

Policy Statement 6.11 – Dental Amalgam Waste Management (Including Guidelines for Amalgam Waste Management)

Position Summary

Mercury and waste amalgam discharge from dental uses, into the general environment, should be minimised.

1. Background

- 1.1. Targeted oral health promotion programs may reduce the need for restorative interventions.
- 1.2. Mercury is bio-accumulative and of particular environmental significance.
- 1.3. Many countries have strict mandatory limits on the levels of mercury in wastewater.
- 1.4. Dental clinics are recognised as a source of environmental mercury.
- 1.5. Dentistry's contribution to environmental mercury is extremely small with about half of environmental dental mercury occurring as a result of cremations. Crematorium filters can capture up to 99% of discharged mercury vapour from amalgam waste.
- 1.6. Amalgam waste is created in dental clinics during the placement, finishing, polishing and removal of amalgam restorations.
- 1.7. Not all dental clinics create dental amalgam waste.
- 1.8. For some dental clinics it is impracticable to implement all amalgam waste management measures.
- 1.9. Dental amalgam waste in various forms may find its way into wastewater, as sediment in sewage sludge and landfills and as mercury vapour in the atmosphere.
- 1.10. Chair side traps, suction filters and amalgam separators complying with ISO 11 143 'Amalgam separators' capture 95 per cent of the amalgam waste.
- 1.11. Alternatives to amalgam are not as amenable to recycling.
- 1.12. The Minamata Convention on Mercury (an international environmental agreement that addresses the adverse effects of mercury) was signed by the Australian Government on 10 October 2013 and it is considering ratification to become a full party.

2. Position

- 2.1. Mercury and waste amalgam discharge from the dental clinic and into the general environment should be minimised.
- 2.2. Dental staff must be trained so they can adopt best practices to minimize amalgam waste and ensure that waste is disposed of properly.
- 2.3. Only those clinics where amalgam restorations are placed, finished, polished, or removed should be required to adopt amalgam waste management protocols.
- 2.4. Any measure or regulation for amalgam waste management should be cost effective
- 2.5. Only precapsulated amalgam alloy complying with ISO 24234:2015 'Dentistry amalgam should be used in dental clinics.

- 2.6. Dental clinics must collect, store safely and forward for recycling as much amalgam waste as possible. Such waste includes:
- used amalgam capsules;
 - excess amalgam not placed in restorations, including that left on instruments and matrix bands;
 - amalgam retained in chairs side traps, suction filters and amalgam separators; and
 - extracted teeth which have been restored with amalgam.
- 2.7. Amalgam separators, which comply with ISO 11 143, should be installed in those dental clinics described in 3.3 if it is practicable.
- 2.8. Dental clinics generating dental amalgam waste should be encouraged and supported to adopt the amalgam waste measures in this Policy Statement.
- 2.9. Community and individual oral health promotion messages should be employed to reduce the need for restorative interventions.

Policy Statement 6.11

Adopted by ADA Federal Council April 12/13, 2007.

Amended by ADA Federal Council November 15/16, 2007.

Amended by ADA Federal Council April 12/13, 2012.

Reviewed by ADA Policy Committee, September 28, 2012.

Amended by ADA Federal Council August 27/28, 2015.

Amended by ADA Federal Council April 14/15, 2016.

Amended by ADA Federal Council, April 11/12, 2019

Appendix to Policy Statement 6.11 – Guidelines for Amalgam Waste Management

Dental Amalgam Waste

Dental amalgam waste should be recycled. Following the simple suggestions outlined in this document will help protect the environment.

Although mercury in the form of dental amalgam is very stable, amalgam should not be disposed of in the general waste, infectious waste “yellow bag,” pharmaceutical waste or sharps container. Amalgam also should not be rinsed down the drain. These precautions 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. Recycling is best practice for amalgam waste management for dental clinics.

Standards

The appropriate standard for amalgam separation is ISO 11 143, which specifies the use of amalgam separators that effectively filter 95% of amalgam waste, after large pieces have been captured in the chair side trap, that might otherwise go into wastewater streams. The chair side traps collect 40% remaining 60% is discharged into the effluent or goes to an ISO 11143 compliant amalgam separator. This 60% will be reduced by at least a further 95% leaving 3% or less of amalgam particles being discharged into the wastewater.

Types of Amalgam Waste

- 1. Non-contact amalgam (scrap)** is excess mix leftover at the end of a dental procedure. Many recyclers will buy this clean scrap.
- 2. 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, scrap left on instruments and matrix bands and amalgam captured by chair side traps, filters, or screens.
- 3. Amalgam separators** that comply with ISO 11 143 capture over 95% of amalgam waste but also trap other treatment debris
- 4. 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 general waste).
- 5. 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.
- 6. Amalgam sludge** is the mixture of liquid and solid material collected within vacuum pump filters or other amalgam capture devices.
- 7. Empty amalgam capsules** are the individually dosed containers left over after mixing precapsulated dental amalgam.

Bulk Elemental Mercury

The use of bulk elemental mercury also referred to as liquid or raw mercury is not recommended for use in dental clinics. Instead, precapsulated amalgam alloy should be used.

If there is still bulk elemental mercury in a dental clinic, it should be recycled. Check with a licensed recycler to determine whether they will accept bulk elemental mercury. Do not pour bulk elemental mercury waste into the general waste, infectious waste yellow bag or down the drain.

Steps for Recycling Amalgam Waste

1. Stock amalgam capsules in a variety of sizes to minimize the amount of amalgam waste generated.

2. Use high velocity evacuation, if appropriate with air/water spray, when carving, finishing, polishing or removing amalgam restorations.
3. Amalgam waste may be mixed with body fluids, such as saliva, or other potentially infectious material, so use personal protective equipment such as gloves, masks, and protective eyewear when handling it.
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 containers—talk to your recycler about any advantages in doing so.
5. Arrange for your recycler to collect your amalgam waste on a regular basis.

Amalgam Waste Management - Best Practices

DO	DON'T
Do use precapsulated alloys and stock a variety of capsule sizes	Don't use bulk mercury
Do recycle used disposable amalgam capsules	Don't put used disposable amalgam capsules in sharps containers, infectious waste containers (yellow bags) or general waste
Do salvage, store and recycle non-contact amalgam (scrap amalgam)	Don't put non-contact amalgam waste in sharps containers, infectious waste containers (yellow bags) or general waste
Do salvage (contact) amalgam pieces from restorations after removal and recycle the amalgam waste	Don't put contact amalgam waste in sharps containers, infectious waste containers (yellow bags) or general waste
Do use chair side traps to retain amalgam and recycle the content	Don't rinse chair side traps containing amalgam over drains or sinks
Do recycle contents retained by the vacuum pump filter or other amalgam collection device, if they contain amalgam	Don't rinse vacuum pump filters containing amalgam or other amalgam collection devices over drains or sinks
Do recycle teeth that contain amalgam restorations. (<i>Note: Ask your recycler whether or not extracted teeth with amalgam restorations require disinfection</i>)	Don't dispose of extracted teeth that contain amalgam restorations in sharps containers, infectious waste containers (yellow bags), or general waste
Do manage amalgam waste through recycling as much as possible	Don't flush amalgam waste down the drain or toilet
Do use line cleaners that minimize dissolution of amalgam	Don't use bleach or chlorine-containing cleaners to flush wastewater lines

A practical guide to integrating Amalgam Waste Management Best Practices into dental clinics

Non-contact (scrap) amalgam
<ol style="list-style-type: none"> 8. Place non-contact, scrap amalgam in wide-mouthed, airtight container that is marked “Non-contact Amalgam Waste for Recycling.” 9. Make sure the container lid is well sealed.
Amalgam capsules
<ol style="list-style-type: none"> 10. Stock amalgam capsules in a variety of sizes. 11. After mixing amalgam, place the empty capsules in a wide-mouthed, airtight container that is marked “Amalgam Capsule Waste for Recycling.” 12. Capsules that cannot be emptied should likewise be placed in a wide-mouthed, airtight container that is marked “Amalgam Capsule Waste for Recycling.” 13. Make sure the container lid is well sealed.

14. When the container is full, send it to a recycler.

Amalgam separators

15. Check supplier instructions for replacement of waste container (varies from volume guideline to time cycle e.g. annual replacement).
16. Check with supplier re model information against specific conditions in the practice i.e. space, plumbing, access, workload, regulatory requirements
17. Consider capacity (in chairs), maximum flow rate and life cycle.

Disposable chair side traps

18. Open the chair side unit to expose the trap.
19. Remove the trap and place it directly into a wide-mouthed, airtight container that is marked "Contact Amalgam Waste for Recycling."
20. Make sure the container lid is well sealed.
21. When the container is full, send it to a recycler.
22. Traps from dental units dedicated strictly to hygiene and non-amalgam related activities may be placed in with the general waste.

Reusable chair side traps

23. Open the chair side unit to expose the trap.
24. Remove the trap and empty the contents into a wide-mouthed, airtight container that is marked "Contact Amalgam Waste for Recycling."
25. Make sure the container lid is well sealed.
26. When the container is full, send it to a recycler.
27. Replace the trap into the chair side unit (Do *not* rinse the trap under running water as this could introduce dental amalgam into the waste stream.

Vacuum pump filters

28. Change the filter according to the manufacturer's recommended schedule. *Note:* 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.
29. 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.
30. 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.

Line cleaners

31. Use non-bleach, non-chlorine-containing line cleaners, which will minimize amalgam dissolution.

Instruments

32. Clean scrap amalgam from instruments and matrix bands

33. Place scrap into a wide-mouthed, airtight container that is marked "Contact Amalgam Waste for Recycling."

Ultrasonic Cleaning Solution

34. Dispose ultrasonic cleaning solution via the amalgam separator

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