

## Why do I want to separate and recycle my amalgam?

Amalgam is about 50% mercury, and mercury is ranked third in the US Government list of hazardous substances. Mercury comes after arsenic and lead, but ahead of all the organic toxins such as PCBs and pesticides. The World Health Organization (WHO) has identified mercury as the number one environmental poison.

Symptoms of mercury toxicity cover a wide range, including respiratory, immunological, neurological, reproductive, developmental, genotoxic, and carcinogenic. Some individuals also exhibit a hypersensitivity to mercury.

Mercury from many sources is appearing in our air, water, food, and sewer sludge.

Sewer sludge is usually sold as fertilizer to agriculture and tree farms. Sludge with a high content of mercury cannot be sold or even given away; it is a toxic waste, which must be properly disposed. The best characterization of mercury entering the sewer system was done by the city of Palo Alto, California in the US. Their results are as follows:

47%	Dental Offices
36%	Human Waste (Amalgam)
7%	Permitted Industry and schools
6%	Human Waste (Food)
3%	Storm water
0.1%	Residential products
1.6%	Other

With around 80% of the mercury entering the sewer system being from dental amalgam, all levels of government are moving towards regulation.

Air emissions of mercury are also a major area of concern. Mercury is a volatile liquid that changes to a vapor over time, or rapidly with the addition of heat. Sources as estimated by the US EPA are as follows:

26.7%	Medical Waste incinerators (includes amalgam from traps)
22.7%	Municipal Waste Combustors (includes amalgam from traps tossed in garbage)
34.7%	Boilers-Utility, Commercial, & Residential, primarily from coal
0.9%	Crematories and sludge incinerators
13.2%	Manufacturing sources
1.8%	Fluorescent lamps, labs, dental preparations, landfills, paint and misc.

Regulations are removing mercury from many products. For instance, paint contained mercury as a mold inhibitor until a few years ago. The energy industry is facing EPA regulations on coal fired boilers. Air emissions from dental mercury can be greatly reduced by recycling amalgam from traps instead of throwing it in the garbage and medical waste, or flushing it.

Dental amalgam that enters garbage landfills will contaminate ground water and volatilize into the air.

Mercury levels are increasing in our food supply. Sewer sludge is used as fertilizer for our food. Mercury in the air eventually gets into water and the food chain. Living tissue accumulates mercury, and this becomes more concentrated at the top of the food chain. Fish have been found to accumulate very high levels of mercury.

Government agencies use two procedures for finding mercury in the sewer system. If local regulations require amalgam separators, then spot checks at the dental clinics are done to verify compliance. The second and less known procedure is used when a sewer treatment facility has a problem with high levels of a contaminant. They first test every sewer line flowing into the facility to see which ones have high levels. Next they go upstream on the offending line and sample at each divide until they can pinpoint the building or office creating the contamination. This has led to work stoppage and a requirement to collect and dispose of all liquid waste at some private dental offices and one US Government dental facility.

Most municipalities or sewer districts in North America already have regulations which place upper limits on the parts per million of various elements that can be in the waste stream entering the sewer. Keep in mind that agencies will measure total mercury, both particulate and dissolved compounds.

The bottom line for dentists is avoidance of liabilities and anticipating or meeting regulations. Canada just passed a national program for dental mercury, and the US EPA is developing a program. Mercury accumulating in vacuum and sewer lines may be a hazardous waste site liability when you move the office or demolish the building. Recycling amalgam from traps and unused portions will improve our world and eliminate a liability. Install a Rasch 890 ISO 11143 certified amalgam separator to remove fine amalgam particles and dissolved mercury from your waste stream. ■