Workplace Conflict * Nonviolent Conflict Resolution * Interpersonal Skills *
Minnesota Alternatives to Violence Co-Facilitator * Phi Kappa Phi Honors * Center for Nonproliferation Scholarship

Applied Skills: Multi-media presentations, teaching, public speaking, strategic planning, concept mapping, group project coordination, facilitation, liaison and negotiation, organizing, advocacy, research, writing and policy analysis

Technical Skills: Word, PowerPoint, Access, Statistical Package for Social Sciences (SPSS), Internet Research, Windows, Microsoft Outlook and Project Planner, Decision Explorer, Excel

Language Skills: English, Spanish

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

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. 4698, 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

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>.

Comparison of EPA's Mercury Rule and STAPPA/ALAPCO's Model

1. Deadlines

- a. EPA has two phases—2010 and 2018; The 2018 deadline may actually extend into the 2020's when "banking" is used.
- b. STAPPA/ALAPCO Model has two phases—2008 and 2012.

2. Emission Reductions

- a. EPA—Phase I—21% reduction from current levels, based on collateral benefits; Phase II—69% reduction.
- b. STAPPA/ALAPCO Model—Phase I—80% capture; Phase II—90-95% capture.

3. Requirements for New Facilities

- a. EPA requires sources to meet New Source Performance Standards.
- b. STAPPA/ALAPCO Model requires state of the art technology, updated on a periodic basis.

4. Trading

- a. EPA allows interstate trading of mercury emissions.
- b. STAPPA/ALAPCO Model prohibits interstate trading.

5. Additional Flexibilities

- a. EPA relies on trading for flexibility.
- b. STAPPA/ALAPCO Model provides for compliance on a "rolling average," intrastate averaging in Phase I (provided it is limited to the same owner) and extensions of Phase I deadlines (under Option 2) if multi-pollutant control commitments are made.
- c. States also have existing flexibility mechanisms.

MAY 22 2006

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

SOUTH DAKOTA PUBLIC
UTILITIES COMMISSION

In the Matter of Otter Tail Power Company
on behalf of Big Stone II Owners for an
Energy-Conversion Facility Permit for the
Construction of the Big Stone II Project

Docket No. EL05-022

CERTIFICATE OF SERVICE

The undersigned hereby certifies that on May 19, 2006, true and correct copies of her Direct Testimony, Exhibits 1A-C and Exhibit Index list were sent to the following email addresses from the EL05-022 Legal and E-Service List:

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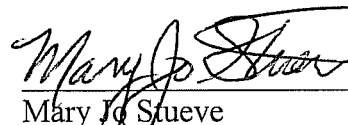
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