

FACT SHEET ON DENTAL AMALGAM MERCURY'S IMPACT ON THE ENVIRONMENT

Prepared by the International Academy of Oral Medicine and
 Toxicology (IAOMT, www.iaomt.org); 2016 Update

Dental amalgam results in substantial quantities of toxic mercury released annually into the environment. Once in the environment, mercury pollution damages animals, plants, and the entire ecosystem, while creating "hotspots that last for centuries."¹

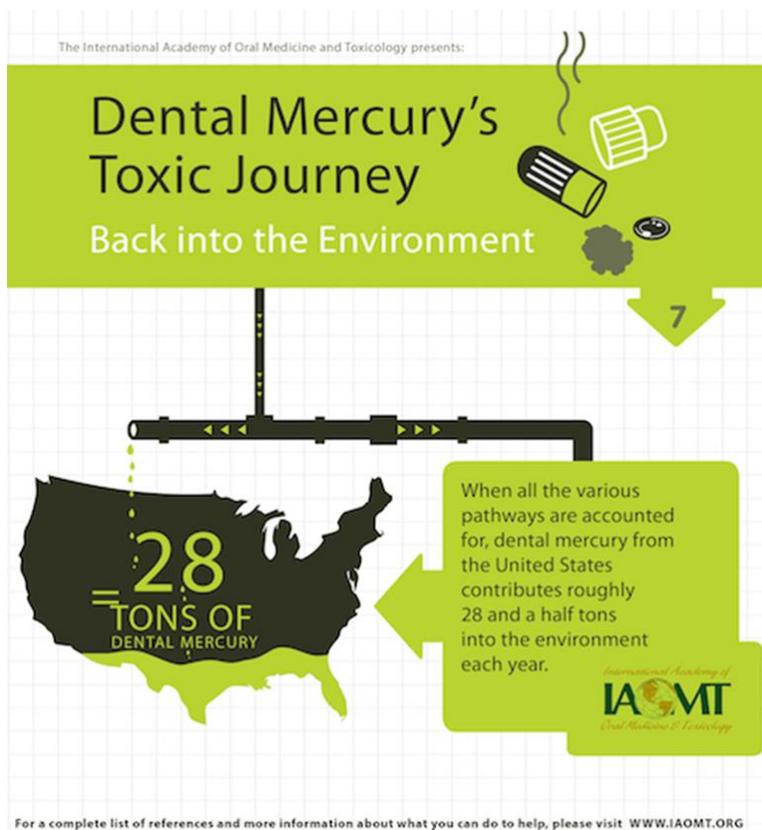
1) Wastewater from Dental Offices: According to the United States Geological Survey, in 2010, dental amalgam was the leading end-use sector of mercury in the U.S.² Also, the U.S. Environmental Protection Agency (EPA) has recognized that "dental offices are the largest source of mercury discharges to POTWs [publicly-owned treatment works]."³ Mercury from these dental discharges is separated out into sludge or biosolids. The sludge is usually incinerated, which releases mercury pollution into the atmosphere,⁴ and the biosolids are often used as fertilizer, which contaminates soil with mercury.⁵

2) Human Waste: Patients with amalgam fillings (also called "silver fillings") excrete over ten times more mercury in their feces than those without mercury fillings.⁶ The IAOMT has estimated that in the U.S., this is over 8 tons of mercury flushed out to sewers, streams, and lakes per year.⁷

3) Cremation and Burial: According to the United Nations Environment Programme (UNEP), in 2010, cremation of human remains released approximately 3.6 tons of mercury into the environment.⁸ Other sources have identified that burying an individual with amalgam fillings means that the mercury is re-deposited directly into soil.⁹

4) Mercury Vapor: Mercury vapor has been found in air inside and outside of dental offices at high levels,^{10 11} and it is also continuously emitted from dental amalgam fillings.¹²

5) Amalgam Separators: Amalgam separators can reduce the amount of mercury discharge in wastewater from dental offices.^{13 14} In fact, the U.S. EPA has utilized measures in the Clean Water Act to develop standards for dental clinics to reduce mercury releases;¹⁵ however, these standards have not yet been passed. Even if standards are required, it would be helpful to enforce maintenance requirements for amalgam separators. It should also be remembered that amalgam separators only contribute to reducing dental mercury in wastewater and not the additional burdens on the environment and human health.



For more detailed information and a full list of sources, download the IAOMT's
 "Comprehensive Review of Dental Mercury" by scanning the code to the left or visiting
<https://iaomt.org/wp-content/uploads/Comprehensive-Review-Dental-Mercury.pdf>

¹ Pirrone N, Mason R. *Mercury Fate and Transport in the Global Atmosphere: Emissions, Measurements, and Models*. New York, New York: Springer. 2009: 166.

² Wilburn DR. Changing patterns in the use, recycling, and material substitution of mercury in the United States: U.S. Geological Survey Scientific Investigations Report 2013-5137. 2013.

³ United States Environmental Protection Agency. *Effluent Limitation Guidelines and Standards for the Dental Category Mercury in Dental Amalgam*. EPA - 821-F-14-002. September 2014.

⁴ Balogh S, Liang L. Mercury pathways in municipal wastewater treatment plants. *Water, Air, and Soil Pollution*. 1995; 80(1-4):1181-90.

⁵ Health & Environment Alliance and Health Care Without Harm. Chapter 2: Mercury pollution: where does it come from? *Stay Healthy, Stop Mercury Campaign*. 2007: 24.

⁶ Björkman L, Sandborgh-Englund G, Ekstrand J. Mercury in saliva and feces after removal of amalgam fillings. *Toxicology and Applied Pharmacology*. 1997; 144(1):156-62.

⁷ Larose P. *Position Paper*. IAOMT Environmental Committee; 2011.

⁸ United Nations Environment Programme. *Global Mercury Assessment 2013: Sources, Emissions, Releases and Environmental Transport*. Geneva, Switzerland: UNEP Chemicals Branch; 2013: 10.

⁹ Hylander LD, Goodsite ME. Environmental costs of mercury pollution. *Science of the Total Environment*. 2006; 368(1):366.

¹⁰ Rubin PG, Yu MH. Mercury vapor in amalgam waste discharged from dental office vacuum units. *Archives of Environmental Health: An International Journal*. 1996; 51(4):335-7.

¹¹ Stone ME, Cohen ME, Debban BA. Mercury vapor levels in exhaust air from dental vacuum systems. *Dental Materials*. 2007; 23(5):527-32.

¹² Many scientific studies support this fact, but one example of this being reported from a reputable government agency is Health Canada. *The Safety of Dental Amalgam*. 1996: 4.

¹³ Arenholt-Bindslev D, Larsen AH. Mercury levels and discharge in waste water from dental clinics. *Water, Air, and Soil Pollution*. 1996; 86(1-4):93-9.

¹⁴ Hylander LD, Lindvall A, Uhrberg R, Gahnberg L, Lindh U. Mercury recovery in situ of four different dental amalgam separators. *Science of the total environment*. 2006; 366(1):320-36.

¹⁵ United States Environmental Protection Agency. *Effluent Limitation Guidelines and Standards for the Dental Category Mercury in Dental Amalgam*. EPA - 821-F-14-002. September 2014.

The IAOMT is an accredited member of the United Nations Environment Programme's Global Mercury Partnership. The goal of the IAOMT is to promote a global network of independent national and regional organizations that communicate and share the basic principles of science-based biological dentistry with each other, our communities, and the world.

WWW.IAOMT.ORG