

Environmental Best Management Practices Guidelines for Dental Offices



**Vermont
Department of
Environmental
Conservation**

July, 2002

About These Guidelines

The Vermont Department of Environmental Conservation has prepared these environmental best management practices (BMPs) guidelines to assist dental offices in complying with environmental regulations for waste and wastewater. *Dental offices which follow these guidelines will be considered to be in compliance with all hazardous waste management and wastewater discharge requirements for dental wastes.* Most of these BMPs you are already familiar with from *The Environmentally Responsible Dental Office: A Guide to Proper Waste Management in Dental Offices*. (Northeast Natural Resource Center of the National Wildlife Federation and the Vermont State Dental Society, June 1999).

Vermont and other states in the Northeast are implementing strategies to reduce mercury releases from business and consumer activity. Following these BMPs will also help ensure that the dental community is doing its part to reduce mercury use and release to the environment.

These Guidelines consists of:

- 1) *BMPs* that pertain to dental amalgam, X-ray, and chemical sterilant wastes and waste waters.
- 2) A *biennial certification* indicating that you are following the best management practices of these Guidelines. You will be mailed a simple certification form every other year to be returned to the Agency by July 1. *The first certification will be due in 2003.* (Note: Filing a certification is not a requirement of regulation, but by doing so you will provide evidence of your good faith effort to comply with environmental regulations and you will minimize the possibility of future regulatory inspections.)

Please note that these Guidelines recommend that all sink traps which may have received amalgam wastes in the past be cleaned no later than July 1, 2003 (and any mercury waste collected for disposal or recycling).

These Guidelines may be amended in the future to include the installation, operation, and maintenance of amalgam separator equipment to further treat wastewater for mercury.

How Does a Dental Office Comply with Environmental Waste Regulations?

It's fairly simple:

- ☞ Read and follow the best management practices in this procedure
- ☞ File your certification on the form provided every other year (7/1/2003, 7/1/2005, 2007, etc.)

If you have any questions on this procedure or are in need of technical assistance and implementation of BMPs, please contact the non-regulatory Environmental Assistance Division at **1-800-974-9559**.

Environmental Best Management Practices Guidelines for Dental Office Wastes

Vermont Department of Environmental Conservation

I. Purpose

These Guidelines are intended to protect public health and the environment by establishing best management practices (BMPs) to be followed by dental offices in the handling and management of dental amalgam wastes, X-ray wastes, and chemical sterilants, all of which are either toxic or ignitable hazardous materials and are generally hazardous wastes. These Guidelines also promote best management practices, which reduce the generation of these wastes at the source or promote the recycling of these wastes. **Any dental office which follows these Guidelines and certifies such will be considered to be in compliance with all hazardous waste management and wastewater discharge requirements for dental wastes.** These BMPs are based on *The Environmentally Responsible Dental Office: A Guide to Proper Waste Management in Dental Offices* (Northeast Natural Resource Center of the National Wildlife Federation and the Vermont State Dental Society, June 1999). This Guide should be referred to for additional information on BMPs.

II. Definitions

Terms used in this procedure are defined as follows:

“Amalgam separator” means a wastewater treatment device involving sedimentation, filtration or centrifugation, or a combination of these technologies designed to separate amalgam particles from dental wastewater.

“Amalgam sludge” means the mixture of liquid and solid material cleaned from vacuum pump filters or other amalgam capture devices.

“Best management practices (BMPs)” means activities or practices carried out to assist dental offices to reduce the amount of contaminants (such as mercury and silver) discharged to the environment, to comply with regulations, and to improve overall waste management operations.

“Chair-side trap” means a reusable or disposable filter (generally ranging from 40 to 100 mesh) associated with each dental chair that captures amalgam waste particles during amalgam replacement or removal procedures.

“Contact amalgam” means amalgam that has been in contact with the patient. Examples are extracted teeth with amalgam restorations or amalgam captured by chairside traps, filters or screens.

“Dental amalgam” means a dental filling material consisting of an amalgam of mercury, silver and other materials such as copper, tin, or zinc.

“Dental office” means any operation that carries out dental care, dental hygiene or dental laboratory activities and generates waste containing mercury or silver.

“Flow control fitting” means a device used to limit the flow of water into a wet vacuum system to a rate that does not exceed the maximum inlet flow rate of an amalgam separator installed downstream

“Non-contact amalgam” means excess amalgam mix left over at the end of a dental procedure.

“Silver recovery unit” means equipment that is designed to recover silver from wastewater produced by photographic imaging operations using such methods as metallic replacement, electrolysis, ion exchange or chemical precipitation.

“Vacuum pump filter” means a secondary trap or filter located at the vacuum pump and after the chair-side trap that generally contains amalgam particles.

III. Best Management Practices

A. Dental Amalgam, Amalgam Capsules and Scrap Amalgam

(1) Amalgam substitutes should be used in cases where they are appropriate as determined by the dental practice in order to minimize mercury and silver usage in dental offices.

(2) After July 1, 2002 all dental offices should utilize single use amalgam capsules. Elemental mercury (free, bulk or raw mercury) should not be utilized after this date and all unused elemental mercury should be removed from the dental office and recycled through hazardous waste haulers, dental amalgam recyclers, or state-approved municipal hazardous waste collection programs (for residential and conditionally exempt generators).

(3) Empty amalgam capsules (after mixing amalgam), which contain no visible amalgam, may be disposed of as solid waste in the garbage or trash.

(4) Salvage and store all contact and non-contact scrap amalgam in separate appropriately labeled, tightly closed containers. (Example of labeling: “Hazardous Waste: Contact Amalgam.”)

(5) All scrap amalgam shall be processed through an amalgam recycler, a certified hazardous waste transporter, or taken to a municipal hazardous waste collection program or event with prior approval of the municipal program. Scrap amalgam shall not be disposed of in the trash or into sinks or drains. It is recognized that some amalgam particles will not be captured by chairside traps and vacuum pump filters.

(6) If scrap amalgam is stored under water or other liquid, the liquid shall not be disposed of down a drain or in the trash, but must be disposed of through an amalgam recycler or hazardous waste hauler.

B. Chairside (Primary) Traps

- (1) Disposable chair side traps are preferable to reusable traps because of the difficulty of cleaning reusable traps and a risk of amalgam particle loss into the sewer or trash. 100 mesh traps are preferable to 40 mesh traps in suction systems that can function adequately with smaller mesh.
- (2) Inspect chair side traps daily and remove or clean as necessary.
- (3) Disposable amalgam traps: Place trap directly into the labeled contact amalgam recycling container. Never rinse primary traps over the drain or discard in the trash.
- (4) Reusable amalgam traps: Remove all visible amalgam by tapping the contents into the labeled contact amalgam recycling container. Non-amalgam fragments such as cement may be removed with forceps and disposed of in the trash as solid waste. Never clean reusable traps over running water or discharge the trapped amalgam into the wastewater system, sharps container, biohazard bag or trash.

C. Vacuum Pump Filters (Secondary Traps)

- (1) Vacuum pump filters should be changed once per month or in accordance with the manufacturer's recommendations.
- (2) Upon removal of the filter, hold it over a tray or other container that can catch spills and decant as much water as is feasible without losing visible amalgam. The decanted liquid can be poured down the drain. The lid should be placed on the filter and stored in its original shipping box until picked up by an amalgam recycler.

D. Amalgam Separators

This section is reserved until evaluation of amalgam separators by the Agency is completed, at which time these Guidelines will be amended to address any requirements for the installation, operation and maintenance of amalgam separators used to further treat wastewater.

E. Plumbing and Sink Traps

- (1) By July 1, 2003 traps at sinks and at any other accessible locations that may have received amalgam particles from dental operations should be cleaned or replaced.
- (2) Whenever plumbing parts are removed or cleaned, caution should be taken to avoid spilling the contents, in case amalgam or mercury is present.
- (3) Sludge from traps or other plumbing should be poured or brushed out and collected and handled as contact amalgam for recycling or disposal.

F. Mercury Spill Kits and Training

If any elemental or free mercury is used or present in a dental office (excluding spill capsules but including mercury from historical use in amalgam or in any medical instruments such as thermometers or sphygmomanometers), a mercury spill kit shall be maintained on site and all technical/medical staff trained on spill clean up response procedures for mercury.

G. X-Ray Wastes

The use of x-ray procedures in dental offices generates the following wastes: fixer, developer, cleaners, lead foil, and lead shields (aprons). These wastes are best managed as follows:

(1) Used fixer contains silver and is considered hazardous waste. Used fixer should be handled in one of the following ways: recycled through a reclamation facility licensed to accept hazardous waste, disposed through a hazardous waste hauler, or reclaimed on-site with a silver recovery unit. Check with your local publicly owned treatment works (POTW) prior to purchasing a silver recovery unit to ensure that the level of silver in the discharge from the recovery unit is acceptable for discharge to the municipal sewer system. These systems will involve an initial purchase cost and operating and maintenance costs, but you may receive payment for the recovered silver from a recycler. Dental offices on septic systems should discharge neither untreated fixer nor the treated effluent from a silver recovery unit.

(2) Used developer, if not mixed with x-ray fixer may be discharged to the sanitary sewer with the permission of the municipal wastewater treatment plant. If x-ray developer and fixer are accidentally mixed, then the mixture must be disposed of through a hazardous waste hauler or through a municipal hazardous waste collection program. Used developer should not be discharged to a septic system.

(3) Cleaners for x-ray developers may contain chromium that will render any spent solution a hazardous waste. Purchase and use cleaners that are chromium-free. Cleaners should not be discharged to a septic system.

(4) Lead foils, shields and aprons should be collected and returned to the manufacturer, recycled using a hazardous waste hauler, or brought to a municipal hazardous waste collection program. Do not dispose in the trash or biohazard bags.

H. Chemical Sterilant Solutions

Chemiclave/chemical sterilant solutions from the chemical sterilization of instruments is an ignitable waste. Dilute the spent solution 4 parts water to 1 sterilant solution and it is acceptable to be discharged down a drain. Do not wash the solution undiluted in the drain or trash.

I. Fluorescent Lamps and Batteries

All fluorescent lamps contain mercury and should not be placed in the trash. Some batteries contain mercury and other heavy metals and should be handled as described in *The Environmentally Responsible Dental Office: A Guide to Proper Waste Management in Dental Offices*.

J. Notification of Hazardous Waste Activity Filing

Each dental office must file a Notification of Hazardous Waste Activity Form with the Department of Environmental Conservation (see form and instructions provided).

K. Self Reporting on Compliance with BMPs

Each dental office should file a biennial certification of compliance with the Best Management Practices of these Guidelines on or before July 1 of each odd year (starting in 2003) on the form provided and mailed to each dental office by the Department.

ADOPTED by _____
Christopher Recchia, Commissioner
Vermont Department of Environmental Conservation

on this _____ day of May 2002 and effective on October 1, 2002.