

THE ENVIRONMENTALLY RESPONSIBLE DENTAL OFFICE:

THE OREGON DENTIST'S GUIDE TO
BEST MANAGEMENT PRACTICES
OF DENTAL WASTE



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INTRODUCTION

The following recommendations were developed by the ODA Office Safety Committee in cooperation with the City of Portland Bureau of Environmental Services and other water/environmental agencies throughout the state of Oregon. At the time of this publication, the ODA is negotiating with all of the water/environmental agencies to accept these recommendations in lieu of regulation and permitting requirements.

Many thanks to Mr. Kelly Hendryx and Mr. Gary Barnes from the Bureau for working with the ODA on voluntary management of dental office hazardous waste. ODA wishes to thank the principal authors of this document: Beryl Fletcher, ODA Director, Professional Affairs, John G. Colasurdo D.M.D., and Murray Bartley DMD, Ph.D., Chair, Office Safety Committee. Thanks is also extended to the Western Lake Superior Sanitary District for resource information provided to our authors.

BACKGROUND

The Oregon Dental Association has developed this guide to assist dentists in how best to manage the disposal of dental office wastes. Reduction of toxic substances at the source is the pollution prevention goal of the U. S. Environmental Protection Agency and Oregon's Department of Environmental Quality (DEQ). Local city and county waste water districts are required to implement a program to reduce toxic wastes from entering our streams, sewers and landfills. Mercury



discharged into the sewer system when dealing with old or new amalgam is of vital concern.

In late 1996, ODA began discussions with DEQ and ultimately the City of Portland Bureau of Environmental Services and other local municipalities, as these agencies were promulgating new administrative rules for hazardous waste generators. Of key interest to these agencies is mercury including amalgam (Federal EPA includes amalgam in the mercury category), x-ray fixer (silver) and lead foil. Also of interest, is the use and disposal of chemiclave materials. The agencies encourage the conversion from chemiclaves to autoclaves.

ODA and these agencies are reaching a mutual agreement whereby dentists will be encouraged to initiate a voluntary program, "Best Management Practices" (BMP's) for recycling of amalgam, lead foil and x-ray fixer. Historically, voluntary efforts achieve much higher compliance than mandates, and are less expensive to administer for all.

ODA strongly encourages all dental offices to recycle mercury, amalgam, lead foil and x-ray fixer. If

dental offices recycle these materials there will be no need to enact further and more costly regulation of dental offices.

RECYCLING ASSISTANCE

We identify some companies which will assist you in recycling of these materials. ODA does not endorse or recommend any particular company. A few suggestions to help you implement your plan and where to look for recycling assistance are:

- You may wish to review the yellow pages of your local telephone book under "recyclers" or "hazardous waste."
- You may also wish to contact your nearest DEQ hazardous waste station.
- METRO (in Portland, (503) 223-8133 is available to any registered Conditionally Exempt Generator (CEG) in the state. The Hazardous Waste Station is open Monday through Friday. Please call first to set up an appointment to bring in the materials for recycling. There is a disposal fee charged when not a special "no fee"* day.
- You must make application to METRO for a "Conditionally Exempt Generator Certificate and then you may bring your hazardous material to METRO's Central Transfer Station at 6161 N. W. 61st. Street, Portland. There will be a fee assessed to dispose of this material.

- There is also mail-service disposal and other companies which may accept your wastes. Make sure you follow guidelines from each company for packaging and/or mailing. Always keep a record of what, how much and when you ship.

AMALGAM (MERCURY) WASTE

In order to meet EPA's pollution prevention goal, the Oregon Dental Association's Best Management Practices (BMP's) include avoiding the amount of mercury from amalgam particles from entering the sewage system or the garbage. Amalgam particles are a potential source of mercury not only in the sewer, but ground water and streams and rivers. Amalgam particles are created when old fillings are removed and new fillings are mixed. We recommend that dental offices recapture amalgam particles with screens or traps, and avoid disposal of amalgam down the drain or in the trash can.

A list of recyclers is given in the Appendix. You may wish to consult with the company of your choice on specifications for storage and disposal preparation of amalgam particles.

Some simple techniques to properly collecting, storing and transporting amalgam include:

- **Install amalgam traps** chair-side and in the suction line just before the vacuum pump. Every few months, clean the traps and bowl and recycle the amalgam waste. This will also improve the suction and extend the life of your vacuum pump.
- **Flush the vacuum system** with line solution before changing the chair-side trap. (do it before you go home, then change the trap the first thing in the morning.
- **Use barrier techniques** such as gloves, glasses and mask when handling traps. (chair-side or vacuum pump) Use utility gloves

for cleaning up and handling these wastes.

DISPOSAL SERVICES

Some disposal services allow you to dispose of gloves, bags and paper towels used in collecting the used amalgam. If allowed, pull the cuff of the glove over the amalgam trap, and off hand and fingers, inverting the glove and collecting the amalgam trap inside. Tie a knot in the glove to secure the trap inside. If not allowed, you will need to check with disposal service to obtain information on what to do with contaminated gloves, paper towel etc.

Most disposal services require that amalgam waste be disinfected and documented in some way that it was disinfected prior to disposal pick up. You may use your normal disinfectant solution. Check with your recycler for any special form to document the waste was disinfected or check to see if you may simply include a statement on your letterhead that the amalgam waste has been disinfected.

Keep all containers with recycled waste, in cool, dry area. Avoid sunlight and high humidity.

To minimize the amount of mercury vapor emitted to the office from waste amalgam, the American Dental Association recommends that it be stored under a small amount of photographic fixer in a closed container labeled Amalgam Waste. However, most recyclers of amalgam want the material as dry as possible. Before sending waste amalgam to a recycler, you must decant off the fixer and blot amalgam dry with paper towel. (Be sure to use gloves and dispose of paper towels appropriately.)

Most recyclers pay for clean scrap amalgam, but may not pay for amalgam that is mixed with other wastes from traps. The recyclers request that clean and mixed amalgam be kept separate to aid recycling. You can send

waste amalgam to the recycler via common carrier (i.e. UPS) in a strong suitable container with proper labeling, storage, and manifesting prior to shipping. You may wish contact your local DEQ hazardous waste unit or METRO in Portland (503) 223-8133 for information on how to register as a conditionally exempt small waste generator (CEG), allowing you to dispose of this material at a hazardous waste clean-up day in your area.

Some recyclers who accept other materials may also accept amalgam if using their service to dispose of x-ray fixer, gold or other dental wastes.

The American Dental Association recommends that small amounts of elemental mercury can be made into amalgam by reacting with alloy. This results in an amalgam scrap which can be added to the scrap jar and recycled. Contaminated elemental mercury spills, and absorbents from cleaning up spills of mercury are accepted by some recyclers of amalgam. This material should be managed as a hazardous waste, with proper labeling, storage, manifesting, and shipping.

The ODA and ADA recommend that all dentists use encapsulated amalgam vs. mixing restorative material from bulk sources.

Used (and empty) amalgam capsules have been determined to be non-hazardous, based on toxicity test results. Empty amalgam capsules maybe placed in the garbage. If the used amalgam capsules are not empty, this amalgam should be recycled.

X-RAY FIXER

X-ray fixer is considered a hazardous waste because of its high silver content. However, fixer is easily recyclable. Recycling is the management method recommended by regulatory agencies. **There are two suitable methods of managing fixer waste:**

- You may use a silver recovery unit* for your developing system; or
- You may give, sell, or pay someone that operates a silver recovery unit to take your fixer.

For your reference, a list of silver recyclers is included in the appendix. If you dispose of your fixer off-site, collect and store it in a closed plastic container labeled: Hazardous Waste - Used Fixer - Contains only fixer. Many recyclers want to be sure that the liquid does not contain developer. If it does, it could actually remove silver from the recycling equipment. The liquid that has run through a recovery unit can be disposed of down the drain.

Many local photo developing companies will accept x-ray fixer from dental offices. You may wish to check with those companies in your area. If any photo developing companies have regulatory questions concerning the acceptance of fixer from an outside source, they may contact Mr. Gary Barnes from the City of Portland, Bureau of Environmental Services (503) 823-7383.

X-RAY DEVELOPER

Developer solutions should not be mixed with fixer solutions. Waste developer can be sewerred if it is not mixed with fixer. Flush the drain thoroughly as you discharge developer

*Silver recovery units only make economic sense if the flow is 2 or 3 gallons of fixer per week. Small recovery units have an operating life of about six months. They are filled with iron wool and will rust over time. Once rusted, the unit does not pick up any more silver. The problem with silver removal equipment is most dental offices generate only small amounts of silver and the cost of the silver recovery equipment can be expensive. The smallest unit known to our contacts at the City of Portland was Kodak's Chemical Recover Cartridge, Junior Model II. This model would most like have to be changed out approximately every 6 months depending upon the flow volume and rust development. While this unit will treat up to 100 gallons in that time period, only a large dental business would generate such a large flow of fixer. The option to purchase a silver recovery unit might only be possible if several dentists found it feasible to collectively share a unit.

down the drain. Some units mix the fixer and developer after they are spent. The resulting solution is hazardous. However, you may purchase an adapter kit to keep the fixer and developer separate. The fixer can be recycled and the developer can be sewerred. You may also wish to check with your local DEQ hazardous waste disposal site as to whether they also may take used developer.

LEAD FOIL OR LEAD SHIELDS

Lead foil that shields X-ray film or protective lead shields should not be disposed of in the garbage. These materials are hazardous waste unless they are recycled for their scrap metal content. Companies which recycle amalgam or fixer may also accept lead waste. Eastman Kodak has a special mail in program for dentists to recycle lead foil. A list of metal reclaimers is given in the appendix.

CHEMICLAVE WASTE

Normal use and discharge of chemiclave solutions is acceptable although discouraged. Agencies would like to encourage dentists to move away from chemiclave sterilization to autoclaves. Normal use and sewer disposal of solutions (in normal use) is acceptable. Flush following disposal-with several gallons of water so that it does not sit in the sink trap or does not give a slug of material to the sewer system.

We recommend that dental offices buy only the amount of chemical sterilizer that they need; this will eliminate the need to dispose of the excess material.

If a dental office switches to an autoclave and has a supply of unused formaldehyde, they should give this to a dentist who still uses a chemiclave. The agencies would like to avoid a large "slug" of formaldehyde at any one time.

LABELING

The container in which you store your hazardous waste must be labeled with the words "hazardous waste" and a description of the waste. Example: "Hazardous Waste - Used fixer - contains only fixer."

The date you started filling the container should be written on the container or on a label. Standard labels are commercially available. Make sure you keep a written record of any material you send or deliver to a recycling entity. Be sure to request a "Certificate of Recycling or Disposal". This could be simply a note on their letterhead that they received "x" gallons of fixer and that it would be processed in their silver recovery unit.

You may wish to refer to labeling instructions in the appendix of the ODA Dental Office Safety Manual and any OR-OSHA requirements for employee safety in handling or disposal.

The companies listed below we have found provide recycling services in the areas indicated. You may find that other companies also provide recycling. *The Oregon Dental Association does not endorse or recommend any particular company or their services.*

Amalgam Recyclers***Safety Kleen Corporation**

(800) 669-5913 - Ask For Rick Talbot

Safety Kleen branch offices:

1550 Shelley St.
Springfield, OR 97477-1967
(541) 747-5804 or 1-800-669-5941

14013 Crater Lake Hwy
Medford, OR 97504-9742
(541) 770-8066

116540 S. E. 130th Avenue
Clackamas, OR 97015-8995
(503) 655-5578

Pendleton area
Contact Safety Kleen's Pasco,
Washington office 1-800-669-5941

Amalgaway (Mail Disposal Service)

1002 West Troy
Indianapolis, IN 46225
(800) 267-1467

Mercury Refining Co.

1218 Central Avenue
Albany, NY 12205
(800) 833-3505
(Also accepts raw mercury)

Dental Recycling North America (DRNA)

P. O. Box 1069
Hackensack, N. J. 07601
(800) 525-3793
(Also accepts raw mercury)

Strickland Refining Company

1290 81st Avenue Northeast
Minneapolis, MN 55432
(612) 786-2858 or (800) 486-2858
Fax# (612) 786-7793

EnviroChem

21821 industrial Blvd.
Rodgers, MN 55374
(612) 428-4002

Amalgam Recyclers***Dental Refiners**

P O Box 6569
Stateline, NV 89449
(800) 786-1742

Recyclights' Inc.

401 W. 86th Street
Bloomington MN 55420
(800) 831-2852
fax# (612) 948-0627
Contact: Karen Healy
(Also accepts raw mercury)

Silver Recyclers

Check with your local photo finishers
in your area. Many will accept x-ray
fixer from dental offices.

MRS Environmental Services

23826 NE 182nd Avenue
Battleground, Washington 98604
(503) 780-0355 OR 780-4910

Safety Kleen Corporation

(800) 669-5913 - Ask For Rick Talbot

Safety Kleen branch offices:

1550 Shelley St.
Springfield, OR 97477-1967
(541) 747-5804 or 1-800-669-5941

14013 Crater Lake Hwy
Medford, OR 97504-9742
(541) 770-8066

16540 S. E. 130th Avenue
Clackamas, OR 97015-8995
(503) 655-5578

Pendleton area
Contact Safety Kleen's Pasco,
Washington off ice 1-800-669-5941

Merry X-ray Company

1161 N. 28th Street
Springfield, OR 97477
(541) 726-9499
(Services I-5 Corridor from
Portland to Medford)

Silver Recyclers**EnviroChem**

218-21 Industrial Blvd.
Rodgers, MN 55374
(612) 428-4002

Strickland Refining Company

1290 81st Avenue Northeast
Minneapolis, MN 55432
(612) 786-2858 or (800) 486-2858
Fax# (612) 786-7793

BF-2 Silver Recovery

1250 Ocean Street
Eugene, OR 97402
(800) 327-2511

Lead Foil and/or Metal Reclaimers

Many of the same companies that
recycle amalgam or fixer may also
accept lead waste.

MRS Environmental Services

23826 NE 182nd Avenue
Battleground, Washington 98604
(503) 780-0355 OR 780-4910

Eastman Kodak Company

1-800-933-8031
Visa/MC Orders

Check orders send to:
Kodak Dental Film
Lead Recycling Program
343 State Street
Rochester, NY 14650-0547
or call for info: (716) 477-3194

*Refer to *your* Yellow Pages under Hazardous Waste or Recycling

*Contact METRO Hazardous Waste Disposal Program (503) 234-3000. You must register as a Conditionally Exempt Generators (CEO) prior to delivering hazardous material to METRO Transfer Station for Disposal. There will be a fee for disposal.

For dental offices in Lane County, please contact Mr. Larry Gibbs at (541) 682-3899. Lane County will hold one day per month for Lane County CEG's (Conditionally Exempt Generators) to drop off their hazardous materials.. You will need to sign an affidavit that you are a CEG There is a fee for disposal.

DENTAL WASTE BEST MANAGEMENT PRACTICES

WASTE	SOURCE	MANAGEMENT PRACTICE(S)
Amalgam particles	Traps, Screens, Excess mix	<ul style="list-style-type: none"> ● Send to a recycler ● Dispose of as hazardous waste
Waste Mercury	Spills, spill cleanup	<ul style="list-style-type: none"> ● Manage as hazardous waste - send to a recycler
<i>Empty</i> Amalgam capsules		<ul style="list-style-type: none"> ● Dispose of in the garbage
Fixer	X-ray processing	<ul style="list-style-type: none"> ● Sell, give away, or pay to have silver reclaimed ● Buy silver recovery system ● Take to hazardous waste disposal site
Developer	X-ray processing	<ul style="list-style-type: none"> ● Discharge to sewer system
Combined fixer and developer	X-ray processing	<ul style="list-style-type: none"> ● Purchase kit to separate and follow methods listed above
X-ray Film Packets	Patient x-rays	<ul style="list-style-type: none"> ● Send to metal (lead foils and shield) reclaimer ● Dispose of as hazardous waste
Chemiclave	Sterilizer	<ul style="list-style-type: none"> ● Agencies recommend replacement with autoclave; discourage use of formaldehyde
	Used chemicals	<ul style="list-style-type: none"> ● Discharge to sewer & flush with several gallons of water.
	Unused chemicals:	<ul style="list-style-type: none"> ● Use hazardous waste disposal service or give to another office who uses chemiclave.