



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

APR 05 2010

OFFICE OF CONGRESSIONAL AND
INTERGOVERNMENTAL RELATIONS

The Honorable Dennis J. Kucinich
Chairman
Subcommittee on Domestic Policy
Committee on Oversight and Government Reform
Washington, D.C. 20515

Dear Mr. Chairman:

Thank you for your letter dated January 15, 2010, to the United States Environmental Protection Agency (EPA), concerning dental fillings as a source of mercury pollution, and particularly, the atmospheric emissions of mercury related to dental use of mercury. I share your desire to reduce mercury in the environment and appreciate your continued interest in this particular aspect of the problem.

In this response letter, I would like to describe what the Agency is currently doing to address mercury in the environment and in particular what we are doing to address mercury emission factors that are of particular interest to you and the members of the Domestic Policy Subcommittee. We will keep you and the Subcommittee apprised of our efforts as we continue our work on updating these factors.

EPA is addressing the issue of mercury in the environment broadly

Addressing domestic and global mercury concerns is a top priority of the Agency. EPA recognizes that pollution from all sources of mercury is a serious concern to human health and the environment. Mercury is well-documented as a toxic, environmentally persistent substance that demonstrates the ability to bioaccumulate and to be atmospherically transported on a local, regional, and global scale. In addition, mercury can be environmentally transformed into methylmercury which biomagnifies and is highly toxic. As such, EPA is currently working to address mercury in various media, including atmospheric emissions, aquatic discharges, solid and hazardous wastes, and manufacture of mercury containing products.

EPA's Office of Prevention, Pesticides, and Toxic Substances published EPA's *Roadmap for Mercury* in July 2006, as a clear statement of EPA's commitment to address mercury in the environment for the public and its stakeholders. As summarized in EPA's *Roadmap for Mercury*, EPA has a long history of addressing mercury. Between 1970 and 1990, there was increasing scientific evidence of mercury pollution problems in the United

States. This evidence included serious health impacts from low-level exposure to mercury, increasing amounts of mercury pollution in air, water, and waste, increasing human exposure to mercury through fish consumption, and the enormous problem of local, regional, national and global transport of mercury pollution.

To address a number of these problems, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) was enacted in 1980, providing authority to clean up past waste. Following that, the Clean Air Act of 1990 provided authority to address mercury air emissions at key sources. In 1995, the Great Lakes Water Quality Guidance provided water quality standards to address mercury in that media. The 1996 Battery Act followed soon after, introducing mercury regulations in the area of products and manufacturing. Since that time, EPA has helped to shape and enforce mercury-pertinent provisions of environmental statutes, as well as spearhead domestic initiatives to study and reduce the harmful effects of mercury in environment.

In one of our most important efforts to address mercury, EPA's Office of Air and Radiation is developing a rule to control toxic air emissions including mercury from power plants. Since 2005, some power plants have been able to achieve 90 percent or greater reductions – both in demonstration projects and actual commercial operation. EPA is currently soliciting information from the electric utility industry that will provide actual operating experience at a number of facilities and provide the basis for requiring maximum achievable control technologies.

Because a major portion of mercury in the U.S. environment comes from sources outside the U.S., EPA has supported and led efforts to address mercury in multilateral treaties. Under the United Nations Economic Convention for Europe Convention for Long-Range Transboundary Air Pollution Protocol (LRTAP), EPA supported negotiations in 1998 of the LRTAP Heavy Metals Protocol which was subsequently ratified by the U.S. This Protocol includes limitations and deadlines for emissions for new and existing stationary sources as well as mandatory mercury concentrations limits for certain types of batteries. EPA also supported international efforts to address mercury reduction efforts in 2001-2002 by contributing scientific expertise, leadership, and funding to the United Nations Environment Program's (UNEP's) 2002 *Global Mercury Assessment*. Subsequently, the UNEP Governing Council in 2003 mandated the Global Mercury Program. In 2005, the UNEP Global Mercury Partnership was launched with significant support from the United States, and from EPA in particular. We provide a significant amount of the funding, lead two of the partnership areas, and support a wide range of projects across the Partnership as a whole. Since the 2009 decision by the UNEP Governing Council to negotiate a global mercury treaty by 2013, EPA has provided technical expertise and policy guidance throughout the process and we will contribute significantly as members of the U.S. negotiating team.

Currently, EPA is following through on the commitments made in the *Roapmap for Mercury*, including the use of regulatory authority under the Toxic Substances Control Act (TSCA) to reduce or eliminate the use of elemental mercury in certain products, including both existing and obsolete products. EPA also provides strong leadership to the UNEP

Global Mercury Partnership and technical expertise to the LRTAP Task Force for Heavy Metals. In the future, EPA looks forward to participating in the Intergovernmental Negotiating Committee that will begin the process of developing legally binding instrument to address global mercury issues. Those actions, as well as the convening of the Commodity Mercury Stakeholder Workgroup to inform the development and to support the implementation of the Mercury Export Ban of 2008, demonstrate a solid commitment to address mercury-related issues.

Notwithstanding these successes, the mercury challenge is multi-faceted and without simple solutions. We continue to provide global leadership through our ongoing efforts to address domestic and global mercury demand as a means to reduce risks to human health and the environment.

Assessing the amount of mercury pollution attributable to dental mercury

Based on National Emission Inventory data, EPA estimated unintentional air emissions of mercury from source categories related to waste combustion and incineration. At this time, there are limited atmospheric emissions estimates for mercury-containing product categories, including dental amalgam. For example, available 1990 and 2005 NEI data contain mercury emissions estimates for “Other (numerous very small sources),” but does not quantify emissions by specific mercury-containing items or sub-categories. In 2005, estimated emissions from the “Other (numerous very small sources)” category were 16.9 tons (16.5 percent) of 102.7 tons total U.S. anthropogenic mercury air emissions. Similar global estimates do not account for emissions specifically linked to dental amalgam. However, in 2005, the total estimate of global mercury emissions was 1,930 metric tons. Categories applicable to dental amalgam, “Cremation” (1 percent) and “Waste incineration and other” (7 percent) accounted for approximately 154 metric tons.

Dental amalgam use in the U.S. is gradually declining because the incidence of dental decay is decreasing and because improved substitute materials are now available for certain applications. In 2001 the total amount of dental mercury sold annually in the U.S. was 27.9 metric tons. Dental mercury use decreased slightly to 27.6 metric tons in 2003, but by 2007 had declined steeply to 14.9 metric tons, a decrease of 46 percent over three years. As of 2007, dental amalgam remained the second largest category of mercury use in all products (after switches and relays), constituting about 24 percent of mercury in all products sold in the U.S. that year. (Interstate Mercury Education and Reduction Clearinghouse fact sheet: *Mercury Use in Dental Amalgam*, January 2010)

Unlike other mercury-added products, there are no state restrictions on the sale or distribution of dental amalgam. At the national level, dental amalgam is regulated as a medical device by the Food and Drug Administration (FDA) under the Federal Food, Drug and Cosmetic Act. Increased consumer awareness of the presence of mercury in amalgam fillings may drive future declines in mercury amalgam use; however, the expense of non-mercury fillings can affect patients’ preferences for dental restorative materials.

It should be noted that it is difficult to translate dental amalgam use and consumption data to estimates of mercury pollution in the environment.

Efforts to assess mercury releases from dental amalgam

As your letter suggests, mercury from dental amalgam is a source of controllable mercury released to the environment and likely will remain a significant concern into the future. Mercury from dental amalgam is released to the environment through three primary pathways: in wastewater, as solid waste, and through cremation of bodies containing dental amalgam.

Mercury Amalgam in Wastewater

The majority of dental mercury amalgam waste is currently discharged from dental offices to wastewater treatment systems where it usually settles out in sewage sludge that is then incinerated, heat treated, landfilled, and/or land applied as biosolids (also known as “sludge”). In 2008, EPA estimates there are approximately 160,000 dentists working in 120,000 dental offices that use or remove amalgam in the United States, almost all of which discharge their wastewater exclusively to municipal sewage treatment plants. Most dental offices currently use some type of basic filtration system to reduce the amount of mercury solids passing into the sewer system. However, the adoption of best management practices and the installation of amalgam separators, which generally have a removal efficiency of 95 percent, have been shown to reduce discharges even further. In October 2007, the American Dental Association adopted new Best Management Practices for Amalgam Waste that recommends the use of dental amalgam separators and the recycling of captured amalgam solid waste.

Mercury Amalgam in Solid Waste

Waste amalgam solids that are improperly disposed in medical waste (“red bag”) containers will be either incinerated or autoclaved, thus causing volatilized mercury to escape into the environment. Mercury amalgam also accumulates on consumable dental supplies, such as cotton swabs and gauze, and these materials are usually disposed in the regular trash. In local areas where trash is incinerated, the mercury in this trash can be released via air emissions. To avoid such mercury air emissions, dental offices should properly dispose of captured amalgam solid waste by sending it to a dental waste recycler.

Mercury Emissions from Crematoria

Dental amalgam also contributes to mercury emissions through the cremation of bodies containing dental amalgam. A mercury flow worksheet developed for EPA Region 5 estimated that in the United States in 2005 almost 3,000 kilograms (6,613 lbs.) of mercury were released to the environment from crematoria. There remains a lack of good empirical data on the magnitude of mercury emissions from crematoria. At this time, no federal or state regulations restrict mercury emissions from crematoria.

EPA is working to update its estimates of pollution linked to dental amalgam

EPA plans to update mercury emission factors

EPA is developing a new emissions factors program designed to produce high quality emission factors by the end of next year. Once our new emissions factors development process is complete, any emissions sources (including wastewater sludge incineration and crematoria) that provide electronic source test plans to our Internet-based database will enable us to generate emissions factors for all pollutants, including mercury, using the most current data available.

EPA plans to revise regulations for sewage sludge incinerators

EPA plans to propose and finalize a rule setting new source performance standards and emission guidelines for sewage sludge incinerators by December 2010. This will include a standard for mercury emissions.

EPA recognizes the importance of revising and improving emissions data. Part of the sewage sludge incinerator (SSI) rule effort involves data collection and improving the accuracy of emissions data. EPA is currently using CAA Section 114 authority to collect information from active units. EPA's two part information collection request was sent on October 23, 2009, and EPA anticipates receiving data by March 31, 2010. As part of this information collection effort, EPA is collecting new and existing mercury data for the revised standard.

The Other Solid Waste Incinerator (OSWI) rule originally included new source performance standards and emission guidelines for 2 categories -- very small municipal waste combustion and institutional waste incineration units on December 16, 2005 (70 FR 74870). The rule was challenged by environmental groups in court and in response, the Agency plans to propose, accept notice and comment, and finalize new regulations in the near future. Both the SSI and OSWI rules will include a standard for mercury, eight other pollutants, and set an opacity standard.

EPA does not plan to regulate human crematoria at this time

At this time, however, EPA does not plan to regulate human crematoria. In the preamble to the final OSWI rule (70 FR 74870), EPA concluded that the human body is not solid waste. Since the law requires EPA to establish regulations for solid waste incineration units, EPA concluded that human crematories were not solid waste incinerators, and, therefore, it was not appropriate to regulate them under Clean Air Act Section 129. EPA also stated that if in the future we conclude that human crematories should be regulated, other Clean Air Act authorities or state authorities could be used.

EPA encourages dental amalgam capture and recycling

EPA's Office of Solid Waste and Emergency Response (OSWER) is currently partnering with Marquette University to finalize a teaching module to encourage dental amalgam capture and recycling, targeting student and practicing dentists. This effort has focused on addressing the capture of dental amalgam waste and dental amalgam recycling rather than emissions. Teaching dentists responsible dentistry will help prevent excess amalgam waste from entering the waste stream and ending up in sewage sludge. The teaching module is currently undergoing review, and will be posted to the EPA website upon final approval.

In December 2008, EPA's Office of Water signed a Memorandum of Understanding (MOU) with the American Dental Association (ADA) and the National Association of Clean Water Agencies (NACWA) to establish and monitor the effectiveness of a Voluntary Dental Amalgam Discharge Reduction Program. The purpose of the MOU is to have dental offices install and properly maintain amalgam separators, and recycle the collected amalgam waste. Early in 2009, the MOU parties agreed on a method for estimating the baseline and the data to be collected and analyzed. In June 2009, EPA received the baseline report, which included highlights of ADA's survey results on installation rates of separators across the country. We also expanded our coordination with stakeholders to include the Quicksilver Caucus, a coalition of State environmental associations who are concerned with mercury discharges, and also with the Mercury Policy Project, which is an NGO focused on reducing mercury from all sources. As all the parties continue to coordinate on next steps, we look forward to narrowing the performance goals and agreeing on best approaches to encourage installation of separators.

Again, thank you for your letter and your continued interest in this issue. If you have any questions, please contact me, or your staff may contact Tom Dickerson of my office at (202) 564-3638.

Sincerely,



Arvin Ganesan
Deputy Associate Administrator
for Congressional Affairs