**Characteristics of Concern:** mercury is a PBT (like PCBs, dioxin/furans, DDT)

* Persistent: elemental, inorganic: some converts to organic forms (e.g., methylmercury is primary concern)
* Bioaccumulative: works its way up the food chain, i.e., consumed by increasing life forms until we eat affected animals (primarily fish)
* Toxic: neurological; damages the brain, kidney, and lungs; symptoms can include sensory impairment (vision, hearing, speech), disturbed sensation, and a lack of coordination

**Significant Sources:**

* Common Sources: barometers, sphygmomanometers, thermometers, hydrometers, pyrometers; fluorescent lamps; mercury arc lamps producing ultraviolet rays; switches; mirrors; extracting gold and silver from ores; electric rectifiers; electroanalysis; batteries (e.g., zinc-carbon & mercury cells); cathode in electrolytic manufacturing of chlorine & caustic soda; catalyst for urethane & epoxy resins; laboratory reagent; amalgam
* Dental Facilities: 1) NACWA’s 2002 *Mercury Source Control and Pollution Prevention Program Final Report* identified dental facilities as the main source of mercury discharges to POTWs, 2) 2003 ADA report: 50% of POTW’s mercury

**What happens at a POTW?**

* Good News: 90% removed from the wastewater by the primary and secondary processes
* Bad News: settles - in the biosolids, low spots (specific gravity: 13.5 @25°C)

**Controllability and Source Control Strategies:**

* Source Reduction Programs: collections, exchanges/ product substitution (e.g., thermometer, light bulbs)
* Dental Product Substitution: 5 alternatives: resin composite, glass or resin ionomers, porcelain, and gold alloys (dental insurance may cover only amalgam; if you opt for an alternative, you will pay the difference)
* Technology - Amalgam Separator: $3,000 - $5,000 each; maintenance; hazardous waste hauling/recycling

Example Recycling Pricing: one gallon container - $75; five gallon container - $260

**Why the Effluent Guideline?**

* December 2008: MOU signed by EPA, ADA, and NACWA: establish and monitor the effectiveness of a Voluntary Dental Amalgam Discharge Reduction Program: install and maintain amalgam separators and recycle the waste
* September 2010: EPA began the process of establishing the Dental Amalgam Effluent Guideline
* Status: EPA originally intended to have the proposed rule ready by October 2011 but it has been pushed back to early spring 2012; still committed to finalizing by October 2012

**What has been done so far?**

* **Educational Material:** EPA and Marquette University’s School of Dentistry developed a teaching module highlight four main actions to properly manage amalgam waste: GRIT: “Gray Bag It; Recycle It; Install It, and Teach It. Advocates ADA’s BMPs for amalgam waste. (gray bag – for mercury recycling; similar to red bag for biohazardous medical waste, although these are often incinerated)
* **BMPs Guidance Materials:** 1) ADA: Best Management Practices for Amalgam Waste (last revised October 2007) and 2) CDA Handout: Amalgam Waste Best Management Practices

**Recyclers:**

* EcoSolutions/Stericycle, Milpitas, CA, (866) 783-7422, http://www.stericycle.com/
* Barnes HazMat, Inc., Pacoima, CA, (877) 600-6737, www.barneshazmat.com/
* WCM, Inc., Carlsbad, CA, (866) 436-9264, www.wastewise.com
* **AZ, CA, CO, ID, MT, NM, NV, OR, WA:** AERC Recycling Solutions, Allentown, PA, (610) 797-7608 – Main Corporate Office, www.aercrecycling.com

**Other Mercury- Related Issues**

* **SWRCB:** TMDL for San Francisco Bay; developing statewide TMDL – draft by December 2013
* **Fish Consumption Rate:** OR: 175 g/day (vs. EPA’s 17.5 g/day); WA: 157-267 g/d (6.5 g/day for WQS)
* **USEPA:** [water quality criterion for human health of 0.3 mg methylmercury/kg of fish tissue](http://www.epa.gov/waterscience/criteria/methylmercury/factsheet.html)