

# The Environmental Guide for Dentistry



How to properly manage waste  
from your Dental Practice

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## ***The Environmental Guide for Dentistry***

This booklet was compiled by the Maine Department of Environmental Protection, in cooperation with the Maine Dental Association. This booklet is intended to help Maine dentists deal with dental office waste in a proactive, environmentally friendly manner. The information contained within this document is consistent with the Maine Department of Environmental Protection's current rules and regulations.

The following documents were used in developing this booklet:

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***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

***A Guide for Dentists: How to Manage Waste from Your Dental Practice;***

Western Lake Superior Sanitary District; 1993

***Resource Guide: Useful Information for Properly Managing Your Dental***

***Wastes;*** City and County of San Francisco Bureau of Environmental Regulation and Management Water Pollution Prevention Program, San Francisco Dental Society, and California Dental Association; May 1997

***Handling Dental Waste;*** Seattle-King County Dental Society and the Local Hazardous Waste Management Program in King County, January 1996

***How to Prevent Pollution from Your Dental Practice: A Guide for Dentists;*** Indiana Department of Environmental Management; May, 1995

***Removal of Mercury from Dental Amalgam Wastewater.*** A New Prescription: Pollution Prevention Strategies for the Health Care Industry Conference, Balogh, Cynthia Welland and Paul G. Rubin, 1998

### **Contributing Organizations**

Maine Department  
of Environmental Protection  
17 State House Station  
Augusta, ME 04333  
(207) 287-7688  
[www.state.me.us/dep/home.htm](http://www.state.me.us/dep/home.htm)

Maine Dental Association  
Association Drive  
P.O. Box 215  
Manchester, ME 04351  
(207) 622-7900  
Medental@aol.com

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# Dental Office Wastes – Handling Procedures

## General

The following paragraphs detail the correct procedures for handling and disposing of the various waste streams that are generated by a typical dental office. These procedures are based on the assumption that all chemicals and raw materials are being handled in accordance with the manufacturers' instructions. If the materials are utilized improperly, these procedures may not apply.

**NOTE:** Dentists whose offices are serviced by a septic system should be aware that certain wastes could disrupt the proper functioning of the system. In addition, use of a septic system involves relying on others to dispose of the system's solids at a landfill, wastewater treatment facility, or a compost facility. This septic system waste can be refused on the basis of its composition and characteristics.

## Amalgam

(Containing Mercury and Silver)

**S**teps You Can Take to  
Reduce the Amount of  
Mercury that Could Be  
Discharged – General Guidelines:

- Use alternative filling materials in situations where they are effective and affordable.
- Discontinue practice of formulating amalgam fillings at the dental practice using elemental mercury. Instead use amalgam capsules. This change will help to minimize the chance of an accidental mercury spill.
- Collect as much amalgam as possible and place all scrap amalgam in container labeled "WASTE AMALGAM" for recycling.
- Any chunks of existing amalgam filling removed during dental procedures should be placed in "WASTE AMALGAM" container to prevent it from being discharged to the environment.<sup>1</sup>

### Do not place amalgam in these areas

- ❖ Sharps container
- ❖ Red Biohazard bag
- ❖ In the trash
- ❖ Down the sink drain.

## Elemental Mercury

(Free, bulk, or raw mercury)

Use pre-capsulated amalgam to eliminate the need for elemental mercury at the dental facility. If some elemental mercury is present in your office, it must be handled in the following way:

**Elemental Mercury is considered to be hazardous waste. Contact a licensed hazardous waste transporter and have the material transported to a licensed mercury recycling facility. Many DEP licensed hazardous waste transporters will accept elemental mercury for recycling.**

If you have any questions concerning the proper disposal of this material, please contact the Bureau of Remediation and Waste Management at the Maine Department of Environmental Protection at 287-2651.

## Amalgam Capsules

For any capsule that has been properly utilized and is visibly clean, it may be disposed of with the normal refuse from the dental practice.

In the event that a capsule is damaged or not entirely utilized, this capsule will need to be disposed of in the container labeled “WASTE AMALGAM”.

Make certain to verify that this practice is acceptable to the licensed amalgam recycling facility, otherwise your material could be rejected.

## Waste Amalgam

All waste amalgam must be stored in an air tight container with a label stating “WASTE AMALGAM”.

This material must be shipped to a licensed amalgam recycler to comply with state laws governing the handling of this material.

Make certain that you contact the licensed amalgam recycling facility to determine if they have some specific requirements that you must follow to prevent having your waste rejected for recycling.

**Ø Do not store waste amalgam in used radiographic fixer, because this fixer is considered hazardous waste and will result in the waste amalgam being considered hazardous waste.**

## Chairside Traps

The first opportunity to remove waste amalgam that has been removed from the patients mouth by use of the vacuum system is the chairside trap. The material from these traps should be removed and placed in the container labeled “WASTE AMALGAM”. Due to the difficulty of removing material from these traps, they are available in disposable and reusable models. The disposable trap is designed to be recycled along with its content.

Make sure to contact the licensed amalgam recycling facility that you are utilizing and ask if it is acceptable to place these disposable traps in with your scrap amalgam.

The following recommendations will help you to properly manage your trap systems:

### ***Disposable and Reusable Amalgam Traps:***

The following procedures should be followed when handling either type of chairside trap.

Handling the chairside trap carefully so as not to spill any of the contents.

Empty and or change the chairside traps as recommended by the manufacturer.

Flush the vacuum system with disinfecting line solution before changing the chairside trap.

The best method is to flush the line at the end of the day, and then change the trap the next morning before the suction is used. This method will allow particles in the trap to dry.<sup>2</sup>

### ***Disposable Amalgam Traps:***

Open the chairside dental unit where the amalgam trap is located.

Carefully take out the amalgam trap and put it into the container labeled “WASTE AMALGAM” for recycling. Make sure that this container is tightly sealed once you have placed the trap inside.

If the trap is visually clean, it can be put in the trash or re-used. Visually clean traps have been determined to be non-hazardous. A heavily contaminated trap should always be recycled. Store contaminated traps in the waste amalgam container.<sup>3</sup>

### ***Reusable Amalgam Traps:***

Open the chairside trap unit where the amalgam trap is located.

Carefully take out the amalgam trap and dump the contents into the container labeled “WASTE AMALGAM” for recycling. Make sure that this container is tightly sealed once you have placed the contents of the trap inside.

Install the amalgam trap back into its holder and close trap unit. Make sure to inspect the amalgam trap for wear or damage prior to placing back into trap unit. Replace if trap is not in original condition.

### **Vacuum Pump Filters:**

(Central suction pump)

Replace the filter located on the vacuum pump as recommended by the manufacturer.

Be careful during removal so as not to dislodge any of the material captured on the filter.

Consult with your licensed amalgam recycler to determine how these filters are to be prepared for transport.

Remove the filter. While holding it over a tray or other container that can catch spills, decant as much liquid as possible without losing visible amalgam. The decanted, amalgam-free, liquid can be rinsed down the drain.

Put the lid on the filter and place it in the box in which it was originally shipped. When the box is full, the filters should be recycled. Be sure to check with your amalgam recycler to ensure that they will take these filters.<sup>4</sup>

Maine DEP requires that you keep records and receipts of the material transported by a hauler to a licensed recycler.

Ø **Do not** dispose of used vacuum pump filters as medical waste.<sup>5</sup>

### **Handling Mercury Spills**

In the event of a mercury spill, put on nitrile gloves and clean it up immediately using a mercury spill kit. (Do not use latex gloves as mercury can penetrate latex.) This spilled material must then be handled as hazardous waste. Contact the DEP Response Division at 1-800-452-4664 if you spill some

mercury. Mercury spill kits are available from a number of sources, including; companies that specialize in Occupational Safety and Health Administration (OSHA) compliance supplies and equipment; amalgam recyclers, and dental product suppliers. Before purchasing a kit, make sure it comes with complete instructions on how to perform a spill clean up. Train several staff members in proper spill clean-up procedures.<sup>6</sup>

### **Additional Sources of Mercury in Dental Offices:**

Any electrical equipment with switches, relays, or temperature controls (thermostats) may contain mercury and should be disposed of through a hazardous waste hauler.

Mercury thermometers and blood pressure units are also sources of elemental mercury

Ø **Never** dispose of contaminated waste in the sharps container, biohazard bag, or trash.  
Ø **Never** dispose of elemental mercury down the drain or in the sharps container, biohazard bag, or trash.<sup>7</sup>

### **Amalgam Separators**

Your office may wish to consider purchasing an amalgam separator. The ability of amalgam separator to remove amalgam from the dental wastewater may be superior to filters and traps used in chairside dental units and vacuum lines. These separator systems are used to capture scrap amalgam too fine to be removed by a trap or screen from the wastewater.

Amalgam separators are used in Europe and are currently being evaluated in selected areas of the United States. Contact your state dental association or an amalgam separator vendor for more information.<sup>8</sup>

Due to the developing nature of this technology, you should contact the Maine DEP to inquire if a license is needed.

If you decide that you want to purchase an amalgam separator, be prepared to shop around for the equipment that works best for you. These separators vary widely in sophistication and effectiveness. The following criteria should help you select the right system.

- ✓ The system should be effective. The company should be able to prove that it can remove the amalgam from the wastewater.
- ✓ There should be no compromise in suction power.
- ✓ You may want to consider a unit that is “hands-off,” meaning that the dentist or staff does not have to perform a series of manual operations, or be required to handle and change filters.
- ✓ The captured amalgam should be recycled. Make sure that the company, which sold you the unit, arranges for the recycling of the captured amalgam. The company needs to provide you with the appropriate information on how to recycle the captured amalgam. Keep records and receipts of all amalgam sent to recyclers, including name, date, quantity, and address of recycler.
- ✓ Simplicity of design is a plus. There will be fewer chances for something to go wrong.

- ✓ The unit should operate quietly.
- ✓ The unit should come with a “fail-safe” mechanism that protects you from a spill or back-up in the event that a blockage occurs.
- ✓ The unit should be installed centrally so that the wastewater, from all suction lines, passes through it before discharging into the sewer system.
- ✓ The unit should be reasonably priced. Obtain information from the companies on the total cost for all services, including cost of the unit over a 5-10 year period, before making a decision.<sup>9</sup>

## Plumbing Replacement and Repairs

After adopting an amalgam management practice, it may be a good time to clean or replace sink traps. Mercury from past practices often settles at low points such as sink traps and sumps. The slow dissolution of the mercury in a sink trap or sump can release mercury into the wastewater for years after past disposal practices have been corrected.

Whenever plumbing parts are removed or cleaned, take caution to avoid spilling the contents in case amalgam or mercury is present.

Pour and brush out the sludge and handle it as you would handle waste amalgam.

The plumbing parts can then be put back in place or recycled.<sup>10</sup>

## Office Renovations

Alert renovators to the possibility of historical mercury spills that may have resulted in the presence of mercury in carpets, floor cracks, behind moldings and other areas where elemental mercury may have been used, or where amalgam capsules may have been spilled.

If you suspect the presence of uncontained mercury in your dental office due to historical or recent mercury spills, equipment is available to detect mercury vapor and locate spills.<sup>11</sup>

## Used X-ray Fixer

(Containing Silver)

Used x-ray fixer is considered a hazardous waste because of its high silver content. (See “HAZARDOUS WASTE” section) Used fixer should be reclaimed off-site by a licensed facility, or reclaimed in-house. If shipped off-site, this material should be managed as hazardous waste. If reclaimed in-house, a license must be obtained from the DEP. Reclaiming the silver in used fixer conserves a valuable resource and reduces your business liability. Many reclaimers will pay to take your silver. If you choose to reclaim the silver in-house, please check with your own local publicly owned wastewater treatment facility (WWTF) prior to purchasing a silver recovery unit to ensure that the level of silver removal meets the WWTF’s discharge standards. If it does, you may rinse the recovery process waste down the drain.

Be aware that this recovery unit requires on-going maintenance and inspection to ensure that it operates properly.



## ***X-ray Developer***

**C**heck with your local publicly owned wastewater treatment facility (WWTF) to determine if waste X-ray developer can be flushed down the drain. If X-ray developer is accidentally mixed with used X-ray fixer, the mixture must be handled as a hazardous waste. (See “HAZARDOUS WASTE” section)

Ø **Do not** mix X-ray developer and used X-ray fixer. The silver- laden used X-ray fixer is considered hazardous waste and can not be flushed down the drain. Please refer to the previous section on Used X-Ray Fixer Solution for proper handling procedures.<sup>12</sup>

## ***Cleaners for X-Ray Developer Systems***

**M**any cleaners for X-ray developer systems contain chromium. Chromium is considered a toxic substance that must be managed as a hazardous waste. (See “HAZARDOUS WASTE” section.) Check the package label or the Material Safety Data Sheet (MSDS) to see if the cleaner you use contains chromium. If it does, ask your supplier to provide a non-chromium cleaner.

Ø Never put an undiluted cleaning solution, disinfectant or any other process chemical into a septic system, because these wastes could disrupt the septic system.<sup>13</sup>

Ø Never discharge chromium cleaners to the city sewer or your septic system because these cleaners are considered hazardous waste.

## ***Lead Foil or Lead Shields***

**L**ead foils, shields, and aprons are considered hazardous waste unless they are recycled for their scrap metal content. DEP requires that if the material is recycled, it must go to a licensed recycling facility and records and receipts must be kept. Companies that recycle amalgam or fixer may also accept lead waste. A list of metal reclaimers is given in the appendix. Remember to always get documentation from the company handling your lead waste confirming that the waste has been disposed of properly.

Ø **Do not** put the lead foil that shields X-ray film, protective lead shields, and lead aprons into the trash or into biohazard bags. The lead content of these items makes them hazardous waste.<sup>14</sup>

## ***Disinfectants, Cleaners and other Chemicals***

**M**ost used disinfectants may be discharged directly to the sewage system. Residue left in containers may be rinsed down the drain; the container may be disposed of in the garbage or recycled through your local recycling program. Flush the drain well when disposing of any disinfectant. Any unused chemical is a hazardous waste if it has a flash point below 140 degrees Fahrenheit, or if it contains formaldehyde or certain other listed hazardous chemicals. If you have any questions, please contact the DEP.

Ø Alcohols, ethers, and peroxides are considered ignitable and must not be discarded down the drain. These materials are considered to be hazardous waste. (See “HAZARDOUS WASTE” section)

Ø Never put an undiluted cleaning solution, disinfectant or any other process chemical into a septic system, because these wastes could disrupt the septic system.<sup>15</sup>

## **Chemiclave Waste**

**M**ost used chemical sterilizer waste may be discharged to the public sewer system. Flush the drain well when disposing of this waste. Any unused chemical is a hazardous waste if it has a flash point below 140 degrees Fahrenheit, or if it contains formaldehyde or certain other listed hazardous chemicals. If you have any questions, please contact the DEP.

Buy only the amount of chemical sterilizer that you need; this will eliminate the need to dispose of the excess material.

Ø Never put an undiluted chemical sterilizer solution into a septic system, because this waste could disrupt the septic system.

## **Other Wastes**

### ***Blood:***

Flowable quantities of **blood** may be sewerred. Swabs or dressings that are bloody and dripping may be disposed of with the

normal refuse if you generate less than 50 lbs per month. Otherwise, this material needs to be treated as biomedical waste.

### ***Sharps:***

Needles, scalpels, reamers, broaches, and other sharp objects that could cause a puncture wound should **not** be placed in the garbage **even if they are sterilized**. This type of waste should be placed in a puncture-proof container. Disposal should be through a **biomedical waste service**. A list of biomedical waste transporters is provided in the appendix.

### ***Office Waste:***

Although office waste is usually not hazardous, we wish to remind you that aluminum, glass, newspaper, corrugated paper, and office paper can easily be recycled through your garbage hauler or recycling center.

### ***Fluorescent Bulbs:***

Recycle fluorescent bulbs through your hazardous waste transporter or lamp recycler. Fluorescent bulbs are hazardous waste and a significant source of mercury.

Ø **Do not** place fluorescent bulbs in the trash.<sup>16</sup>

## Batteries:

The following paragraphs describe how to handle some of the most common batteries that are utilized throughout the marketplace.

**Non-rechargeable Batteries:** As a result of federal and state legislation, mercury is no longer added to domestically produced alkaline batteries. However, certain other kinds of batteries, mercury oxide and silver oxide batteries, small lead-acid batteries, and other specialty batteries continue to contain mercury and other metals that are added intentionally. These non-alkaline batteries must be recycled, or else handled as hazardous waste. (See “HAZARDOUS WASTE” section.)

**Rechargeable Batteries:** Nickel/cadmium (Ni/Cd) batteries, that are no longer useful, are hazardous waste and should also be recycled since they contain lead and cadmium. Information on the nickel/cadmium battery collection program can be obtained from calling 1-800-8-battery.<sup>17</sup>

Ø **Do not** place batteries in the biohazard bag, or sharps container.  
Ø **Do not** place rechargeable or non-alkaline batteries in the trash.

## Hazardous Waste

**M**aterial can be considered as hazardous waste if it contains one of the following constituents or characteristics;

1. contains mercury, silver, or chromium or other heavy metals
2. contains certain hazardous chemical ingredients
3. possesses the characteristics of ignitability, corrosivity, or high pH

If your dental office accumulates, at any one time, no more than 55 gallons of any or all types of hazardous waste, you are considered a small quantity generator, (SQG). For SQG's, the requirements include:

**LABELING** - Each container of hazardous waste must be labeled with the words “HAZARDOUS WASTE” and marked with the date, (start date), when waste is first put into the container. Once filled, the container must be labeled with the date when it became full (full date).

**STORAGE** - Once a container of hazardous waste becomes full, it may not be stored on-site for more than 180 days from the full date.

**DISPOSAL and RECYCLING** - You must arrange for a DEP licensed hazardous waste transporter to transport the waste under a uniform hazardous waste manifest to a licensed hazardous waste facility for disposal or recycling.

If you accumulate more than 55 gallons of hazardous waste, including mercury, silver X-ray fixer, waste chemicals, etc., contact the DEP for more information concerning the hazardous waste management rules at 207-287-2651.

## **ENDNOTES**

1. Northeast Natural Resource Center of the National Wildlife Federation and The Vermont State Dental Society. 1999. "The Environmentally Friendly Dental Office: A Guide to Proper Waste Management in Dental Offices." p. 6.

2-6. Northeast Natural Resource Center of the National Wildlife Federation and The Vermont State Dental Society. 1999. "The Environmentally Friendly Dental Office: A Guide to Proper Waste Management in Dental Offices." p. 8.

7-10. Northeast Natural Resource Center of the National Wildlife Federation and The Vermont State Dental Society. 1999. "The Environmentally Friendly Dental Office: A Guide to Proper Waste Management in Dental Offices." p. 9.

11. Northeast Natural Resource Center of the National Wildlife Federation and The Vermont State Dental Society. 1999. "The Environmentally Friendly Dental Office: A Guide to Proper Waste Management in Dental Offices." pp. 9-10.

12. Northeast Natural Resource Center of the National Wildlife Federation and The Vermont State Dental Society. 1999. "The Environmentally Friendly Dental Office: A Guide to Proper Waste Management in Dental Offices." pp. 10.

13-14. Northeast Natural Resource Center of the National Wildlife Federation and The Vermont State Dental Society. 1999. "The Environmentally Friendly Dental Office: A Guide to Proper Waste Management in Dental Offices." pp. 11.

15-17. Northeast Natural Resource Center of the National Wildlife Federation and The Vermont State Dental Society. 1999. "The Environmentally Friendly Dental Office: A Guide to Proper Waste Management in Dental Offices." pp. 12.