



**TESTIMONY OF MICHAEL SHANNON, MD, MPH, FAAP
ON BEHALF OF THE AMERICAN ACADEMY OF PEDIATRICS**

**ENERGY AND COMMERCE SUBCOMMITTEE ON
ENVIRONMENT AND HAZARDOUS MATERIALS**

“H.R. 1534, the Mercury Export Ban Act of 2007”

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Department of Federal Affairs
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Good morning. I appreciate this opportunity to testify today before the Energy and Commerce Subcommittee on Environment and Hazardous Materials at this hearing, “*H.R. 1534, the Mercury Export Ban Act of 2007.*” My name is Michael Shannon, MD, MPH, FAAP, and I am proud to represent the American Academy of Pediatrics (AAP), a non-profit professional organization of 60,000 primary care pediatricians, pediatric medical sub-specialists, and pediatric surgical specialists dedicated to the health, safety, and well-being of infants, children, adolescents, and young adults. I am Chair of the AAP’s Committee on Environmental Health. I am Chief of the Division of Emergency Medicine and Co-Director of the Pediatric Environmental Health Center at Boston Children’s Hospital. I am also a Professor of Pediatrics at Harvard Medical School. My board certifications are in General Pediatrics, Emergency Medicine, Pediatric Emergency Medicine and Medical Toxicology.

Elemental Mercury Poses a Serious Health Hazard to Children

Mercury is a ubiquitous environmental toxin that is capable of causing a wide range of adverse health effects in humans. The AAP’s Committee on Environmental Health described the dangers of mercury in the environment to children in a 2001 technical report, of which I was a lead author.

Elemental mercury is one of the three forms of this substance, the other two being organic mercury and inorganic mercury. The elemental form is liquid at room temperature. When heated, elemental mercury becomes a vapor; this vapor has the ability to contaminate large

geographic areas, affecting all of those nearby. In the United States, the largest source of atmospheric mercury vapor is from burning fossil fuels, especially high-sulfur coal. Other major sources include chloralkali production (a process that uses elemental mercury to produce chlorine, bleach, and other products), mercury mining, and waste incinerators (especially those that incinerate medical wastes). Elemental mercury in liquid form is found in thermometers, barometers, and other medical instruments. Indiscriminate disposal of medical devices is a major source of environmental mercury contamination when they are buried in landfills or burned in waste incinerators rather than recycled. Fortunately, recent efforts to eliminate elemental mercury from medical devices have been successful in reducing human exposure from this source. ¹

Elemental mercury readily vaporizes in the presence of heat. When inhaled, mercury vapor easily passes through the membranes of the lung, entering the bloodstream, where it is then distributed primarily into the central nervous system (CNS), and the kidneys. Circulating elemental mercury also crosses the placenta and concentrates in the fetus. In adults, the half-life of elemental mercury, that is, the amount of time it takes for the body to eliminate one-half of the metal, is as long as 90 days.²

Elemental mercury poisoning can produce a broad range of effects on the central nervous system, kidneys, skin and lungs. In children, elemental mercury is particularly deleterious because of its effects on the rapidly developing brain of the child. Children exposed to elemental mercury can develop a range of neurocognitive and behavioral

effects, ranging from learning disabilities to devastating neurologic problems including mental retardation, blindness and spasticity.³

History has provided us several important lessons of the consequences of severe mercury exposure to children. One example is the Minamata Bay incident which took place in Japan in the 1950's. A coastal factory discharged large quantities of mercury compounds into the bay. That mercury was taken up by local fish which was routinely eaten by nearby villagers. An epidemic of disease, manifested by blindness and spasticity appeared among the offspring of the women who ate the contaminated fish while pregnant. Ultimately, there were 41 deaths and at least 30 cases of severe brain damage in these infants. There also continue to be case reports describing the development of symptomatic mercury poisoning in children and adults as a result of mercury spills and even mercury thermometers breaking, with the mercury bead being vacuumed or spilling into a heating duct. This is rare, but continues to show us how toxic this element can be.⁴

Because the elemental mercury that enters the blood, CNS, and renal tissues and is so slowly eliminated, toxicity can be prolonged. Given that treatment options for mercury intoxication are inadequate, prevention of exposure is the cornerstone of avoiding long-term health consequences.

Recommendations

The American Academy of Pediatrics recognizes that elemental mercury is toxic to the fetus and to children, and recommends that aggressive efforts should be made to reduce exposure for pregnant women and children as well as the general population.

- Efforts should be made to decrease the amount of elemental mercury in the waste stream by continuing the phase-out of mercury-containing devices. Families should be encouraged to remove mercury thermometers from their homes.
- Elemental mercury should not be present in the home or other environments of children. Public health agencies, community organizations, pediatricians, and other child health providers should work together to identify and address the factors that may lead to elemental mercury exposure.

Conclusion

The American Academy of Pediatrics commends you, Mr. Chairman, for holding this hearing today to call attention to the hazards of elemental mercury. We look forward to working with Congress to minimize the exposure of children and all Americans to potentially toxic levels of elemental mercury. I appreciate this opportunity to testify, and I will be pleased to answer any questions you may have.

¹ Goldman LR, Shannon MW, and the AAP Committee on Environmental Health. Technical Report: Mercury in the Environment: Implications for Pediatricians. *Pediatrics*, 2001 108: 197-205.

² Ibid.

³ Speaking Points for Mercury in the Environment: Implications for Pediatricians, http://www.aap.org/moc/pressroom/speaking_points/mercury.htm?CFID=1395517&CFTOKEN=64233499.

⁴ Ibid.