



COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
ONE WINTER STREET, BOSTON, MA 02108 617-292-5500

DEVAL L. PATRICK
Governor

TIMOTHY P. MURRAY
Lieutenant Governor

IAN A. BOWLES
Secretary

LAURIE BURT
Commissioner

Oral Testimony of

C. Mark Smith, Ph.D., M.S.

Co-Chair, New England Governors and Eastern Canadian Premiers Mercury Task Force

Deputy Director, Office of Research and Standards,

Massachusetts Department of Environmental Protection

Before the

Domestic Policy Subcommittee

Oversight and Government Reform Committee

Wednesday, November 14, 2007

2154 Rayburn HOB

2:00 P.M.

Thank you Chairman Kucinich, Ranking Member Issa and members of the Committee, for inviting me to testify today on the environmental impacts of dental mercury. As a scientist, a father and a fisherman I am very concerned about the effects of mercury pollution on our environment and our children's health. To help address this problem, I have been engaged in mercury policy and research for the past 15 years. I currently direct my agency's mercury program; represent MA on the Quicksilver Caucus and co-chair the New England Governors and Eastern Canadian Premiers (NEG-ECP) Mercury Task Force.

Today I am speaking on behalf of the New England Governors Conference, which was established by the Governors of New England to coordinate regional policy programs in several areas including the environment, and the Massachusetts Department of Environmental Protection.

To address the serious impacts of mercury pollution in the northeast, the New England Governors and Eastern Canadian Premiers unanimously adopted a bi-national Mercury Action Plan in 1998. This plan called for the virtual elimination of anthropogenic mercury pollution in the region and established interim goals of a 50% reduction by 2003 and 75% by 2010. The region has exceeded this plan's first goal and is well on its way to the 2010 target. This has been accomplished through strict regulations that exceed federal requirements, addressing mercury pollution from trash incinerators, coal-fired power plants, mercury products and the dental sector.

Several assessments have estimated that the dental sector, in the absence of amalgam separator pollution controls, accounts for 50% or more of the mercury entering municipal wastewater systems, where it concentrates into sewage sludge. In areas where amalgam separators are required, mercury levels in sludge have declined significantly, often by more than 50%.

Mercury discharged from dental offices is released to the environment when sewage sludge is incinerated or reused. Dental mercury can also be released in treatment plant effluent; combined sewer overflows; solid waste and upon the cremation of individuals with amalgam fillings.

Sewage sludge incinerators were estimated to be the third largest point source of mercury emissions in the northeast prior to regional requirements that dentists use amalgam separators, and accounted for over 1,100 pounds or 12% of total emissions. This estimate did not include releases from wastewater or land applied sewage sludge, which would significantly increase the total.

In 1997, land applied sewage sludge was estimated to release over 10,000 pounds of mercury per year in the US and Europe. Although mercury in amalgam is less volatile and soluble than other forms, the large surface area of small amalgam particles released into dental wastewater enhances mercury mobilization compared to intact fillings, resulting in its bioavailability. This conclusion is supported by experiments in which mercury levels in fish increased over 200-fold after exposure to amalgam particulates.

Amalgam separators are inexpensive technologies that can reduce dental mercury pollution by greater than 95%. To reduce mercury releases attributable to the dental sector our region adopted a 75% amalgam separator use goal for 2007, and 95% for 2010. The national Canada-wide standards also call for 95% of Canadian dentists to use these controls.

The region is well on its way to meeting these goals. Montreal, the first municipality in the northeast to mandate amalgam separators, reports that mercury levels in their sludge have decreased by greater than 50%. Overall, in the Eastern Canadian provinces more than 53%, and in the New England states, more than 78% of dentists who generate amalgam waste are now using amalgam separators.

In MA we have worked collaboratively with the Massachusetts Dental Society and an MOU was adopted in 2001 to encourage amalgam separator use. A follow-up program was initiated in 2004 when MassDEP indicated that it was developing regulations requiring amalgam separators. To achieve faster mercury reductions, the agency also initiated a voluntary early compliance program. As an incentive, permit fees were waived and acceptable separators were grandfathered until 2010. This incentivized early compliance program was very successful - about 75% of MA dentists installed amalgam separators by the end of the first year preventing several hundred pounds of mercury discharges. Regulations requiring the use of amalgam separators were ultimately adopted in 2006.

Data from the Massachusetts Water Resources Authority (MWRA), which treats sewage for 2.5 million people in the Greater Boston Area, indicates that this program has been effective. Over 2004 – 2006, when amalgam separator use increased to over 75% in MA, mercury levels in MWRA sludge decreased by 48%.

In conclusion, the dental sector can be a significant source of mercury pollution. Amalgam separators can significantly reduce such releases. Collaborative initiatives to expand the use of these control technologies, which include quantifiable goals and objectives and meaningful compliance deadlines are effective and should be pursued nationally.

I would like to again thank you, Mr. Chairman, Ranking Member, and other members of this Subcommittee, for your interest in this issue and for allowing me to share my state's and region's views. I would be happy to answer any questions you have at this time.