BEST MANAGEMENT PRACTICES (BMPs)
FOR DENTAL CARE PROVIDERS

For Minimization of Mercury Discharge to the Sewerage System
By Dental Care Providers

Introduction and Regulatory Background:

Mercury discharges to the environment are receiving significant attention throughout the United States including Idaho. Improper waste management from Dental offices; e.g., amalgam particles, waste mercury, fixers, developers, x-ray film packets, and chemiclave chemicals, can cause toxic chemicals (mercury, silver, lead, developer solution chemicals, and chemiclave solutions) to enter our river, sanitary sewers, and landfills. Local city wastewater agencies have the ability to regulate dental office discharges through existing sewer use ordinances, typically in conjunction with a pretreatment inspection and compliance programs. The Dental BMP Program has been updated to specifically address mercury amalgam; other environmental concerns and new regulatory requirements required by newly issued wastewater treatment discharge permits.

In addition to the environmental benefits of proper waste management, through pollution prevention, dentists can also reduce the regulatory requirements associated with dental wastes by complying as outlined. This guide was prepared to assist dentists on how to best manage the disposal of dental wastes. Specifically, this BMP program was developed to help dentists properly manage dental wastes to ensure compliance with applicable environmental, biomedical, occupational health, and transportation regulations.

This program relies on mandatory amalgam separators, supported by easy-to-implement and cost-effective BMPs to insure compliance with applicable wastewater discharge permit limits. The BMPs provide additional further waste management and pollution prevention.

This set of mandatory and recommended BMPs for Dental Care Providers relies on two principal concepts:

1) Installation and maintenance of a City approved ISO 11143 certified amalgam separator.
2) Reduce and Recycle all dental waste.

ISO certified amalgam separators available on the market today are easily affordable and highly effective at trapping amalgam particles in dental office wastewater discharges.

Encouraging the reduction and recycling of dental waste is the preferred approach as this reduces the amount of, and costs associated with, dental wastes. Dental waste management vendor information is in an appendix to this document.

If recycling of dental wastes is not an option, proper disposal as hazardous waste is necessary. Ada County and the City of Boise have hazardous waste collection programs designed for small generators of wastes such as dental care providers. For example, Ada County operates a conditionally-exempt small quantity generator (CESQG) program that can accept up to 200 combined pounds of scrap amalgam, x-ray fixer solution, and lead foils per month.

MANDATORY BMPs

AMALGAM SEPARATORS

Install and properly maintain a City approved amalgam separator meeting ISO 11143 certification. The amalgam separator must achieve a minimum of 99 percent removal efficiency of dental amalgam, by weight, in accordance with ISO 11143 test procedures, as verified by an ISO-certified testing laboratory.

Amalgam separators in service at dental facilities prior to the effective date of this Dental BMP pretreatment standard, must be certified to achieve a minimum 95 percent removal efficiency of dental amalgam, by weight, in accordance with ISO 11143 test procedures as verified by an ISO-certified testing laboratory. Existing facilities meeting this 95% standard shall be required to upgrade to a City approved unit when any modification is made to the vacuum system, the number of operatories served changes, or when the existing amalgam separator must be replaced.

Amalgam separators shall:
Be suitably sized per manufacturer's minimum specifications and serve all operatories connected to the vacuum system.
Be installed in accordance with applicable State or local codes
Be installed prior to vacuum pump system (wet or dry).
Be inspected weekly for collection system fill volume with results recorded.

Maintenance
Maintain the amalgam separator in accordance with manufacturer requirements.
Use amalgam separator manufacturer approved vacuum system line cleaners
Replace separator filter cartridges or collection system reservoir as required by the manufacturer recommendations but not less than once per year unless otherwise approved by the City.

Record Keeping
All maintenance and inspection records for the amalgam separator shall be retained for 3 years and be made available to the City inspector upon request.

RECOMMENDED BMPs

AMALGAM WASTES

Limit the amount of amalgam used to the smallest appropriate size for each restoration. Use only pre-capsulated dental amalgam.

Eliminate all use of bulk elemental mercury (also referred to as liquid or raw mercury). Any unused bulk elemental mercury must be recycled or handled as hazardous waste. It must never be poured in the regular trash, infectious waste (red bag), or down the drain.

Change or clean chair-side amalgam traps as needed or as recommended by the manufacturer. Do not rinse amalgam traps over drains or sinks. Consider dedicating specific chairs to amalgam

placement and removal to minimize the number of amalgam-containing traps that need to be managed (traps associated only with hygiene chairs can be disposed of in the regular trash).

Change vacuum pump filters as needed or as recommended by the manufacturer. This action will also improve suction and extend the life of the vacuum pump.

All amalgam waste must be handled by a hazardous waste management company for recycling or disposal as hazardous waste:

Non-contact amalgam (scrap);
Contact amalgam (e.g., amalgam removed from patients and extracted teeth containing amalgam);
Leaking or unusable amalgam capsules.
Amalgam waste must never be put in the regular trash, put in with infectious waste (red bag), or flushed down the drain. Chair-side traps or vacuum pump filters containing amalgam must never be rinsed over drains or sinks.

Empty amalgam capsules can be placed in the regular trash.

Store amalgam waste as directed by your hazardous waste management contractor. This typically includes being in covered, segregated, and clearly labeled airtight plastic containers. Check with your contractor for any other specific requirements such as disinfection steps or necessary dry storage.

Retain amalgam waste disposal/recycling records provided by your contractor. Documentation of all amalgam waste recycling and disposal must be obtained from your recycler or hazardous waste hauler, kept on file, and made available to a City inspector upon request.

X-RAY FIXER AND DEVELOPER

Properly manage X-ray fixer waste. Fixer waste is considered a hazardous waste because of its high silver content. Recycling fixer waste is the recommended method by regulatory agencies. There are two suitable methods of managing fixer waste:

a) You may use a silver recovery unit for your developing system; or
b) You may collect the fixer waste for off-site recycling and/or proper disposal.

If you dispose of your fixer off-site, collect and store it in a closed plastic container labeled: Hazardous Waste -- Used Fixer--Contains only fixer. Many recyclers want to be sure that the liquid does not contain developer. If it does, it could actually remove silver from the recycling equipment. The liquid that has run through a recovery unit can be disposed of down the drain.

Do not mix X-ray developer solutions with fixer solutions. Waste developer can be washed down the drain, if it is not mixed with fixer. Flush the drain thoroughly as you discharge developer down the drain.
Some units mix the fixer and developer after they are spent. The resulting solution is hazardous and should be disposed of as hazardous waste (see amalgam waste for more information on hazardous waste disposal options). However, you may purchase an adapter kit to keep the fixer and developer separate.

LEAD FOIL AND LEAD SHIELDS

Recycle or dispose of lead foil that shields x-ray film or protective lead shields as hazardous waste. These materials should never be disposed of in the regular trash because they are hazardous waste and should be recycled for their scrap metal content. Companies which recycle amalgam or x-ray fixer may also accept lead waste. A list of metal reclaimers is available on the Idaho Department of Environmental Quality website.

Do not reuse lead foil or give lead foil to patients for reuse.

CHEMICLAVE WASTE

Switch from chemiclave sterilization to autoclaves. Normal use and discharge of chemiclave solutions to the sewer is acceptable. Flush following disposal with several gallons of water so that it does not sit in the sink trap or introduce a slug of material to the sewer system.

Use up or dispose of discarded materials properly. Dental offices should buy only the amount of chemical sterilizer that you need: this will eliminate the need to dispose of the excess material. If you switch to an autoclave and have a supply of unused formaldehyde, you should recycle or dispose of properly.

LABELING

Properly label the container in which you store your hazardous waste. You should check with your disposal company, typically these containers must be labeled with the words "hazardous waste" with a description of the waste, e.g. "Hazardous Waste - - Contains only used fixer, for recycling only." The date you start filling the container should be written on the container. Make sure you keep a written record of any material you send or deliver to a recycling entity. Be sure to request a "Certificate of Recycling or Disposal."

ADDITIONAL RECOMMENDED BMPs

Use disposable amalgam traps instead of reusable traps, and have them recycled or handled as hazardous waste if they contain amalgam waste.

Clean or replace sink traps and sumps, taking care to avoid spillage of the contents from plumbing parts. Removed sludge must be recycled or handled as hazardous waste.

Use, when appropriate, based on your professional judgment, mercury-free alternatives to amalgam such as, gold, ceramic, porcelain, composites, polymers, or glass ionomers).

Implement a program to have mercury-containing thermostats, switches, and fluorescent light bulbs recycled when they are replaced. Thermostats and switches should be replaced with mercury-free alternatives.