



Learning Disabilities Association of America

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July 25, 2006

1:00 PM

The Environmental Quality Board Public Hearing Southwest Regional Office 500 Waterfront Drive Pittsburgh, Allegheny County

RECEIVED 2006 AUG -2 PM 2:52 INDEPENDENT REGULATORY REVIEW COMMISSION

Good afternoon.

My name is Kathy Lawson and I am the Director of the Healthy Children Project of The Learning Disabilities Association. The National Headquarters of The Learning Disabilities Association is located in Pennsylvania on Library Road in Castle Shannon.

LDA is a national non-profit association with approximately 20,000 members and some 200 affiliates in 41 states. 60% of our members are parents of children with learning disabilities; 57% of our members identify themselves as professionals in the field; and 25% of our members identify themselves as adults who have learning disabilities.

Organized by volunteer parents in 1963, LDA established a Research Committee in 1975, which promotes research and policies aimed at identifying the nature and causes of learning disabilities and reducing its incidence. LDA has avidly tracked the emerging science of children's environmental health: we know now that 2/3 of learning and other developmental disabilities are caused by genetic/environmental interactions and that increasing amounts of chemical and other toxic exposures increase the incidence of cognitive disabilities. In 2002, LDA launched its Healthy Children Project which promotes grassroots prevention activities aimed at reducing human exposure to environmental neurotoxicants.

The Learning Disabilities Association of America is gravely concerned about reported increases in the number of children diagnosed with learning and other developmental disabilities, especially notable in the dramatic rise in the incidence of autism and Attention Deficit Hyperactivity Disorder, or ADHD. Knowing for over a century that mercury is a potent toxicant directly affecting the nervous system, and knowing the research history of that other deadly neurotoxicant, lead, we are convinced that there exists a direct relationship between human exposure to mercury pollution – especially for women of child-bearing years – and the rising incidence of cognitive disabilities.

There are four types of mercury emissions coming from sources caused either by man (anthropogenic) or by nature:

1. Inadvertent releases associated with human activity. Basically the mercury which is the byproduct of processing raw materials such as fossil fuels and minerals.
2. Intentional use of mercury in products and processes and released into the environment during manufacturing, leaks, disposal or incineration.
3. Re-mobilization of mercury deposits previously in soils, sediments, water bodies, landfills and waste piles; and
4. Natural sources such as releases from the earth's crust due to volcanic activity and weathering of stones.

The first three types of exposure can be reduced by human ingenuity. Most of the mercury in our environment is emitted from industrial smokestacks. The EPA has concluded that coal-fired power plants are the nation's largest source of unregulated mercury emissions attributable to human activity.¹

Similar to our global water supply, the worldwide mercury inventory continuously cycles. Once we emit mercury into the atmosphere, it doesn't go away. Once it enters our water supply, it doesn't go away. It might be transformed, but it does not disappear.

For this reason, individuals concerned about the environmental health impacts of mercury exposure are focusing on the danger of eating fish with high levels of mercury in their bodies. The mercury levels in the bodies of fish are a direct result of the mercury which is emitted into the air. The inorganic mercury compounds which fall from the air into water are transformed into the most toxic form of mercury, methyl mercury – a known neurotoxicant -- by way of interaction with bacteria found in fresh water and marine sediments. The larger organisms eat the smaller organisms, the larger fish eat the smaller fish -- all the way up the food chain – with humans being at the top. During this process – a process called bioaccumulation -- the strength of the methyl mercury becomes increasingly more potent. As a result, some fish that humans consume have a very high concentration of methyl mercury and that mercury is much more toxic than the mercury that was originally deposited into the water. And, unfortunately, in Pennsylvania every water in the Commonwealth has advisories on fish consumption due to high levels of mercury and other types of pollution and residents are advised to eat no more than two meals of those fish per month.

The US FDA and American Heart Association agree that fish consumption is an important part of a healthy diet. And, we agree with them -- fish consumption is an important part of a healthy diet. By carefully choosing the fish they eat, people can benefit from consuming seafood, while minimizing their risk from mercury exposure associated with fish in the diet. However, people need accurate information in order to make correct choices.

Unfortunately, self-serving parties try to exacerbate the potential confusion surrounding the issue of mercury in fish by sharing incorrect information for their own commercial interests. Correct information about risks is not toxic – methyl mercury is toxic.²

Some proponents for weak mercury emissions regulations say “No confirmed cases of a single person having a level of mercury in their blood due to fish consumption that comes anywhere near a level which would cause adverse health effects. Scientific studies as far back as the 1950's have made a clear connection between health hazards related to the consumption of mercury-tainted fish. Recently, epidemiological studies have documented harmful effects at even lower doses than we previously thought to cause damage – especially to the

¹ US EPA 1997. Mercury Study report to Congress, Volume II: An Inventory of Anthropogenic Mercury Emissions in the United States.

² Groth, E., PhD, (2005) Risks and Benefits of Fish Consumption: Yes, Mercury is a Problem

developing brain.³ A study done in the Faroe Islands showed a significant correlation between impairment in the areas of language, attention, and memory and prenatal mercury exposure.

Studies as recent as March 2006 have linked the consequences of methyl mercury toxicity to the developing brain. Using the Centers for Disease Control data, it was found that between 316,588 and 637,233 children each year have cord blood mercury levels >5.8 microgram/L. (reference dose); the level associated with loss of IQ and increased developmental disabilities. Those decrements in IQ are, in turn, associated with lower wages and diminished life-time earning power to the amount of \$8.7 billion annually.⁴ In a second study, it was concluded that these downward shifts in IQ resulted in 1,566 excess cases of mental retardation, representing 3.2% of MR cases in the US. The cost for caring for these children amount to millions of dollars a year. In contrast to the costs of controlling pollution, which are one-time expenditures, these costs last a lifetime and will recur in each year's birth cohort until emissions are reduced. Toxic injury to the fetal brain caused by Hg emitted from coal-fired power plants exacts a significant human and economic toll on American children. The cost savings from reducing mercury exposure now will provide savings in improved productivity and enhanced national security for generations to come.⁵

Some business leaders cite the statistic that "power plants account for only 1-2% total worldwide mercury emission." That statistic is quite misleading. A significant amount of the mercury emitted from fixed US combustion sources like power plants tends to deposit locally. The EPA has estimated that roughly 66% of all mercury deposited in the US comes from US sources and that only 34% comes from sources outside the US.

In 1999, the EPA estimated that 117.3 tons of mercury were emitted into the air of the United States per year. Of that amount, coal-fired power plants are the largest source -- emitting 48 tons per year -- or 40% of US inventory from anthropogenic sources.⁶ According to the EPA's own Toxic Release Inventory (TRI), Pennsylvania is second only to Texas as the largest emitter of mercury and mercury compounds.

Those same business leaders suggest that 50% of the mercury comes from natural sources with 50% coming from anthropogenic sources. However, according to the United Nations' Environment Programme Global Mercury Assessment:

The emissions from stationary combustion of fossil fuels (especially coal) and incineration of waste materials account for approximately **70 percent** of the total quantified atmospheric emissions from significant anthropogenic sources. As combustions of fossil fuels is increasing in order to meet the growing energy demands of both developing and developed nations, mercury emissions can be expected to increase accordingly in the absence of the deployment of **control technologies** or the use of alternative energy sources.⁷

As mentioned earlier, exposure to mercury is clearly linked to learning and other developmental disabilities. To reduce the prevalence of mercury contamination as a factor in learning disabilities, we need to reduce mercury released into our environment. Because coal-fired power plants are our nation's biggest mercury emitters -- with Pennsylvania ranking at the top of the list at #2 -- we cannot solve this problem without reducing mercury emissions from these facilities. Independent studies have shown that 90 percent of the mercury from these facilities can be removed economically before it pollutes our air and water. Yet the alternative legislation under

³ Grandjean, P., et al. (1997) Cognitive deficit in 7-year-old children with prenatal exposure to methyl mercury. *Neurotoxicol Teratol* 19:417-428; National Research Council (2000), *Toxicological Effects of Methylmercury*. Washington, DC; National Academy Press

⁴ Transande, L., et al. (2005) *Public Health and Economic Consequences of Methyl Mercury Toxicity to the Developing Brain*.

⁵ Transande, L. et al. (2006) *Mental Retardation and Prenatal Methylmercury Toxicity*

⁶ US EPA, Office of Air Quality Planning and Standards. 1999 National Emissions Inventory for Hazardous Air Pollutants.

⁷ UNEP, *Chemicals Global Mercury Assessment, 2002*. Geneva, Switzerland: Inter-Organization Programme for the Sound Management of Chemicals (IOMC), 2002

consideration – the federal Clean Air Mercury Rule -- would remove less mercury and delay effective action. Meanwhile, some power plants could be allowed to increase their emissions of mercury by the “cap-and-trade” provision included in the rule.

Given these facts, the Learning Disabilities Association of America strongly supports the Pennsylvania Department of Environmental Protection’s proposed rulemaking “Standards for Contaminants: Mercury” which would amend Chapter 123 of the Pennsylvania Code.

Thank you.

Respectfully submitted,

Kathleen P. Lawson, Director
Healthy Children Project