

**Testimony to the  
Domestic Policy Subcommittee  
of the  
Oversight and Government Reform Committee**

**Hearing on:  
“Assessing EPA’s Efforts to Measure and Reduce Mercury  
Pollution from Dentist Offices”**

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The Mercury Policy Project greatly appreciates the opportunity to testify on “Assessing EPA’s Efforts to Measure and Reduce Mercury Pollution from Dentist Offices.” The Mercury Policy Project (MPP) works to promote policies to eliminate mercury uses, reduce the export and trafficking of mercury, and significantly reduce mercury exposures at the local, national, and international levels. We strive to work harmoniously with other groups and individuals who have similar goals and interests.

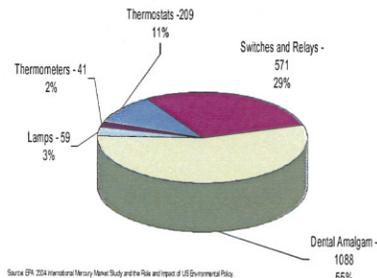
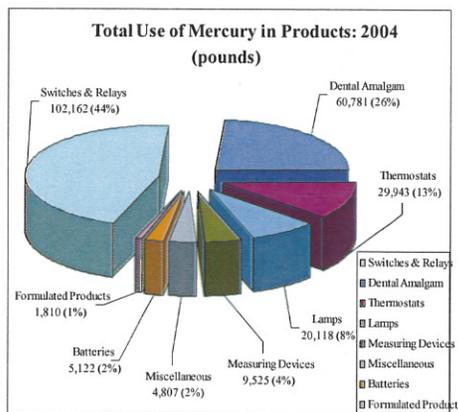
Due to the dental sector’s significant contribution of mercury into the environment, the Domestic Policy Subcommittee held hearings in November 2007 and July 2008 that the Mercury Policy Project testified at. During the hearing, testimony showed that dental offices are the largest polluter of mercury to municipal wastewater treatment plants, contributing 40% or more of the load.<sup>i</sup>

The dental sector is the second largest users of mercury, using over 30 tons of mercury in 2004, and also the largest current use in the United States.<sup>ii</sup> This mercury will subsequently be released 15 years later, since the average life of an amalgam is 10-20 years.<sup>iii</sup>

## Amalgam Mercury Use in 2004 and Subsequent Releases 15 years Later

Dental sector used over 30 metric tons of mercury in 2004

Over 1,000 Tons of Mercury Were In Use American’s mouths in 2004



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Dental mercury pollution subsequently contaminates our food. According to EPA, “When amalgam enters the water, microorganisms can change it into methylmercury, a highly toxic form that builds up in fish.”<sup>iv</sup>

Since the July 2008 hearing, it’s become clear that the December 2008 memorandum between the Environmental Protection Agency, the American Dental Association and the National Association of Clean Water Agencies to voluntarily address the issue of dental mercury

discharges<sup>v</sup> is unnecessarily allowing tons of dental mercury pollution into the environment each year. According to ADA's website, they had convinced EPA:

“...that a national pretreatment standard for dental offices was not necessary because dentistry was already acting voluntarily to address environmental impacts from dental amalgam. The ADA pointed out support of its position that the use of amalgam separators is part of the ADA's Best Management Practices (BMP). The EPA agreed and concluded that a national standard was not warranted at that time. Following this, EPA proposed an agreement among EPA, ADA and National Association of Clean Water Agencies (NACWA) to further promote voluntary compliance with ADA's BMPs, including the use of amalgam separators.”<sup>vi</sup>

As stated in the MOU, EPA “...did not identify...the dental sector...for rulemaking” because they have demonstrated “...significant progress through voluntary efforts” and were therefore “a lower priority for effluent guidelines, particularly where such reductions are achieved by a significant majority of dentists utilizing amalgam separators.”

It was also used as EPA's rationale in its effluent guidelines for dental clinics in 2008.

“EPA...did not identify the dental sector for an effluent guideline rulemaking because as EPA has found with other categories of dischargers, ‘demonstrating significant progress through voluntary efforts’ gives that category ‘a lower priority for effluent guidelines or pretreatment standards revision, particularly when such reductions are achieved by a majority of individual facilities in the industry.’”<sup>vii</sup>

However, ADA appears to be speaking out of both sides of its mouth when it comes to promoting dental mercury pollution prevention. ADA initiated its voluntary program for best management practices (BMPs) in 2003. In October 2007, the ADA's BMPs were amended to include the recommended use of amalgam separators.<sup>viii</sup> The ADA published its first report in 2002 on amalgam separators, followed by articles in 2003 and 2008.<sup>ix</sup> Therefore, the need to install amalgam separators as part of BMPs to protect the environment was well-established years ago. Yet, working with its state chapters, ADA has successfully blocked any further state mandates for amalgam separators since 2008. ADA also convinced EPA in 2008 to conclude “that a national standard was not warranted at the time,” according to their website.<sup>x</sup>

Clear evidence of the failure of voluntary programs had been documented by a 2008 Domestic Policy Subcommittee staff report which cited numerous cases where the programs didn't realize significant compliance.<sup>xi</sup> Since then, the Quicksilver Caucus, a coalition of state government organizations focusing on mercury issues, has found that amalgam separator installation rates are low unless there is a mandatory component.<sup>xii</sup>

While not regulated nationally, eleven states have mandated pollution control requirements (called “amalgam separators”) at dental clinics. State and local programs can eliminate 95%-99% of dental mercury releases to wastewater through a combination of amalgam separators and best management practices. They also require dentists to recycle the mercury and provide reports to verify compliance.

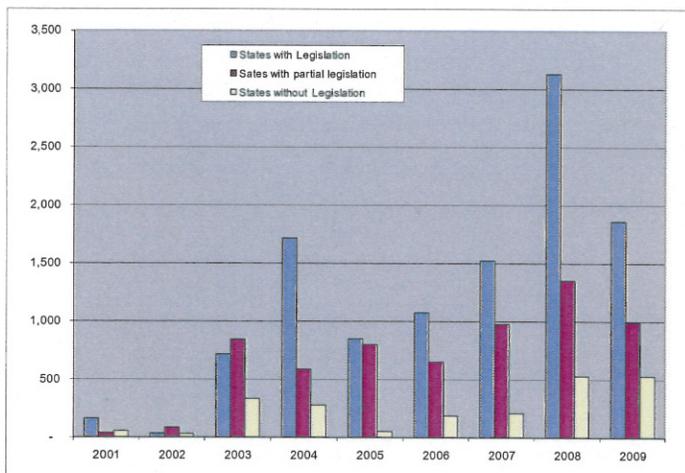
# 11 States Require Best Management Practices with Amalgam Separators

State	Year	Mandate
Connecticut	2003	Law
Maine	2004	Law
New Hampshire	2005	Rules
Washington	2005	Rules
Vermont	2006	Rules
New York	2006	Rules
Massachusetts	2007	Law
Rhode Island	2007	Law
New Jersey	2007	Rules
Oregon	2011	Law
Michigan	2013	Law



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Yet in states where amalgam separators aren't mandated, compliance is low. Only 13% of the separators sold have been sold in non-regulated states from 2004 through 2009, according to an amalgam separator manufacturer.<sup>xiii</sup>



## Partial Estimate of Amalgam Separator Sales, 2001-2009

Only 13% of separators have been sold in non-regulated states from 2004-2009.

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Congressional subcommittee hearings in 2007 and also 2008 also revealed significant disparities between the Agency's estimate of 1.5 tons per year of dental mercury released to air compared with more recent estimates provided by an EPA scientist that were three times higher.

Pathway	EPA 2002 Inventory	MPP Low Estimate 2005	MPP High estimate 2005
Human cremation	0.3	3.0	3.5
Dental clinics	0.6	0.9	1.3
Sludge incineration	0.6	1.5	2.0
MSW disposal	n.a.	0.2	0.5
Infectious/hazardous	n.a.	0.5	0.7
Human respiration	n.a.	0.2	0.2
<b>Total</b>	<b>1.5</b>	<b>7.1</b>	<b>9.4</b>

As the table shows, EPA has not developed estimated emissions for several sources, including: dental mercury in sludge that is landfilled or spread on agricultural or forest land, or that is dried before it is used as fertilizer; in infectious and hazardous waste; in general municipal waste; in human respiration; or removed as grit and fines at wastewater treatment plants and disposed of in a number of ways, including septic systems and in combined sewer overflows.

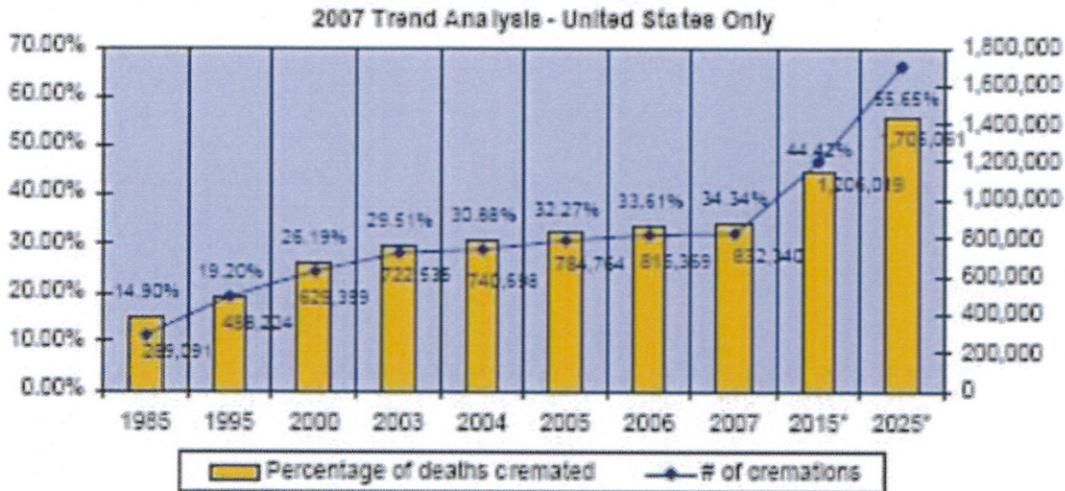
Factoring in other amalgam air pathways that EPA left out and based on new research, our new report estimates that atmospheric emissions from dental mercury could be more than six times the 2002 EPA estimate, due primarily to increasing emissions from cremation.

New data provided by the Cremation Association of North America (CANA) estimates that the 2010 cremation rate in the United States will be just under 36%, with 946,400 cremations, while the rate in 2020 will be about 50%, with approximately 1,456,040 cremations. This is compared to the estimate of 796,058 cremations used in the Region 5 EPA model (29.61% of 2,688,478 total deaths). Thus, the estimate of the EPA scientist for 2010 is 25% too low compared to the CANA estimate, while by 2020, the number of cremations will be 83% larger than the estimate of the model for 2005-2010.<sup>xiv</sup>

In the next 10 years, emissions from crematoria are expected to rise considerably. The chart below from the Cremation Association of America provides an indication of U.S. cremation trends and projections to 2020, which are significantly greater than earlier projections.<sup>xv</sup>

## Cremation Data & Predictions: Data Trends

- Percentage of Deaths Resulting in Cremation Since 1985



\*Projected figures

There are two simultaneous trends contributing to this: a rise in the average number of fillings per person cremated and a rise in the number of cremations.<sup>xvi</sup> In the past, many corpses had relatively few – if any – of their own teeth, due to losses of teeth. For example, according to a study by U.S. Centers for Disease Control and Prevention (the National Health and Nutrition Examination Survey (NHANES)) in the late 1980s and early 1990s, the presence of teeth in U.S. adults was significantly lower among adults above age 55 as compared to younger adults. By age 55, the average adult had less than half of their teeth, while by 75, the number had fallen to less than a third of their teeth.

However, improved health care has resulted in more people retaining more teeth throughout their lives, which also means more restorations – including amalgam fillings – in corpses. This situation will change in time, as the younger generation has benefited from even better dental health care to not only retain more teeth, but to have fewer restorations. While exact data in the United States on these trends are not available – especially the use and estimates for amalgam fillings – we can get an indication of this from work done in Europe, especially the United Kingdom (UK).<sup>xvii</sup>

In a U.K. report from 2003, it was estimated that the amount of mercury per cremation would increase by 42% from 2005 to 2020, based solely on the increased number of teeth – and hence restorations, per person. If the same would apply in the United States, the total amount of mercury emitted would increase by 160% due to a 83% increase in the number of cremations and a 42% increase in mercury per cremation. **Thus, rather than 6,516 pounds a year, the total mercury emission would be about 16,944 pounds per year.**<sup>xviii</sup>

## Estimates of Mercury Emissions from US Crematoria

Year and Source	U.S. Deaths	Cremation Rate	Cremations	Mercury per Cremation	Total Mercury
2005-2010 *	2,688,478	29.61%	796,058	3.72 grams	2961 kg, 6526 pounds
2010 **	2,634,000	35.93%	946,396	3.72 grams	3710 kg, 8177 pounds
2020 ***	NA	50%	1,456,040	5.28 grams	7688 kg, 16,944 pounds

\* EPA Region 5 Mercury Flow Model

\*\* CANA Estimates for number of deaths and cremations, 2003

\*\*\* Interpolation of CANA estimates for the number of deaths and cremations, 2007 trends analysis, and UK estimates of increased quantity of mercury per cremation on a percent basis, based on increased presence of teeth

Securing accurate estimates of dental mercury air releases is important because the record clearly indicates that EPA prioritizes its activities based in part on the amount of mercury releases from a particular industry sector to the atmosphere. Yet EPA continues to significantly underestimate the amount of air pollution that dental mercury accounts for, thereby rendering this problem a lower priority in the Agency's comprehensive mercury reduction strategy.

In conclusion, the problem with the midnight deal between the Bush Administration and the ADA is that it allows significant and preventable mercury pollution releases to the air and water. The deal was based on faulty information, left ADA in charge of developing baseline data before goals could be set, is being unduly delayed, and lacks openness, transparency and follow through. Voluntary educational outreach program might be justified for a *de minimis* pollution source, but is clearly not adequate for this significant source of mercury pollution.

Dental mercury releases to the atmosphere, estimated at between 7-9 metric tons per year in 2005, are significant and growing. The dental sector also remains the largest mercury contributor to wastewater "by far;" although decreasing they are still large users, too. EPA's premise for their MOU with ADA and for not establishing effluent guidelines in 2008 was based on faulty information, which is still being perpetuated to this day on the ADA on website.<sup>xix</sup>

Therefore, we recommend that EPA should establish effluent guidelines for dental offices, including employment of BMPS and amalgam separators. The Agency's 2002 dental Hg air emissions data must be updated, especially for cremation, and include all sources. We also strongly believe that EPA should regulate mercury emissions from crematoria. Finally, EPA should maintain an open and transparent process and include NGOs.

## ENDNOTES

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<sup>i</sup> See: <http://mpp.cclean.org/wp-content/uploads/2008/08/benders-testimony.pdf>

<sup>ii</sup> EPA International Mercury Market Study, cited in Mercury Policy Project, "Current Status of US Dental Mercury Reduction Initiatives," Oct. 12, 2007.

<sup>iii</sup> [Anonymous.] 1991. The Mercury in Your Mouth. Consumer Reports (May):316-319.

<sup>iv</sup> See: <http://www.epa.gov/mercury/dentalamalgam.html>

<sup>v</sup> Memorandum of Understanding between EPA, ADA and the National Association of Clean Water Agencies to establish and monitor the effectiveness of a Voluntary Dental Amalgam Discharge Reduction Program, December 29, 2008; see: <http://www.epa.gov/guide/dental/files/mou.pdf>

<sup>vi</sup> ADA Promotes Voluntary Installation and Use of Amalgam Separators, see: [http://www.ada.org/sections/professionalResources/pdfs/topics\\_amalgamseparators\\_flyer.pdf](http://www.ada.org/sections/professionalResources/pdfs/topics_amalgamseparators_flyer.pdf)

<sup>vii</sup> EPA, Notice of Availability of Preliminary 2008 Effluent Guidelines Program Plan, 72 Fed. Reg. 61,335,61348 (October 30, 2007) and EPA's Roadmap for Mercury (July 5, 2006).

<sup>viii</sup> See: [http://www.ada.org/sections/publicResources/pdfs/topics\\_amalgamwaste.pdf](http://www.ada.org/sections/publicResources/pdfs/topics_amalgamwaste.pdf)

<sup>ix</sup> The ADA first published "Laboratory evaluation of amalgam separators" (PL Fan, Hanu Batchu, Hwai-Nan Chau, William Gasparac, Jim Sandrik and Daniel M Meyer) in the May 2002 issue of the ADA Journal. Note the ADA BMPs were first published in October of 2003 after this article was published in May 2002.

<sup>x</sup> ADA Promotes Voluntary Installation and Use of Amalgam Separators, see: [http://www.ada.org/sections/professionalResources/pdfs/topics\\_amalgamseparators\\_flyer.pdf](http://www.ada.org/sections/professionalResources/pdfs/topics_amalgamseparators_flyer.pdf)

<sup>xi</sup> ibid.

<sup>xii</sup> Letter from Mark McDermid, Quicksilver Caucus, Lead ECOS Representative to the EPA Water Docket ID No. EPA-HQ-OW-2008-0517, March 31, 2010.

<sup>xiii</sup> Email attachment from Al Dube, National Sales Manager, Dental Division, SolmeteX, Northborough, MA, May 5, 2010.

<sup>xiv</sup> See: <http://www.cremationassociation.org/Media/CremationStatistics/tabid/95/Default.aspx>, accessed May 17, 2010

<sup>xv</sup> ibid.

<sup>xvi</sup> Department for Environment, Food and Rural Affairs (Defra, UK) (2003), "Mercury emissions from crematoria. Consultation on an assessment by the Environment Agency's Local Authority Unit", 2003, 25 pages. Accessed on the Internet at <http://www.defra.gov.uk/corporate/consult/crematoria/index.htm> on July 14, 2005. Accessed on the Internet on May 10, 2010 at <http://web.archive.org/web/20031204071747/http://www.defra.gov.uk/corporate/consult/crematoria/consultation.pdf>

<sup>xvii</sup> John Reindl, "Summary of References on Mercury Emissions from Crematoria" (unpublished), May 9, 2010.

<sup>xviii</sup> ibid.

<sup>xix</sup> See: [http://www.ada.org/sections/professionalResources/pdfs/topics\\_amalgamseparators\\_flyer.pdf](http://www.ada.org/sections/professionalResources/pdfs/topics_amalgamseparators_flyer.pdf)