

Best Management Practices for Hazardous Dental Waste Disposal

INTRODUCTION

Best Management Practices for Hazardous Dental Waste Disposal

There are a number of hazardous dental wastes that, when disposed improperly, could cause harm to the environment. The purpose of this document is to minimize the release of hazardous wastes to the environment by encouraging dental offices to use the "best possible practice" for waste management. The following document includes some "Best Management Practices" (BMPs) and some "Good Management Practices" (GMPs) for your office to use as a guide for hazardous waste disposal. There are also some "Don'ts" listed to illustrate those waste disposal practices that are prohibited. Ensuring that the hazardous wastes are managed properly in Nova Scotia is in everyone's best interest. Like our role in providing dentistry, prevention of the problem is the key. The disposal of hazardous wastes in Nova Scotia is a Government regulated process that requires the dental office team to fully understand the facts about proper waste management.

POLLUTION PREVENTION FOR THE DENTAL OFFICE

Pollution prevention is...The use of processes, practices, materials, products or energy that avoid or minimize the creation of pollutants and wastes, at the source. This includes choosing more efficient lighting and heating, reducing the use of water and paper and generally using fewer and less toxic chemicals. A good pollution prevention program includes education and training of staff, good housekeeping practices and chemical inventory control. Pollution prevention is an educational process that seeks to change how we think of what we do or produce with the goal of minimizing the potential impact on the environment while recognizing the economic benefits of waste avoidance. It is a proactive behavior in which the dentist and staff are always looking for opportunities to improve performance.

REGULATORY REQUIREMENTS FOR HAZARDOUS WASTE DISPOSAL

In contrast to the pollution prevention, which is voluntary, the proper disposal of hazardous waste is addressed through provincial regulations and municipal bylaws dealing with safe handling, proper treatment and disposal of these substances. Dental practices can produce many types of wastes, which require effective management to minimize their environmental effect. The disposal of these hazardous materials must follow the legal requirement set out by government. Non-compliance may be met with legal actions and penalties. The regulations also require each waste generator to be aware of how their wastes are being handled and to assume liability if these actions do not meet legislated or otherwise legally defined standards.

BEST MANAGEMENT PRACTICE (BMP)

How to Dispose of Hazardous Wastes

This manual has been designed to assist dental offices to comply with existing regulations to minimize the release of hazardous wastes into the environment. The three options below describe the methods to achieve this goal. The dental team is encouraged to follow the Best Management Practice; however, there are other options that can also be considered.

Disposal Options:

Best Management Practice (BMP)

This is the best option available to the dental office reflecting current commercially available technology and methods. This often reflects pollution prevention principles and goes beyond the minimum required by law. BMPs should be the goals against which current practices are measured.

Good Management Practice (GMP)

These are generally accepted technologies and procedures for handling and treating waste. These behaviors will manage or reduce the release of materials into the environment but are not as effective as BMPs. They represent average behaviors and are usually designed to meet existing legal requirements and established clinical procedures.

Don'ts

These actions are prohibited by law and will cause environmental problems, may endanger staff or public safety and could result in charges under existing regulations and bylaws. These practices are considered not appropriate for a dental office.

MERCURY CONTAINING WASTES

A. Elemental Mercury Waste Management Options

Best Management Practice (BMP)

Store unused elemental mercury in a tightly sealed, break resistant container

Label the container properly – "Hazardous Waste: Elemental Mercury"

Contact a certified waste carrier for recycling or disposal - ([see appendix#1](#))

Use a "mercury spill kit" if you have a spill of elemental mercury (1–800-663-8303)

Good Management Practice (GMP)

React unused elemental mercury with silver alloy to form scrap amalgam

Don'ts

Do not transport elemental mercury yourself

Do not place elemental mercury in the garbage

Do not wash elemental mercury down the drain

"It is often simpler and more cost effective to reduce or eliminate the generation of waste at the source so that the liability is never created."

MERCURY CONTAINING WASTES

B. Scrap Amalgam

Waste Management Options

Some of the metals in amalgam are hazardous to the environment. The provincial regulations in Nova Scotia prohibit the release of these wastes (mercury & silver) into the regular waste stream and further restrictions apply to these metals in the sewer systems. It is important for dentists to minimize the release of these wastes from the dental office as previously described.

Scrap Amalgam Best Management Practice (BMP)

Use a Sponge type Mercontainer™ to store the scrap amalgam

Empty amalgam capsules are non-hazardous and can be disposed in the garbage.

Use an ISO 11143 compliant amalgam separator on the suction lines to remove over 95% of the contact amalgam prior to entering the sewer system

Have a certified amalgam carrier dispose of the amalgam separator material on a regular basis as recommended by the manufacturer

Use disposable suction traps on your dental units and change them weekly

Use gloves, mask, and glasses when cleaning the suction traps

Place the used disposable trap into a properly labeled container of Merconvap™ solution for proper disposal (ie. - alginate container & endash; with label "Hazardous Wastes & endash; Amalgam Traps")

Once full, contact a certified waste carrier for recycling or disposal - ([see appendix #1](#))

Good Management Practice (GMP)

Use a properly labeled container with mercury vapor suppressant such as fixer or Merconvap™ solution to submerge the amalgam particles

Make sure the container is labeled "Hazardous Waste: Scrap Amalgam"

Mix only as much amalgam as is immediately required using premeasured amalgam capsules.

Manually remove large pieces of amalgam produced when removing old fillings and place them in a contact amalgam container

Consider using amalgam substitutes in cases where they are appropriate (clinically equal or superior to amalgam), ethical and economically feasible

Use gloves, mask, and glasses when removing the non-disposable traps from the suction line. Remove all visible amalgam by tapping the trap into a Mercontainer™.

Don'ts

Do not dispose scrap amalgam in the garbage

Do not wash scrap amalgam down the drain

Do not place scrap amalgam in the sharps container

Do not give the scrap amalgam to a scrap dealer who is not certified to transport hazardous wastes

Do not rinse the traps and filters in the sink as amalgam particles will discharge into the sewer

Do not throw disposable traps that contain amalgam particles into the garbage

Do not place extracted teeth with amalgam fillings in the regular garbage. It should be disposed of in the "Scrap Amalgam" container to avoid incineration

Do not suction up unused particles of amalgam, instead place them in a mercury vapour suppressant container

Amalgam Separation

The basic types of amalgam separation technologies:

- Sedimentation units reduce the speed of the downflow of water with baffles or tanks to allow amalgam particles to settle.
- Centrifuge units spin the water out to the sides of the unit. These units offer good amalgam removal but cause some foaming with American vacuum systems.
- Ion Exchange units use polymers to capture small particles; these are often used in series with sedimentation units.
- Other wastewater treatment technologies such as electrolysis and chemical additions have been adapted for dental applications.

Tips When Choosing an Amalgam Separator

- Make sure it is ISO 11143 certified
- Have the dental supply company assess your needs based on number of operatories and type of dental equipment that you utilise
- Evaluate all the separator units for comparisons such as leasing vs buying ([see appendix #2](#))
- Ask the dental supply company that you are dealing with to outline all costs such as the purchase of the unit, the buying of the replacement cannisters, and the disposal of the waste

SILVER CONTAINING WASTES

A. Spent X-ray Fixer

Waste Management Options

The fixer that Dental offices use to develop xrays is a hazardous material that should not be simply rinsed down the drain. Spent fixer solution contains approximately 4000 mg of silver per litre. The current bylaw for Nova Scotia place the maximum concentration limit of silver in solution to be 2 mg/L. Onsite treatment of waste fixer minimizes the risks associated with this material. The best option for a small practice is a Chemical Recovery Cartridge (CRC). CRCs are canisters filled with another metal, usually steel wool that reacts with the silver in the fixer. Essentially the iron dissolves into the solution and the silver plates out. Purchase costs start at about \$100 and can be obtained from most dental supply companies. Note: CRCs may fail prematurely if they are not used and drained regularly.

Dentist should minimize the amount of silver that enters the sewer and septic systems by following the appropriate management practices.

Best Management Practice (BMP)

Use a Silver recovery unit to recapture the silver from the fixer. Collect this silver in a container recommended by the manufacturer and disposal company &endash; (see [appendix #1](#))

Label the Silver Container properly

Once container is full, contact a Certified Waste Carrier for recycling or disposal

The de-silvered fixer solution can be mixed with developer and water and disposed of down the sewer or septic system.

Spent developer is permitted to be discharged into the sewer or septic systems provided it is diluted with water

Utilize a digital X-ray unit to minimize the need for fixer solutions

Good Management Practice (GMP)

Collect the fixer/developer solution in a container provided by the disposal company

Label the container "Hazardous Waste &endash; Used fixer/developer Solution." Use a certified waste carrier for recycling or disposal

Many cleaners for x-ray developer systems contain chromium, a toxic substance. Ask your supplier for a cleaner that doesn't use chromium.

Ask your supplier about returning any date-expired unused developer. Recovered silver from these devices can be sold to precious metal recyclers or returned for credit to x-ray film suppliers.

Don'ts

Do not pour fixer down the drain

Do not place silver recovery unit cartridge in the garbage

Don't discharge chromium- containing cleaners into a sewer or septic system.

SILVER CONTAINING WASTES

B. UNDEVELOPED FILM

Waste Management Options

Undeveloped film contains a high level of silver and must be treated as a hazardous waste. Silver can contaminate the soil and groundwater if it is sent to a landfill. Unused film should be recycled rather than being placed into the waste.

Best Management Practice (BMP)

Collect any unused film that you will be disposing and place it in a container recommended by the disposal company (Plastic alginate container sufficient)

Contact your supplier about a take back program

Once the container is full, contact a certified waste carrier for recycling or disposal

Use a digital x-ray unit to minimize purchase of new x-ray film

Developed film has little residual silver and can be placed in the regular solid waste stream.

Don'ts

Do not throw undeveloped film into the regular garbage

LEAD CONTAINING WASTES

A. LEAD FOIL PACKETS

Waste Management Options

The lead foil inside each xray packet is a leachable toxin and can contaminate the soil and groundwater in landfill sites. Lead foil packets should never be thrown in the regular garbage. This material must be either recycled or treated as a hazardous waste.

Best Management Practice (BMP)

Ask your film manufacturer about a lead recycling program

- Kodak Lead Recycle Program (800) 465-6325

Good Management Practice (GMP)

Collect lead foil packets in a marked container

Once container is full, contact a certified waste carrier for recycling or disposal - ([see appendix #1](#))

Don'ts

Do not throw lead foil packets into the regular garbage

LEAD APRONS

Lead aprons should not be thrown into the regular garbage since the lead can contaminate soil and groundwater via the landfills

Best Management Practice (BMP)

Contact a certified waste carrier to recycle or dispose of unwanted lead aprons ([see appendix #1](#))

BIOMEDICAL WASTES

A. Non-Anatomical Wastes (blood soaked materials)

All biomedical wastes must be colour coded and marked with the WHMIS biohazard symbol. Biomedical wastes can only be transported by a company with proper certification. (See appendix #1) Biomedical wastes are also occupational health and safety concerns for those who come in contact with them. Non-dripping gauze and extracted teeth are not considered biomedical waste and can be put directly into the garbage. When gauze is blood soaked and dripping blood, it does become a biomedical hazardous waste.

Waste Management Options

Best Management Practice (BMP)

Use a yellow biomedical waste bag to collect the non-anatomical wastes

Double bag the waste

Label the bag with a biohazard symbol

Keep refrigerated if onsite for more than 4 days

Once accumulated, contact a certified biomedical waste carrier for disposal

These bags are available from your biomedical waste carrier and your dental equipment supplier ([see appendix #1](#))

Don'ts

Do not throw blood soaked materials into the regular garbage (blood soaked = dripping blood)

Do not throw blood soaked materials into the compost waste

Do not place blood soaked materials in the sharps container

Non-Anatomical Wastes

(Sharps & needles, scalpels, glass carpules, burs, acid etch tips, files, blades, ortho wire and Other sharp objects)

All sharps must be disposed using the appropriate guidelines. Proper disposal will minimize possible puncture wounds on other workers handling these wastes such as cleaners and waste carriers.

Waste Management Options

Best Management Practice (BMP)

Collect sharps in a red or yellow puncture resistant container with a lid that cannot be removed

The sharps container should be properly labeled with biohazard symbol

Once container is full, contact a certified biomedical waste carrier for disposal ([see appendix #1](#))

Don'ts

Do not throw sharps in a regular garbage bag

Do not place other biomedical wastes materials in this container

Do not fill over -full to prevent injury

CHEMICALS, DISINFECTANTS, AND STERILIZING AGENTS

The dental office utilizes many chemicals, disinfectants, and sterilizing agents that may be hazardous to the environment if they are not properly disposed.

Waste Management Options

Best Management Practice (BMP)

Read the Material Safety Data Sheets (MSDS) for all chemicals, disinfectants and sterilizing agents

Ensure staff handling these materials are trained in Workplace Hazardous Materials Information System (WHMIS) - ([see appendix #1](#))

Avoid the use of chemical sterilants whenever possible

Use steam or dry heat to sterilize your dental instruments

If using disposable plastic components, use non-chlorinated plastic (i.e. not PVC) to minimize environmental impacts

Follow manufacturer recommendations on treatment and disposal of waste sterilant solutions. If in doubt, contact the Department of Environment and Labour for advice on proper disposal

Sterilant absorbed on cloths or paper products is acceptable as regular solid waste

Rinse empty sterilant containers with water and place the empty containers in your solid waste stream. Remove or deface the labels (i.e. cross out) to indicate that the container no longer contains the sterilant

Avoid halogenated products (i.e. those with chlorine or iodine) since these can have detrimental effects on the environment

Good Management Practice (GMP)

Minimize the use of disinfectants whenever possible by disinfecting only when and where required. Refer to the NSDA Infection Control Manual for guidance on usage.

Don'ts

Do not pour ignitable substances (straight alcohols, ether, acetone, xylol, chloroform) or other solvents down the drain

Do not pour x-ray cleaning solutions containing chromium down the drain

Do not pour any used or unused chemicals down the drain that contain high concentrations of formaldehyde without contacting your municipality first

Do not pour sterilant solutions into a septic system. This may significantly disrupt the functioning of the system by killing the bacteria, which normally breakdown wastes

Do not pour concentrated or date expired sterilant solutions into municipal sewer systems. Ask your distributor about product take-back programs or methods of safely neutralizing sterilants prior to disposal

Do not put cloths or paper products containing sterilants in your compostable organic solid waste. This may significantly disrupt the functioning of the composting system by killing the microorganisms, which normally breakdown wastes

Don't pour concentrated alcohols, ethers or peroxides down the drain. These materials are flammable and could start a fire or explode

SOLID WASTES

A. NONHAZARDOUS WASTES

Paper, Cardboard, Aluminum, Plastics, etc

Waste Management Options

Best Management Practice (BMP)

Paper, cardboard, aluminum and plastic packaging should be minimized by using responsible suppliers

Office paper should have a high-recycled content

Minimize plastic waste by using refillable bottles for disinfecting or cleaning products and reusable devices for dental procedures where feasible

Avoid containers or packaging made of PVC plastic where feasible. This material is difficult to recycle and can produce acid gases if incinerated as part of your municipal waste treatment

Batteries, fuel oil, solvents, pharmaceuticals, aerosols, corrosive cleaners, paint, pesticides, gasoline can be disposed of via the household hazardous waste system (HHW depot Metro 490-6600)

Shred confidential documents before they leave the office

Good Management Practice (GMP)

Paper waste, cardboard and plastic containers (clean or rinsed) should be recycled where this service exists

Appendix #1

Hazardous Waste Carriers for Nova Scotia Dental Offices

... Please call Dept of the Environment and Labour (NSDEL) for list updates: The list will be continually updated as new licenses are issued.

... Contact: Duncan MacKay 424-2559

<http://www.gov.ns.ca/enla/>

The following companies are registered for Hazardous Materials Management

Inland Technologies Inc. (Industrial Environmental Services Inc)

Debert Industrial Park 1 -800-565 -4383

Dartmouth 468-2771

Fixer and Developer, chemical, amalgam, mercury, lead,

Philip Services Corp

45 Wright Ave., Dartmouth 469-3331

Fixer and Developer, chemical, metals

Matrix Environmental Inc

10 Isley Ave. Brunside Industrial Park 468-2771

Fixer and Developer, chemical, amalgam, mercury, lead, medical, lab, recycling

Safety-Kleen (Atlantic) Ltd.

Debert 662-3336, 1-800-565-7474

Dartmouth 468-4840

Fixer and Developer, chemical, amalgam, mercury, lead, chemical, lab, recycling, solvents

Medic Delivery

47 Moser Dr. Burnside 423-2848

Sharps, Biomedical

WHMIS & endash; Workplace Hazardous Materials Information System

WHMIS Internet Training Course for Dental Offices - <http://www.dentalwhmis.com>

Contact Steve Jennex for more info 420-0088

Or contact Dept of Environment and Labour for list of onsite WHMIS trainers. 424-2559

Web info

Dept of Environment and Labour Website

www.gov.ns.ca/enla

Household Hazardous Waste Info

www.region.halifax.ns.ca/wrms/wr00/red.html

Canada Wide Standards on Dental Mercury www.ccme.ca

Nova Scotia Dentists are Environmental Leaders

Nova Scotia Dentists are seen as North American leaders in the signing of a Memorandum of Understanding (MOU) to develop a pollution prevention plan. On Sept 13th 1999 the Canadian Council for the Ministers of the Environment (CCME) met to establish the Mercury Canada Wide Standards to reduce the discharge of mercury waste into the environment. (www.ccme.ca) In response, the Nova Scotia Department of the Environment and Labour (NSDEL) and the Nova Scotia Dental Association (NSDA) signed a MOU to implement the principles of pollution prevention into Nova Scotia dental offices. This MOU, which was developed by the NSDEL has been adopted as a model elsewhere in Canada and the USA.

The NSDEL has stated: "When developing proposals for legislation, regulations, policies and procedures, NSDEL will duly consider and integrate where practicable the environmental, social, economic, and technical considerations presented in the recommendations and outcomes associated with this agreement."

OBJECTIVES of the Memorandum of Understanding

- To reduce or eliminate emissions of potentially polluting substances into the environment through voluntary actions.
- To encourage and support new and innovative practices, materials and equipment to address environmental concerns.
- To identify environmental concerns, prioritize and resolve them through specific Pollution Prevention Plans to achieve verifiable reductions in the production of waste.
- To reduce the use of renewable and non-renewable resources through onsite conservation and efficiency.
- To publish, disseminate and educate measures for pollution prevention associated with dental issues.
- To introduce changes in a fashion that integrates environmental and economic responsibility.

Canada Wide Standards

"The new Canada-Wide Standards for Mercury in Dental Amalgams have a target of a 95% reduction in dental amalgam releases to the environment by 2005 from a base year of 2000." Amalgam wastes sent to regular municipal waste landfills are considered to be hazardous to the environment because of the bioaccumulation of this substance. This reduction target will be reached by using best management practices. It should be noted that "dental amalgam remains a well suited material for the restoration of dental health in Canada"

Canadian Council of the Ministers of the Environment &endash; Sept 13th, 2001

Government and industry partners have worked on national and international programs to coordinate the reduction of mercury use and improve the collection and recycling of mercury-containing wastes. In Canada, all provincial, territorial and federal environmental departments are cooperating on the establishment of Canada-Wide Standards for mercury to establish methods and targets for mercury controls. This will address both combustion sources and industrial and consumer products.

- NS Dept of the Environment and Labour 2001

Background

There is evidence to suggest that some forms of mercury are getting past the dental unit suction traps during placement and removal of amalgams. The amount that gets past the traps remains unclear, however; Environment Canada estimates more than two tons of mercury enters the environment from dental amalgam.

Mercury & the Environment

Elemental mercury does occur naturally in the environment; however, there are also other forms of mercury that are a concern to the environment. The type and location of the mercury can make a difference in the potential toxicity of the deposits. The four forms of mercury are as follows:

1. Elemental Mercury &endash; (Liquid / Gas) Hg₀ absorbed if touched or inhaled.
2. Amalgam (Silver/Mercury/others) &endash; compounded mercury &endash; very stable but it can corrode with time. Incineration is a risk since it becomes a gas.
3. Inorganic Mercury &endash; (Hg⁺²) or (Hg⁺¹). Between 5 to 15% of this mercury will be absorbed if ingested.
4. Organic Mercury &endash; linked to the carbon molecule &endash; very toxic & endash; if it is ingested, then up to 100% will be absorbed.

Empty amalgam capsules are considered non-hazardous and can be thrown directly into the garbage

Amalgam Separators

Background Info

- Use of amalgam separators in the dental office can reduce the amount of hazardous waste material leaving through your suction lines by 95%.
- The traps that most offices are using today do not adequately remove the sludge that is entering the sewer system. amalgam separators work in conjunction with the amalgam traps to reduce the amount of mercury leaving your office.

ISO STANDARDS

Currently there is an ISO (International Standards Organization) Standard 11143 for amalgam separators. The ISO standard states that 95% of all amalgam must be captured passing through the dental unit. Most separators are attached to the dental suction line before it enters the sewer. They use a combination of filtration and sedimentation to remove the unwanted mercury from the waste material passing through the suction lines. If this mercury sludge gets past the dental suction units, then it can enter into the food chain. By using an ISO approved amalgam separator, the waste management of mercury can be dramatically improved.

What happens to the Suction Waste when not using Amalgam Separators?

When elemental mercury or amalgam particles are discharged into a sewer or septic system, bacteria can convert the mercury into methylmercury, an organic compound that is readily absorbed by most organisms and produces significant toxic effects. This material will also bioaccumulate (i.e. build up in the body) and can biomagnify (i.e. concentrations dramatically increase as we move up the food chain). Elemental (i.e. liquid) mercury can vaporize at room temperature or when incinerated with municipal waste but will recondense on dust or moisture in the atmosphere and return to earth where it can enter the food chain. Mercury contamination has led to fish consumption advisories in much of the United States and Canada, including Nova Scotia.

Toronto & Montreal Adapt New Bylaw for Amalgam Separation

Toronto Sewer Use By-law No. 457-2000 for Dentists

1. A dentist must install before January 1, 2002, an amalgam separator which complies with Section 10(10) of the By-law and enables the dentist to comply with discharge limits for mercury as set forth in Section 2(1)(d) of the By-law;
2. A dentist must submit to the City of Toronto a Pollution Prevention Plan in a pre-approved form which complies with Section 5 of the By-law;
3. A dentist must provide for a Maintenance Access Hole for sample testing in compliance with Section 10(1) or 8(3) of the By-law; and
4. A dentist must have a waste removal program to properly handle and dispose of the dental waste amalgam effluent collected by an amalgam separator.

Amalgam Pick-up

Have contact and non-contact amalgam picked up and recycled by a dental amalgam supplier or registered dangerous goods disposal company.

NS Municipal Bylaws

The Model Sewer Use Bylaw issued by the Department of Municipal affairs limits silver in wastewater to 2.0 mg/L. Limits in specific municipalities are at or below this level. Silver levels in spent x-ray fixer vary depending on the amount and type of film being developed but are typically about 4,000 mg/L.

X-ray Fixer Disposal

X-ray fixer is typically a weak acid solution that becomes contaminated with silver from the x-ray film. Silver can harm or kill microorganisms and fish so its disposal in water is restricted

X-ray Developer Disposal

X-ray developer is typically an aqueous solution with a slightly basic pH due to the presence of potassium hydroxide. Environmental risks from this material are minimal unless exposure is to the concentrated solution.

Digital X-rays

Dentists may consider changing their oral imaging process to digital radiography. These devices use enhanced computer technology to provide real-time images with crisper detail than conventional x-ray film. This increased sensitivity leads to a reduction of up to 90% of radiation exposure, no chemical or film usage and records that can be stored or transmitted by computer, reducing bulky paper records. The main downfall with digital xrays is the cost. This cost should decrease as units become more common.

Silver and the Environment

Silver, in the form of silverthiosulfate, is found in high concentrations in fixer solutions and rinses from x-ray film. Light-sensitive silver-halide crystals present on the x-ray film are released as silverthiosulfate during the fixing process. Used x-ray fixer is regulated as a hazardous waste because of the high silver content. In the environment, free-ionic silver acts as an enzyme inhibitor by interfering with the metabolic processes of organisms.

"Waste not, want not in Nova Scotia"

Special CNN Report

"Nova Scotia is now a world leader in recycling and waste reduction, attracting attention from Hong Kong, Iceland, Taiwan, Russia, and other parts of the world. The eastern Canadian province recently became the first territory in the country to reduce the garbage it generates by 50 percent."

CNN.com - December 4, 2000 <http://www.cnn.com/2000/NATURE/12/04/waste.not.enr/>

Background

Lead is used in x-ray film packs and patient radiation protection aprons. The customary use of lead in a dental office is safe; however, if this lead is improperly handled or disposed of, it can cause significant harm to human health and the environment. Lead is a heavy metal that can potentially leach from landfills into the environment. Lead affects the blood, most organs and the central nervous system and can produce developmental problems in children.

Background

Biomedical wastes are those materials which are or could reasonably be expected to be contaminated with infectious substances. Sharps, blood soaked materials and human tissue are all biomedical wastes. These infectious substances, listed in Schedule VII of the Federal Transportation of Dangerous Goods (TDG) Regulations, range from exotics organisms such as anthrax bacteria to such common threats as hepatitis, influenza and salmonella. If improperly handled or disposed of, these pathogens can spread to humans or animals.

To reduce the risk of spreading disease, specific regulations, guidelines and systems have been established to manage these materials. Dentists are encouraged to follow the NSDA's Infection Control Manual for specific details on handling these materials. All biomedical wastes currently collected in Nova Scotia are sent to the Cape Breton Regional Incinerator for destruction.

Non-infectious waste may be stored and disposed of as normal household garbage. Local recycling guidelines should be followed where possible.

Regulations Defining Biomedical Wastes:

Biomedical waste regulations deal only with items that are saturated with, or dripping blood. Therefore, contaminated rubber dam, gloves, tray covers, towels, cotton rolls, gauze, surgical drapes, dressings, dental impressions, and models are normally classified as general wastes. If any of the materials listed above are dripping blood, or saturated with it, they may be reduced to general waste by simply squeezing them and rinsing them with copious amounts of water. Alternatively, saturated items may be autoclaved then treated as general waste.

Anatomical waste: With the exception of teeth, hair, nails and small pieces of gingival tissue, human anatomical waste must be segregated for disposal by internment at a cemetery, cremation at a crematorium or incineration by a licensed biomedical waste disposal facility. Significant amounts of anatomical waste are very unlikely to be encountered in a dental office.

For more info see: The NSDA Infection Control Manual

If the blood or body fluids are known or reasonably suspected to be infected with specific rare organisms (i.e. Ebola virus) , then the waste should be treated as Biomedical Waste. (for a complete listing of these organisms refer page 3 of the NSDA's Infectious Control Manual).

Background

Chemical sterilant solutions may be used to destroy all microbial life on instruments and materials that may come into intimate contact with patients (i.e. intra-oral instruments). Examples of chemical substances used include ethylene oxide, glutar-aldehyde, formaldehyde, hydrogen peroxide, peracetic acid and combinations of these materials. Since these materials are intended to be lethal to most microorganisms, it is not surprising that if they are improperly handled or disposed of they can have serious effects on human health or the environment

Hazardous Wastes can be defined as discarded chemicals or items that pose a risk to humans and other living things in the environment because these materials are either toxic, flammable, corrosive, or reactive to air, water, or other substances.

Infectious Wastes are discarded substances containing viable micro-organisms, including bacteria, viruses, parasites, and fungi, that are known or believed to cause disease in humans or animals.

WHMIS Regulations

By law, every person in Nova Scotia handling hazardous products such as gypsum, photocopy ink and sealants (to name a few) must take a Workplace Hazardous Materials Information System course (WHMIS). Review the latest copy of the NSDA's "Interpretation of the Occupational Health and Safety Act" for more information on WHMIS.

Background

The solid wastes from a dental practice are mostly paper, aluminum cans and plastics. These products must be disposed of according to your local municipal programs.

Need Further Assistance?

If your particular practice or circumstances result in unique wastes or conditions that are not covered in this guide: Please contact your local office of the Department of Environment and Labour for information on these issues.

Appendix 2

Amalgam Separator Info

ISO 11143 Certified

Updated Nov, 2001

Equipment* Prices are fluctuating & Check with suppliers - All units can be run in parallel for large clinics

Manufacturers Distributors	# Operatories per unit	Cost* (CDN\$) as of Nov 5/01 All manufacturers called
<p>METASYS, (ECO II): Biodent1 www.biodent.com Supplier: Biodent 218 Audet Street St. Basile-le-Grand, QC G3N 1G7 Tel: 1-800-211-1200 Fax: (450) 441-0535 1 800 211 1200 info@biodent.com</p>	<p>1 - 6 per unit</p>	<p>Unit is leased; Metasys provides transport & disposal Installation: \$750 Average All inclusive \$60 /month (install, transport, pickup) Technical manager needed for more then 6 ops No local contact at present (Nov 2001) Prices are fluxuating with the market</p>
<p>MAXIMUM (Model 2000): 100-1779 Sean Heights Saanichton, BC M8M 1X6 Tel: 1-800-799-7147 Fax: (250) 652-9599 Tel: (250)-652-5279 Suppliers: Ash Temple, Patterson, and Shine and others www.amalgamseparators.com</p>	<p>1 - 16 per unit 80 L per day</p>	<p>Manufacturer suggested retail Model 1000 & \$2595.00 up to 6 ops Model 2000 & \$2995.00 up to 16 ops Installation costs & by supplier (approx \$265.00) Questionnaire must be filled out for design purposes Replacement tank cost: \$487.50 includes removal Disposal - Safety Kleen Corp (902) 835-8078 \$240 removal of tank only Estimate: 1 tank per dentist per year. engineering@amalgamseparators.com</p>
<p>REBEC (Rebec LLC) 3511 132nd Street SW, Ste 1 Lynnwood, WA, USA 98037 Tel: (800) 569-1088 Fax: (800) 964-1414 Ash Temple, Shine, Patterson www.rebecsolutions.com</p>	<p>Catch 400 (to 4) Catch 1000 (to 10)</p>	<p>Manufacturer suggested retail \$1460.00 catch 400, \$2460 catch 1000 Canister replacement yearly \$548.00 Disposal – Philip Services, Delta BC Estimate: 1 canister per system per year.</p>
<p>DRNA: BullfroHg and MRU Mmsussman@drna.com www.drna.com New Jersey - (800) 360-1001 Suppliers All suppliers</p>	<p>1-6 per unit 1-16 BullfroHg 100</p>	<p>Lease 100\$US/month for everything no liability to dentist Install & whatever tech time at dental supply costs City of Toronto - awarded contact for health clinic and children's hospital Also company will remove lead foils and amalgam waste</p>
<p>Rasch 890: AB Dental Trends</p>	<p>1-12 per</p>	<p>Manufacturer suggested retail</p>

211 Grover Street
Lynden, WA, USA 98264
Tel: (360) 354-4722
Fax: (360) 354-7460

www.amalgamseparation.com
roger@amalgamseparation.com

Suppliers: all suppliers

unit
In Parallel
as many as
needed

Model 890-1000 Wet pump \$1380.00
Model 890-6000 Dry Pump \$753.00
Average time before replacing tank: 18 month.
Tank replacement based on 5 amalgam removal for
5 days a week.
Replacement \$720.00 includes shipping and
disposal