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## BEST MANAGEMENT PRACTICES FOR AMALGAM WASTE

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## Dental Amalgam Waste

Dental amalgam waste can be recycled to help prevent the release of mercury to the environment. Following the simple suggestions outlined in this document will help protect the environment.

Concern about the effects of mercury in the environment has increased over the years. Mercury in the environment is bioaccumulative, which means that it can build up in fish and cause health problems in humans and other animals that eat fish. Many state health professionals recommend limiting fish consumption, especially for children and pregnant women.

Mercury is a naturally occurring metal; however, about half of the mercury released to the environment comes from human activity. Of that amount, 53% is emitted from combustion of fuels for energy production and 34% is from the combustion of waste.<sup>1</sup> Sources associated with manufacturers and consumers make up the remaining 13%, with dentistry contributing less than one percent.

Some mercury released into the air eventually collects in the waterways, where it enters the food chain. As a precautionary measure, U.S. regulators typically assume that all or most of the mercury released into the air or surface water may accumulate in fish. As of 2000, the U.S. EPA lists more than 43,971 miles (covering 3,426,244 acres) of rivers and streams in the U.S. as “impaired” because of the presence of mercury.<sup>2</sup>

Although mercury in the form of dental amalgam is very stable, amalgam should **not** be disposed of in the garbage, infectious waste “red bag,” or sharps container. Amalgam also should **not** be rinsed down the drain. These cautions are important because some communities incinerate municipal garbage, medical waste, and sludge from wastewater treatment plants. If amalgam waste ends up in one of these incinerated waste streams, the mercury can be released to the environment due to the extremely high temperatures used in the incineration process. Increasingly, local communities are enacting restrictions on the incineration of wastes containing mercury.

The good news is that amalgam waste, kept separate from other waste, can be safely recycled. The mercury can be recovered from amalgam wastes through a distillation process and reused in new products. The ADA strongly recommends recycling as a best management practice for dental offices.

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<sup>1</sup> Office of Air Quality Planning and Standards, Office of Research and Development. Mercury Study Report to Congress. Volume II: An inventory of anthropogenic mercury emissions in the United States. Washington, D.C.: Environmental Protection Agency. Publication No. EPA-452/R-97-004. December 1997, p. ES-6.

<sup>2</sup> EPA. Major Pollutants Causing Impairment by State. Available at [www.epa.gov/owow/tmdl/303dcaus.html](http://www.epa.gov/owow/tmdl/303dcaus.html). Accessed February 10, 2004.



The following information demonstrates how to manage and recycle dental amalgam waste to help protect the environment.

## Types of Amalgam Wastes

- **Non-contact amalgam (scrap)** is excess mix leftover at the end of a dental procedure. Many recyclers will buy this clean scrap.
- **Contact amalgam** is amalgam that has been in contact with the patient. Examples are extracted teeth with amalgam restorations, carving scrap collected at chair side, and amalgam captured by chair side traps, filters, or screens.
- **Chair side traps** capture amalgam waste during amalgam placement or removal procedures (traps from dental units dedicated strictly to hygiene may be placed in the regular garbage).
- **Vacuum pump filters** or traps contain amalgam sludge and water. Some recyclers will accept whole filters, while others will require special handling of this material.
- **Amalgam sludge** is the mixture of liquid and solid material collected within vacuum pump filters or other amalgam capture devices.
- **Empty amalgam capsules** are the individually dosed containers left over after mixing precapsulated dental amalgam.

The ADA recommends against the use of bulk elemental mercury, also referred to as liquid or raw mercury, for use in the dental office. Since 1984, the ADA has recommended use of precapsulated amalgam alloy.

If you still have bulk elemental mercury in the office, you should recycle it. Check with a licensed recycler to determine whether they will accept bulk mercury. **Do not** pour bulk elemental mercury waste in the garbage, red bag or down the drain. You also should check with your state regulatory agency and municipality to find out if a bulk mercury collection program is available. Such bulk mercury collection programs provide an easy way to dispose of bulk mercury.



## Steps for Recycling Amalgam Waste

1. Stock amalgam capsules in a variety of sizes to minimize the amount of amalgam waste generated.
2. Amalgam waste may be mixed with body fluids, such as saliva, or other potentially infectious material, so use personal protective equipment such as utility gloves, masks, and protective eyewear when handling it.
3. Contact an amalgam waste recycler about any special requirements that may exist in your area for collecting, storing and transporting amalgam waste.  
If you need to find a recycler, check with your city, county or local waste authority to see whether they have an amalgam waste recycling program.
4. Store amalgam waste in a covered plastic container labeled “Amalgam for Recycling” or as directed by your recycler.  
Consider keeping different types (e.g., contact and non-contact) of amalgam wastes in separate container—talk to your recycler about any advantages in doing so.

## Questions to Ask Your Amalgam Waste Recycler

Below is a list of questions you may want to ask your amalgam waste recycler. Note that not all recycling companies accept every type of amalgam waste, and the services offered by recyclers vary widely. The ADA recommends that you contact a recycler before recovering amalgam and ask about any specific handling instructions the recycler may have.

Importantly, select a reputable company that complies with applicable federal and state law and provides adequate indemnification for its acts and omissions.

### Ask Your Recycler ...

- What kind of amalgam waste do you accept?
- Do your services include pick up of amalgam waste from dental offices? If not, can amalgam waste be shipped to you?
- Do you provide packaging for storage, pick up or shipping of amalgam waste?
- If packaging is not provided, how should the waste be packaged?
- What types of waste can be packaged together?
- Do you accept whole filters from the vacuum pump for recycling?
- Is disinfection required for amalgam waste?
- How much do your services cost?
- Do you pay for clean non-contact amalgam (scrap)?
- Do you accept extracted teeth with amalgam restorations?
- Does your company have an EPA or applicable state license?
- Does the company use the proper forms required by the EPA and state agencies?



### Best Management Practices for Amalgam Waste

DO	DON'T
<i>Do</i> use precapsulated alloys and stock a variety of capsule sizes	<i>Don't</i> use bulk mercury
<i>Do</i> recycle used disposable amalgam capsules	<i>Don't</i> put used disposable amalgam capsules in biohazard containers, infectious waste containers (red bags) or regular garbage
<i>Do</i> salvage, store and recycle non-contact amalgam (scrap amalgam)	<i>Don't</i> put non-contact amalgam waste in biohazard containers, infectious waste containers (red bags) or regular garbage
<i>Do</i> salvage (contact) amalgam pieces from restorations after removal and recycle the amalgam waste	<i>Don't</i> put contact amalgam waste in biohazard containers, infectious waste containers (red bags) or regular garbage
<i>Do</i> use chair-side traps to retain amalgam and recycle the content	<i>Don't</i> rinse chair-side traps containing amalgam over drains or sinks
<i>Do</i> recycle contents retained by the vacuum pump filter or other amalgam collection device, if they contain amalgam	<i>Don't</i> rinse vacuum pump filters containing amalgam or other amalgam collection devices over drains or sinks
<i>Do</i> appropriately disinfect extracted teeth that contain amalgam restorations by storing them in a container of glutaraldehyde or 10% formalin and recycle them along with the chair side trap waste ( <i>Note:</i> Confirm with your recycler that they will accept extracted teeth with amalgam restorations)	<i>Don't</i> dispose of extracted teeth that contain amalgam restorations in biohazard containers, infectious waste containers (red bags) or regular garbage
<i>Do</i> manage amalgam waste through recycling as much as possible	<i>Don't</i> flush amalgam waste down the drain or toilet
<i>Do</i> use line cleaners that minimize dissolution of amalgam	<i>Don't</i> use bleach or chlorine-containing cleaners to flush wastewater lines



## Practical Guide to Integrating BMPs Into Your Practice

<b><i>Non-contact (scrap) amalgam</i></b>
<ul style="list-style-type: none"><li>• Place non-contact, scrap amalgam in wide-mouthed, airtight container that is marked “Non-contact Amalgam Waste for Recycling.”</li><li>• Make sure the container lid is well sealed.</li></ul>
<b><i>Amalgam capsules</i></b>
<ul style="list-style-type: none"><li>• Stock amalgam capsules in a variety of sizes.</li><li>• After mixing amalgam, place the empty capsules in a wide-mouthed, airtight container that is marked “Amalgam Capsule Waste for Recycling.”</li><li>• Capsules that cannot be emptied should likewise be placed in a wide-mouthed, airtight container that is marked “Amalgam Capsule Waste for Recycling.”</li><li>• Make sure the container lid is well sealed.</li><li>• When the container is full, send it to a recycler.</li></ul>
<b><i>Disposable chair-side traps</i></b>
<ul style="list-style-type: none"><li>• Open the chair-side unit to expose the trap.</li><li>• Remove the trap and place it directly into a wide-mouthed, airtight container that is marked “Contact Amalgam Waste for Recycling.”</li><li>• Make sure the container lid is well sealed.</li><li>• When the container is full, send it to a recycler.</li><li>• Traps from dental units dedicated strictly to hygiene may be placed in with the regular garbage.</li></ul>
<b><i>Reusable chair-side traps</i></b>
<ul style="list-style-type: none"><li>• Open the chair-side unit to expose the trap.</li><li>• Remove the trap and empty the contents into a wide-mouthed, airtight container that is marked “Contact Amalgam Waste for Recycling.”</li><li>• Make sure the container lid is well sealed.</li><li>• When the container is full, send it to a recycler.</li><li>• Replace the trap into the chair-side unit (Do <b>not</b> rinse the trap under running water as this could introduce dental amalgam into the waste stream).</li></ul>
<b><i>Vacuum pump filters</i></b>
<ul style="list-style-type: none"><li>• Change the filter according to the manufacturer’s recommended schedule. <i>Note:</i> The following instructions assume that your recycler will accept whole filters; some recyclers require different handling of this material, so check with your recycler first.</li><li>• Remove the filter. While holding the filter over a tray or other container that can catch any spills, decant as much of the liquid as possible without losing any visible amalgam. The decanted, amalgam-free liquid can be rinsed down the drain.</li><li>• Put the lid on the filter and place the sealed container in the box in which it was originally shipped. When the box is full, the filters should be recycled.</li></ul>
<b><i>Line cleaners</i></b>
<ul style="list-style-type: none"><li>• Use non-bleach, non-chlorine-containing line cleaners, which will minimize amalgam dissolution, such as those listed in the <b><i>Additional Resources</i></b> section of this document.</li></ul>



### ***Additional Resources***

“Dental Mercury Hygiene Recommendations” are available through the ADA Division of Science. These recommendations were published in the *Journal of the American Dental Association* (November 2003) and also are available to ADA members online at [http://www.ada.org/prof/resources/pubs/jada/reports/report\\_mercury.pdf](http://www.ada.org/prof/resources/pubs/jada/reports/report_mercury.pdf)

The following line cleaners do not contain bleach or chlorine and therefore minimize the dissolution of amalgam. This listing is provided for informational purposes only and should not be construed as an endorsement of these products by the ADA. Check with your manufacturer to determine which line cleaner would be appropriate for use with your equipment.

Biocide (Biotrol International), BirexSe (Biotrol International), DRNA Vac (Dental Recycling North American Inc.), E-Vac (L&R Manufacturing Co.), Fresh-Vac (Huntington), GC Spray-Cide (GC America Inc.), Green and Clean (Metasys), Microstat 2 (Septodont USA), Patterson Brand Concentrated Ultrasonic Cleaner/Disinfectant Solution (Patterson Dental Supply, Inc.), ProE-Vac (Cottrell Ltd.), Pure-Vac (Sultan Chemists Inc.), Sani-Treet Plus (Enzyme Industries Inc.), SRG Evacuation (Icon Labs), Stay Clean (Apollo Dental Products), Turbo-Vac (Pinnacle Products), Vacusol Ultra (Biotrol International), Cavicide (Metrex Research Corp.), Vacuum Clean (Palmero Health Care).