

# MEMORANDUM OF UNDERSTANDING ON REDUCING DENTAL AMALGAM DISCHARGES

The following is a Memorandum of Understanding (MOU) between the U.S. Environmental Protection Agency (“EPA”), the American Dental Association (“ADA”), and the National Association of Clean Water Agencies (“NACWA”) to establish and monitor the effectiveness of a Voluntary Dental Amalgam Discharge Reduction Program. Section I provides a brief background. Section II provides the terms of the MOU, including its purpose, limitations, goals, and the intended actions of the parties. Sections III, IV, and V provide the effective date of the MOU, the authority to modify the MOU, and the method by which the MOU can be terminated.

## **I. BACKGROUND**

Mercury in dental wastewater originates from waste particles associated with the placement and removal of amalgam fillings. Dental amalgam is used to restore teeth in dental practices. It is an alloy that contains mercury (approximately 50%) bound together with other metals. EPA estimates there are approximately 160,000 dentists working in over 120,000 dental offices who use or remove amalgam in the United States – almost all of whom discharge their wastewater exclusively to Publicly Owned Treatment Works (POTWs).<sup>1</sup>

As of 2005, amalgam use had declined to one third of the 1979 level (52.5 million amalgam restorations (31.6% of all restorations) compared to 157 million amalgam restorations performed in 1979).<sup>2</sup> Most dental offices currently use some type of basic filtration system to reduce the amount of mercury solids passing into the sewer system. However, the installation of amalgam separators and the use of best management practices have been shown to reduce discharges even further (EPA Final 2008 Effluent Guidelines Plan FR Notice at 53,234). Amalgam separators that meet the International Organization for Standardization (ISO) voluntary consensus standard (ISO standard) can capture over 95% of the amalgam discharged by dental offices into sewer systems prior to the point at which the POTW discharges its effluent into surface water. A recent study funded by NACWA concluded that the use of amalgam separators may result in reductions in POTW influent concentrations and biosolids mercury concentrations. The use of amalgam separators does not always result in reductions in POTW effluent because most amalgam particles are precipitated to biosolids. EPA Final 2008 Effluent Guidelines Plan FR Notice at 53,234.

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<sup>1</sup> EPA, Notice of Final 2008 Effluent Guidelines Program Plan, 73 Fed. Reg. 53,219, 53,234 (September 15, 2008) (EPA Final 2008 Effluent Guidelines Plan FR Notice).

<sup>2</sup> US Public Health Service, *Dental Amalgam: A Scientific Review and Recommended Public Health Service Strategy for Research, Education and Regulation*, 1993, available at <http://www.health.gov/environment/amalgam1/ct.htm>, and ADA *Economic Impact of Regulating Amalgam*, 122 Public Health Reports, September–October 2007 at 657, available at [http://www.ada.org/prof/resources/topics/amalgam\\_economic\\_impact.pdf](http://www.ada.org/prof/resources/topics/amalgam_economic_impact.pdf).

EPA estimates approximately 0.45 tons of mercury related to dental amalgam are currently discharged into surface water from POTWs.<sup>3</sup> Methylmercury levels in fish, which comes from all sources, are a significant regulatory concern. Several comparisons of mercury concentrations in POTW effluent before and after installation of separators have not detected a measurable decrease in mercury concentrations in POTW effluent. According to EPA evaluations, “[d]ental amalgam contributes a small portion of all of the mercury released to the environment from human activities”<sup>4</sup> and that air emissions are the principle source of mercury entering surface water.<sup>5</sup>

Increasing the amount of amalgam-related mercury captured in dental offices directly may reduce the amount of mercury entering POTWs and present in biosolids and to a much lesser degree the methylmercury level in fish. States have increasingly issued fish advisories because methylmercury concentrations in fish from some surface water bodies exceed EPA’s recommended water quality criteria of 0.3 milligrams of mercury per kilogram of fish tissue (“mg/kg”) or more stringent state levels. In addition, although existing levels of mercury in biosolids are well below EPA’s exceptional quality ceiling limit for mercury (of 17 mg/kg), if additional mercury is captured in dental offices, this mercury can be recycled (a preferable environmental management approach) and the amount of mercury emitted from biosolids incinerators would decrease. POTWs are committed to maintain the high quality of their biosolids recognizing that public support of biosolids is critical for successful land-application programs, and public perception of biosolids quality can adversely affect an otherwise successful program.

EPA, States, Tribes and localities are concerned about this issue and have implemented mandatory and voluntary programs to reduce dental mercury discharges. Specifically, 11 states and at least 19 localities have mandatory pretreatment programs that require the use of dental mercury amalgam separators. At least 20 POTWs have voluntary programs to reduce mercury discharges from dental offices. Success rates for these voluntary programs vary greatly. EPA Final 2008 Effluent Guidelines Plan FR Notice at 53,234. Similarly,

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<sup>3</sup> EPA, *Health Services Industry Detailed Study: Dental Amalgam* (EPA-821-R-08-014, August 2008), available at <http://www.epa.gov/waterscience/guide/304m/2008/hsi-dental-200809.pdf>. Similar, but different estimates have been published in the peer reviewed literature and some of the differences remain to be resolved. (Vandeven, J. and McGinnis, S.L., *An Assessment of Mercury in the Form of Amalgam in Dental Wastewater in the United States*, Water, Air and Soil Pollution at 164, 349, 363 (2005)

<sup>4</sup> Statement of Geoffrey Grubbs, Director, Office of Science and Technology, U.S. Environmental Protection Agency, Before the Subcommittee on Wellness and Human Rights of the Committee on Government Reform, United States House of Representatives (October 8, 2003).

<sup>5</sup> The “principal sources of fish contamination” with mercury “are air emissions of mercury from coal burning power plants, municipal waste incinerators and other industrial sources” US EPA, Star Report, Vol.4, Issue 1, Mercury Transport and Fate in Watersheds at 2 (October 2000).

EPA is pursuing a number of programs to reduce the release of mercury into the atmosphere and into surface water, including the reduction of mercury discharges from POTWs<sup>6</sup>

The dental community, including ADA and state and local dental associations, has taken action to reduce amalgam wastewater discharges to POTWs. The ADA has evaluated the effectiveness and cost of amalgam separators, contributed to the development of the ISO separator standard, advised the dental community concerning installation and maintenance issues, and conducted outreach and education programs concerning reduction of discharges of amalgam wastewater. In 2007, the ADA updated its voluntary best management practices for dentists (ADA BMPs) to include the purchase and proper use of an amalgam separator, in order to increase the recycling of amalgam. See Attachment A.

EPA's Final 2008 Effluent Guidelines Plan FR Notice did not identify the dental sector for an effluent guidelines rulemaking because as EPA has found with other categories of dischargers, "demonstrating significant progress through voluntary efforts" gives that category "a lower priority for effluent guidelines or pretreatment standards revision, particularly where such reductions are achieved by a significant majority of individual facilities in the industry." EPA will "continue to examine the percentage of dentists using amalgam separators and their effectiveness at recovering dental amalgam and reducing mercury discharges to POTWs" and "whether a significant majority of dentists are utilizing amalgam separators." EPA Final 2008 Effluent Guidelines Plan FR Notice at 53,234. This MOU is intended to be a vehicle for conducting such an examination. After such examination, EPA may re-evaluate its view not to initiate an effluent guidelines rulemaking for the dental sector. EPA's Final 2008 Effluent Guidelines Plan FR Notice at 53,234.

Use of ADA BMPs to reduce the discharge of amalgam wastewater from dental offices is consistent with EPA's view that POTWs may use BMPs -- as an alternative to numeric limits -- that are developed to protect the POTWs, water quality, and sewage sludge from discharges from significant industrial users.<sup>7</sup>

While there has been progress in reducing mercury levels in the environment from all sources, the signatories to this MOU believe that additional voluntary efforts to reduce the amount of amalgam being discharged from dental offices into POTWs are appropriate and would promote recycling and expedite such reductions. A collaborative effort by EPA, ADA and NACWA will help build awareness and the importance of prevention at the local, state, tribal, and national levels.

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<sup>6</sup> See EPA, Notice of Availability of Preliminary 2008 Effluent Guidelines Program Plan, 72 Fed. Reg. 61,335, 61348 (October 30, 2007) and *EPA's Roadmap for Mercury* (July 5, 2006)).

<sup>7</sup> EPA, Streamlining the General Pretreatment Regulations for Existing and New Sources of Pollution, 70 Fed. Reg. 60,134, 60, 137 (October 14, 2005).

## **II. AGREEMENT**

### **A. Purpose**

1. The purpose of this MOU is to promote the use of BMPs adopted by the ADA by dentists, thereby increasing recycling and reducing the discharge of amalgam into POTWs from dental offices that currently handle amalgam wastewater.

2. The parties seek to encourage the use of this voluntary program described in paragraphs B and C, below, and subject to the limitations in subparagraph 3, below.

### **B. Goals and Activities of the Voluntary Program**

1. The goal of the Voluntary Dental Amalgam Discharge Reduction Program is to have dental offices<sup>8</sup> follow the ADA BMPs, which includes, among other things, installation of an amalgam separator, proper maintenance of such separators, and recycling of all amalgam waste collected in dental offices. (See Attachment A of this MOU.) This program also establishes performance goals and intends to track the percentage of dental offices that use the BMPs.

2. As an initial step, the ADA intends to prepare within six months of the effective date of this MOU a baseline report estimating the current level of amalgam separator usage at the national and state level. This report will describe the data and methodology utilized and, if appropriate, recommend improvements in the methodology. The methodology may vary from locality to locality.

3. As an interim goal, the ADA intends to establish a tracking program (using the methodology used to estimate the current amalgam separator usage). ADA intends to report progress in increasing the percentage of dentists using amalgam separators to EPA and NACWA three (3) years after the effective date of the MOU.

4. It is the intent of the signatories that the Voluntary Dental Amalgam Discharge Reduction Program will demonstrate a significant increase in the use of amalgam separators within a reasonable period of time in order to progress toward achieving the goal of this MOU. However, at this time, there is insufficient information to set numerical interim goals. There is no precise estimate on the percentage of dentists using amalgam separators and the joint efforts of the signatories have not yet begun. Not later than one year after the effective date of this MOU, the signatories intend to establish such interim goals. In establishing the interim goals, the signatories intend to consider the absolute percentage of applicable dental offices using separators and the average annual rate of increase in separator usage (e.g., a 10% increase per

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<sup>8</sup> The focus of this MOU's voluntary program is on dentists who use or remove more than a de minimis amount of dental amalgam. See "Limitations" below in section III.D. c. below.

year), among other factors. This information may be used, as appropriate, to identify whether to revise or intensify aspects of the Voluntary Dental Amalgam Discharge Reduction Program, and to identify any other appropriate changes that may be needed.

5. The parties intend to direct outreach to dentists and to other members of the dental team (i.e., the dentist, hygienist, and other office personnel) who might be involved with BMP compliance. The parties further intend to summarize these outreach efforts in any reports submitted under this MOU.

### **C. Roles and Responsibilities of the Signatories**

The signatories plan to achieve the goals described in subparagraph B through the actions of the signatories to the MOU, which are described below.

#### **1. American Dental Association**

a. ADA will promote compliance with the ADA BMPs by dentists and other members of the dental team.

b. ADA will prepare and submit to EPA and NACWA for review and comment, the baseline report described in subparagraph B.2., above. Thereafter, ADA resolves to submit reports to EPA and NACWA according to plan they will form when interim goals are established. The parties also resolve to continue to consult and coordinate, as appropriate and agreed upon by the signatories. ADA will revise the reports, as appropriate, and submit the final reports to EPA and NACWA.

c. ADA will continue and expand its programs to raise awareness and provide training, outreach, and implementation resources to dentists and other members of the dental team, and where possible, dental students, on the benefits of following the ADA BMPs and the proper ongoing operation and maintenance of the ADA BMPs. This effort includes working with EPA and NACWA in developing seminars, continuing dental education courses and web-based compliance assessment information.

d. ADA will facilitate meetings between EPA, NACWA, and the American Dental Education Association and other appropriate associations, to discuss methods by which these other dental-related associations could contribute to the accomplishment of the goals of the Voluntary Dental Amalgam Discharge Reduction Program.

#### **2. Environmental Protection Agency**

a. EPA resolves to promote to dentists and NACWA members the benefits of dentists voluntarily adopting the ADA BMPs.

b. EPA resolves to submit data it believes is relevant to the ADA to assist in the preparation of the baseline report and the tracking reports.

c. EPA resolves to review and provide comments on the draft baseline report and the tracking reports.

d. EPA plans to raise awareness of this Voluntary Dental Amalgam Discharge Reduction Program with EPA Regional pretreatment personnel, state pretreatment personnel, and POTWs and, as appropriate, provide tools and report progress to these stakeholders and the public.

e. EPA resolves to work, in conjunction with the ADA, to develop a program to provide recognition to dentists who comply with the ADA BMPs, e.g., by providing a certificate to dentists who comply with the ADA BMPs.

f. EPA resolves to work in coordination with ADA and NACWA to develop training tools and information for dentists, States, Tribes, and POTWs.

g. As appropriate, EPA resolves to meet with the American Dental Education Association and other appropriate associations and relevant entities to discuss methods by which these other dental related groups could contribute to the accomplishment of the goals of the Voluntary Dental Amalgam Discharge Reduction Program.

### 3. **National Association of Clean Water Agencies**

a. Where an individual POTW already has data on the degree of compliance with either a mandatory program or a voluntary program, NACWA will encourage its members to submit such data to the ADA to assist in the preparation of the baseline report and the tracking report.

b. NACWA resolves to review and provide comments on the draft baseline report and the tracking reports.

c. NACWA resolves to continue to provide information to its members on the various methods of reducing the discharge of amalgam to POTWs, including through the Voluntary Dental Amalgam Discharge Reduction Program, as well as other programs and requirements.

### 4. **Joint Activities**

a. All signatories resolve to work to encourage compliance with the ADA BMPs.

b. All signatories resolve to use their best efforts to work cooperatively to achieve the goals of the Voluntary Dental Amalgam Discharge Reduction Program.

## **D. Limitations**

a. Nothing in this MOU limits EPA, the States, Tribes, or a POTW in promulgating a mandatory separator program, or affects any existing amalgam wastewater regulatory programs. Nothing in this MOU addresses (or limits) in any manner the legal authority of EPA, the States, Tribes, or POTWs or affects any legal defenses that dentists may have. Nothing in the MOU diminishes the existing authority of the signatories or the members of the signatory associations.

b. This MOU does not impose requirements on dental offices or POTWs beyond those contained in existing laws and regulations.

c. The focus of this MOU's voluntary program is on dentists who use or remove dental amalgam. Some states and POTWs have excluded certain dental practices because they discharge no or a de minimis amount of amalgam (such as orthodontists, and periodontists, oral and maxillofacial surgeons or radiologists, or oral pathologists). The ADA supports those exemptions. The precise scope of the local voluntary program is best left to the local POTW and dental community. This MOU and/or adherence to the ADA BMPs does not relieve dental offices from their responsibility to understand and comply with any local POTW requirements relating to the control of mercury discharges from their practices. The signatories recognize that mandatory separator programs or other such local POTW requirements beyond voluntary adherence to the ADA BMPs may be appropriate based on locale-specific circumstances or considerations.

d. All commitments made in this MOU are subject to the availability of funds and each organization's budget priorities. Nothing in this MOU will, in and of itself, obligate EPA, ADA, or NACWA to expend funds or to enter into any contract, assistance agreement, interagency agreement or other financial obligations.

e. Any endeavor involving the transfer of funds between the parties to the MOU will be executed in separate agreements between or among the participating parties. The signatories agree that they will not submit a claim for compensation to EPA for any actions taken in furtherance of this MOU.

f. This MOU is neither a fiscal nor a funds obligation document. Any endeavor involving reimbursement or contribution of funds between the parties to this MOU will be handled in accordance with applicable laws, regulations and procedures, and will be subject to separate subsidiary agreements that will be effected in writing by representatives of both parties.

g. This MOU in no way restricts the signatories from participating in similar activities or arrangements with other entities, including federal, state, tribal, or local agencies.

h. Nothing in this MOU constitutes an endorsement of the purchase or sale of products and services provided by private organizations, including any particular amalgam separator, recycling service or other amalgam wastewater-related service. However,

the parties recognize that the ADA or state or local dental societies may enter into preferred provider or similar agreements.

i. This MOU does not create any right or benefit, substantive or procedural, enforceable by law or equity by any persons against the signatories of the MOU, their officers or employees, or any other person. This MOU does not direct or apply to any person other than the signatories to the document.

### **III. EFFECTIVE DATE**

This MOU becomes effective upon the date of the final signature by the Assistant Administrator for Water of the U.S. Environmental Protection Agency, the President of the American Dental Association, and the President of the National Association of Clean Water Agencies.

### **IV. MODIFICATION**


The provisions of this MOU may be amended or supplemented as the parties may mutually agree upon in writing by all three parties.

**V. TERMINATION**

This MOU will remain in effect until termination by any Party, unless the non-terminating parties jointly agree to continue the MOU between themselves. Any Party may withdraw from the MOU by giving notice to the other parties in writing. Termination will be effective as of the date that the notification is received by both other signatories.

**SIGNED ON BEHALF OF:**

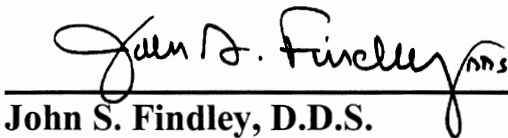
**U. S. Environmental Protection Agency:**



**Benjamin H. Grumbles**  
**Assistant Administrator for Water**

**Date: DEC 29 2008**

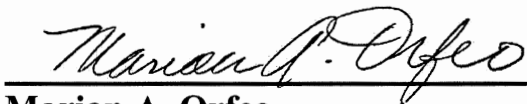
**American Dental Association:**



**John S. Findley, D.D.S.**  
**President**

**Date: December 23, 2008**

**National Association of Clean Water Agencies:**



**Marian A. Orfeo**  
**President**

**Date: December 23, 2008**



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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. According to the EPA in 2000, metals (mainly due to the detection of mercury in fish tissue samples) were the second most common pollutant impairing 3.2 million acres of the 17.3 million acres of assessed lakes (the assessed lakes comprised 43% of the total lake acres).<sup>2</sup>

Although mercury in the form of dental amalgam is 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 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. Quality of America’s Lakes. <http://www.epa.gov/owow/lakes/quality.html> (accessed April 2007).



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

## Glossary of Amalgam Waste Terms

- **Amalgam capture device** is an apparatus such as a chair side trap, vacuum pump filter or amalgam separator that collects amalgam particles.
- **Amalgam sludge** is a mixture of liquid and solid material that collects within vacuum pump filters, amalgam separators or other amalgam capture devices that may be used.
- **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.
- **Dental Best Management Practices** are a series of amalgam waste handling and disposal practices that include, but are not limited to, initiating bulk mercury collection programs, using chair side traps, amalgam separators compliant with ISO 11143<sup>3</sup> and vacuum collection, inspecting and cleaning traps, and recycling or using a commercial waste disposal service to dispose of the amalgam collected.
- **Empty amalgam capsules** are the individually dosed containers left over after mixing precapsulated dental amalgam.
- **Non-contact amalgam (scrap)** is excess mix leftover at the end of a dental procedure.

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.

<sup>3</sup> International Standards Organization 11143:1999. Dental Equipment – Amalgam Separators.



## 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. Your recycler may have its own requirements, so ask your recycler about containers and what may be placed in them.
5. Look for recyclers who comply with the ADA-ANSI standard. This standard is meant to encourage recycling.

## 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. Look for recyclers who comply with ANSI/ADA Specification 109: Procedures for Storing Dental Amalgam Waste and Requirements for Amalgam Waste Storage/Shipment Containers.<sup>3</sup> This standard is meant to encourage recycling.

### 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?



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- Does your company have an EPA or applicable state license?
- Does the company use the proper forms required by the EPA and state agencies?
- Do your procedures comply with ANSI/ADA Specification 109: Procedures for Storing Dental Amalgam Waste and Requirements for Amalgam Waste Storage/Shipment Containers?<sup>4</sup>

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<sup>4</sup>American Dental Association Council on Scientific Affairs. American National Standard/American Dental Association Specification No. 109. Procedures for storing dental amalgam waste and requirements for amalgam waste storage/shipment containers, 2006.



### 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, vacuum pump filters and amalgam separators to retain amalgam and recycle their contents.	<i>Don't</i> rinse devices containing amalgam over drains or sinks
<i>Do</i> recycle teeth that contain amalgam restorations. ( <i>Note:</i> Ask your recycler whether or not extracted teeth with amalgam restorations require disinfection)	<i>Don't</i> dispose of extracted teeth that contain amalgam restorations in biohazard containers, infectious waste containers (red bags), sharps containers 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, container that is marked “Non-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></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.</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>Amalgam separators</i></b>
<ul style="list-style-type: none"><li>• Select an amalgam separator that complies with ISO 11143.</li><li>• Follow the manufacturer’s recommendations for maintenance and recycling procedures.</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>



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#### ***Additional Resources***

The following articles published in the *Journal of the American Dental Association* are available through the ADA Division of Science and also are available to ADA members online.

For information on proper mercury hygiene practices see "Dental Mercury Hygiene Recommendations". 2003:134(11);1498-9.

For information on choosing line cleaners that minimize the dissolution of mercury from amalgam see: "The effect of disinfectants and line cleaners on the release of mercury from amalgam" 2006:137(10);1419-25.

For information on amalgam separators see:

- "Laboratory evaluation of amalgam separators" 2002:133;577-89.
- "Evaluating amalgam separators using an international standard" 2006:137;999-1005.
- "Purchasing, installing and operating dental amalgam separators: Practical issues" 2003 134: 1054-65.