Guide for
Best Practice Management of Dental Office Waste
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Introduction

Dental offices generate waste products that must be properly managed. The Alberta Dental Association and College has produced this document as a member service to assist Alberta dentists with management of dental wastes. Protection of human health and the environment is the goal of Best Waste Management Practices and it is the responsibility of each dentist to minimize the release of substances that could be harmful to the environment and human health.

As a waste generator it is the responsibility of each dentist to ensure that the wastes generated, whether hazardous or not, are managed in a proper and approved manner, from cradle-to-grave.

This document provides guidance for dentists in the proper, approved and environmentally responsible management of hazardous or dangerous wastes that are commonly generated by a dental office. Best Management Practices’ information is provided for each waste type listed below. The information provided is a combination of federal/provincial/municipal legislative requirements, standards or guidelines endorsed by the Alberta Dental Association and College and helpful recommendations.

<table>
<thead>
<tr>
<th>Mercury wastes</th>
<th>Silver wastes</th>
<th>Lead wastes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scrap amalgam</td>
<td>X-ray Fixer</td>
<td>Lead foil packets</td>
</tr>
<tr>
<td>Elemental mercury</td>
<td>Wash solution (for</td>
<td>Lead aprons</td>
</tr>
<tr>
<td>Empty amalgam</td>
<td>Unused Film</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Biomedical waste (infectious)</th>
<th>Other wastes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human Tissue</td>
<td>Developer</td>
</tr>
<tr>
<td>Blood/saliva soaked materials</td>
<td>Chemicals, disinfectants, and sterilizing agent</td>
</tr>
<tr>
<td>Sharps</td>
<td>Expired Medications</td>
</tr>
</tbody>
</table>

In the context of this document, “must” refers to a legislative requirement, and “should” indicates an important requirement (e.g., guideline) that is fully supported by Alberta Dental Association and College. Other recommendations are provided to assist in the best management of wastes, for example, to promote waste reduction. Fundamental to any waste management program is the maintenance of records; shipping documents, waste manifests, certificates of destruction/recycling should and in some cases must,
be retained to support waste disposal/recycling activities. Such documentation is critical in the event of inspections or spot checks conducted by Alberta Environment, the regulatory agency responsible for waste management, and Alberta Transportation, the agency responsible for the transport of dangerous goods. These agencies regularly conduct inspection programs and numerous random spot checks of industry to confirm that Alberta’s environmental requirements are being met.

All members of the dental team should familiarize themselves with the content of this document and make these procedures a part of the every-day routine for the protection of human health and the environment.
Waste Management Initiatives

While options for waste reduction specific to a waste stream are included, there are some general practices that can reduce the volume of waste generated:

1. When planning to purchase new products or to change operation procedures, the waste management needs should be considered, e.g., quantity and type of waste produced and the potential disposal methods and costs;

2. Where patient and/or dental healthcare worker safety is not a concern, reusable products should be considered as replacements. With respect to infection prevention and control considerations regarding patient safety, single use disposal items are recommended;

3. Reduced product packaging and packaging that contains recycled or recyclable material should be investigated;

4. Carefully measure and control inventory of products with limited shelf life;

5. Whenever possible, purchase products in refillable bulk containers; and

6. Collect waste paper, plastic and other recyclables for your office building’s recycling program. Assist in the development of a recycling program if one does not exist.

Alberta Environment’s information sheet titled Waste Minimization: Dentists, Dental Specialists and Denturists provides many more specific waste minimization opportunities; a copy is provided in Appendix A.
Regulatory Review

Alberta’s regulatory approach to the management of wastes is based on four objectives:

1. ensuring the conservation of resources through emphasis on recycling;
2. encouraging minimization of hazardous waste generation;
3. cradle-to-grave management of hazardous waste ensuring the appropriate handling of hazardous waste from their generation to ultimate safe treatment and disposal; and
4. cradle-to-grave management of recyclable material ensuring the appropriate handling of recyclable material through to their ultimate safe recycling.

The principal legislation to achieve these objectives is Alberta’s Environmental Protection and Enhancement Act and associated regulations and guidelines.

All waste must be handled appropriately and as per the regulatory requirements, management of hazardous waste and hazardous recyclables is justifiably more intense. Criteria to classify hazardous waste and hazardous recyclables are provided in the legislation; these are differentiated by end use only, disposal versus further use. Depending on the type and volume of hazardous waste/recyclable generated in the dental office may be required to,

1. have a Personal Identification Number or PIN which is issued by Alberta Environment. Refer to Appendix B for Alberta Environment’s Hazardous Waste Consignor Registration form;
2. meet on-site storage requirements include labeling, and secondary containment for liquid hazardous waste/recyclables;
3. use a specific shipping document, a waste manifest or recycle docket when shipping the hazardous waste/recyclable to a third party. Refer to Appendix C for examples of shipping documents;
4. ensure the carrier and receiver of hazardous waste has a PIN number; and
5. ensure the receiver of the hazardous waste/recyclable is authorized, approved or registered under the Environmental Protection and Enhancement Act to handle (e.g., store, treat, recycle, or dispose of) that waste or recyclable.

Many of the principals and legal requirements outlined in the Environmental Protection and Enhancement Act apply to the transporter or receiver of the hazardous waste or recyclables. However, as a waste generator, the dental office must ensure that the wastes generated are managed appropriately from cradle-to-grave, as per the requirements of the Environmental Protection and Enhancement Act and associated legislation.
Environmental Protection and Enhancement Act legislation and guidelines also address municipal wastewater systems. Municipal wastewater systems cannot be used for disposal of hazardous waste or any substance that may impair the integrity, operation or performance of that system. Individual municipalities can define substance but usually only the larger municipalities have sewer bylaws that identify specific parameters and allowable release levels (e.g., City of Calgary Sewer Bylaw: silver – no more than 0.5 mg/L, mercury – no more than 0.01 mg/L, pH – no less than pH 5.5 or greater than pH 10.0). Smaller municipalities usually defer to bylaws in adjacent jurisdictions.

Federal guidelines/standards of importance to the dental community include the Transportation of Dangerous Goods Act and Regulations, Canadian Environmental Protection Act, and the following three documents released by the Canadian Council of Ministers of the Environment and Environment Canada:

1. Guidelines for the Management of Biomedical Waste in Canada
2. Canada-Wide Standard on Mercury for Dental Amalgam Waste

The Transportation of Dangerous Goods Act and Regulations is federal legislation that is administered by Alberta Transportation; it outlines the classification, packaging and transportation requirements that apply to the transport of dangerous goods on public roads. As a shipper of dangerous goods, the dentist must know the classification, labeling, and documentation requirements for the wastes it generates and consigns for transport. Employees responsible for consigning dangerous goods for transport must be trained and certified in the Transportation of Dangerous Goods Act and Regulations. It is the employer’s responsibility to make sure that employees are trained in their responsibilities, and to issue a Certificate of Training.

The interprovincial movement and export of hazardous waste/recyclable is under the jurisdiction of the Canadian Environmental Protection Act. Under the Canadian Environmental Protection Act a waste manifest must be used in these circumstances. The shipper (i.e., the dental office), transporter and receiver must have personal identification numbers (i.e., PIN) issued to them by their provincial authority.

The purpose behind the Canadian Council of Ministers of the Environment document, Guidelines for the Management of Biomedical Waste in Canada, is to reduce the risk of exposure to infectious disease organisms, and of physical injury caused by sharps.
Recommendations are provided for waste segregation, packaging type and colour coding, storage, in-house movement and disposal options. Off-site receivers (e.g., incinerator facility) of biomedical waste within the province of Alberta remain under the Environmental Protection and Enhancement Act jurisdiction.

The Environment Canada Notice requiring the preparation and implementation of pollution prevention plans in respect of mercury releases from dental amalgam waste mandates the implementation of the Canada-Wide Standard on Mercury for Dental Amalgam Waste. The intent is to substantially reduce the release of mercury waste to the environment from dental practices. The identified best management practice is the installation, use and maintenance of International Organization for Standardization (ISO) certified amalgam separators. Included in the Canada-Wide Standard is the proper management, recovery and disposal-recycling of amalgam wastes. The Canada Wide Standard on Mercury for Dental Amalgam Waste and the requirement for the preparation and implementation of pollution prevention plans in respect of mercury releases from dental amalgam waste are fully supported by the Canadian Dental Association and the Alberta Dental Association and College.
List of Relevant Legislation, Standards and Guidelines

Alberta Environment (www.environment.alberta.ca/)

- Environmental Protection and Enhancement Act, Revised Statutes of Alberta 2000
  i. Activities Designation Regulation (AR 276/2003);
  ii. Waste Control Regulation (AR 192/96);
  iii. Wastewater and Storm Drainage Regulation and Wastewater and Storm Drainage (Ministerial) Regulation. (AR 120/93 and amendments up to 278/2003);
  iv. The Alberta User Guide for Waste Managers, August 1996 (modified 2008); and
  v. Waste Management Information for Businesses That Manage Hazardous Waste and Hazardous Recyclables, October 2006

Transport Canada (www.tc.gc.ca/TDG/)

- Transportation of Dangerous Goods Act, 1992
  - Consolidated Transportation of Dangerous Goods Regulations including Amendment SOR/2012-245.

Environment Canada (www.ec.gc.ca/)

- Canadian Environmental Protection Act, 1999
  i. Interprovincial Movement of Hazardous Waste Regulations, August 2002; and
  ii. Canada Gazette Part 1 May 8, 2010 Notice Requiring The Preparation And Implementation Of Pollution Prevention Plans In Respect Of Mercury Releases From Dental Amalgam Waste

Canadian Council of Ministers of the Environment (www.ccme.ca)

i. Canada-Wide Standard on Mercury for Dental Amalgam Waste, September 200; and

Municipal Sewer Bylaws

- Municipalities can have sewer bylaws that identify specific parameters, such as, pH limits and allowable release levels of contaminants such as silver or mercury. It is necessary to check with the local jurisdiction that the dental office is connected to determine if a waste generated is acceptable for release to the sewer system.
Dental Waste Streams

A. Amalgam/Mercury

1. Scrap Amalgam;
2. Elemental Mercury; and
3. Empty Amalgam Capsules.

1. Scrap Amalgam

a) Description

This waste includes scrap amalgam retrieved from traps, gauze, and excess amalgam not used during a restoration.

1. Waste amalgam in the wastewater stream, which is not caught by traps or filters, is a prime concern as well.
2. Data from a 1991 Seattle-based waste characterization study indicates that the concentration of mercury in the dental operatory waste stream ranged from 12 mg/L to 480 mg/L (Metro Seattle, 1991).
3. Amalgam is composed of metallic mercury (approximately 45-50%) and a metal alloy containing silver, tin, copper and/or zinc.

b) Regulatory Considerations

1. Waste amalgam is classified as hazardous under the Environmental Protection and Enhancement Act due to the presence of mercury and is regulated by the Transportation of Dangerous Goods Act and Regulations. Waste amalgam is a hazardous waste and cannot be disposed of with regular garbage;
2. Do not include waste amalgam with biomedical waste (infectious). Biomedical waste (infectious) is typically disposed of via incineration in Alberta. Mercury will volatilize during the incineration process and becomes an airborne contaminant.
3. Contact and non-contact amalgam must be stored in separate containers.
4. Generally speaking, even if the mercury concentration in the dental waste stream was a 10th of the concentration noted in the 1991 Seattle-based study, the mercury concentration would still exceed most sewer bylaws (e.g., mercury release limits for Calgary and Edmonton are 0.01 mg/L to 0.10 mg/L respectively); and
5. As required by Environment Canada implementing the mercury pollution prevention plan and installation of an amalgam separator, that meets the International Organization for Standardization 11143 standard, will reduce the amount of mercury released to the environment to very low levels.

c) Storage and Handling

1. The waste container must be air tight, and be clearly labeled: Waste Amalgam – HAZARDOUS;

2. Containers are available which contain a treated sponge/lining that is intended to reduce the mercury vapour concentration. Consult with the container supplier regarding the lifespan of the vapour control medium (e.g., for some containers, once the sponge lining has dried out, the vapour control chemical is no longer active);

3. Consult the Environment Canada Mercury Releases From Dental Amalgam Waste publication and/or with the waste receiver to determine how scrap amalgam is to be segregated, e.g., dry versus wet amalgam from separators, traps or filters or contact versus non-contact amalgam or extracted teeth with amalgam; and

4. Gauze contaminated with amalgam may also require storage separate from other forms of amalgam waste – consult with the waste receiver. Gauze that would be considered Biomedical Waste (infectious), i.e., blood soaked gauze, would have to be separated from the amalgam waste and handled as per the Biomedical Waste (Infectious);

d) Options for Reducing Waste Volumes

1. Stock a variety of amalgam capsule sizes, so that the appropriate size can be chosen for any one restoration; and

2. As required by Environment Canada implementing the mercury pollution prevention plan and installation of an amalgam separator, that meets the International Organization for Standardization 11143 standard, will reduce the amount of mercury released to the environment to very low levels.

e) Transportation and Documentation

1. The Transportation of Dangerous Goods Act and Regulations applies to the transport of this waste in volumes over 5 kg.

   i. Shipping Name: WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID/LIQUID, N.O.S.

   ii. Class: 9

   iii. Product Identification Number: UN3077 (solid)/UN3082 (liquid)
2. The Transportation of Dangerous Goods Act and Regulations applies to the transport of this waste, however if less than 5 kg of this waste is being transported, the Limited Quantities exemption applies. Consult with the waste carrier/receiver to ensure that the entire waste shipment complies with the Transportation of Dangerous Goods Act and Regulations requirements.

3. Documentation requirements when transporting scrap amalgam are as follows:

<table>
<thead>
<tr>
<th>Shipment where</th>
<th>Purpose</th>
<th>Volume</th>
<th>Document Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>within Alberta</td>
<td>recycling</td>
<td>&lt; 5kg</td>
<td>see Note* below</td>
</tr>
<tr>
<td>within Alberta</td>
<td>recycling</td>
<td>&gt; 5kg to &lt; 205 kg</td>
<td>any shipping document</td>
</tr>
<tr>
<td>within Alberta</td>
<td>recycling</td>
<td>&gt; 205 kg</td>
<td>recycle docket</td>
</tr>
<tr>
<td>within Alberta</td>
<td>disposal</td>
<td>any volume</td>
<td>waste manifest</td>
</tr>
<tr>
<td>outside Alberta</td>
<td>disposal/recycling</td>
<td>&lt; 5 kg</td>
<td>see Note below</td>
</tr>
<tr>
<td>outside Alberta</td>
<td>disposal/recycling</td>
<td>&gt; 5 kg</td>
<td>waste manifest</td>
</tr>
</tbody>
</table>

* Note: There is no specific documentation requirement in these circumstances, however the transport document that is used (e.g., bill of lading) should be retained on file to support waste disposal activities undertaken.

4. When a waste manifest is used as the shipping document, the shipper, transporter and receiver must have PIN numbers issued to them by the provincial regulating authority.

f) Final Disposal or Recycling

1. An International Organization for Standardization (ISO) 11143 certified amalgam separator identified in the Canada-Wide Standard on Mercury for Dental Amalgam Waste must be installed. This initiative is strongly supported by the Alberta Dental Association and College and the Canadian Dental Association. The separator will reduce the volume of mercury released to the environment via wastewater disposal;

2. Use disposable traps and filters in your dental units. Remove chair-side trap vacuum pump filter from the dental unit and fasten the lid securely onto the filter. Label the filter “Mercury Waste: Contact Amalgam.” Once traps and filters have accumulated, contact an appropriate carrier for recycling, or proper disposal;

3. Analysis of a representative sample of the general wastewater fluid would confirm that the mercury recovery process was adequate and that mercury concentrations were within release limits;
4. Amalgam waste is either transported to a waste transfer station for consolidation prior to sending to a recycling/disposal facility, or sent directly to the recycling/disposal facility itself;

5. If the amalgam waste is being sent for recycling in Alberta, the waste transfer station and the recycling/disposal facility must operate in accordance with the Environmental Protection and Enhancement Act, and will require an approval if processing or storing greater than 10 tonnes or 10,000 litres per month of hazardous recyclables;

6. If the amalgam waste is being sent for disposal in Alberta, the waste transfer station or disposal site must operate and be approved under the Environmental Protection and Enhancement Act to handle this waste; and

7. A mercury recycling/disposal facility located outside of Alberta must be approved and/or authorized to accept and process this waste, as required in that jurisdiction.

**FYI**

- Unused elemental mercury can be reacted with silver alloy to form amalgam and then the scrap amalgam section applies.

- As early as 1980, the World Health Organization identified elemental mercury vapour and methyl mercury as the two most hazardous types of mercury to human health.

- For storage of elemental mercury, the second containment device would contain and prevent any leakage from the primary containment device, thus preventing an impact on the environment.
2. Elemental Mercury

a) Description
1. The use of bulk elemental mercury in the preparation of amalgam is not common; and
2. Elemental mercury waste is generally a result of spills and spill clean-up.

b) Regulatory Considerations
- Mercury contaminated waste is classified as hazardous under the Environmental Protection and Enhancement Act and is regulated by the Transportation of Dangerous Goods Act and Regulations.

c) Storage and Handling
1. Wear gloves when handling this waste;
2. A mercury spill kit should be used in spill situations;
3. Mercury waste containers must be labeled: Mercury Waste; Elemental Mercury – HAZARDOUS; and
4. Secondary containment must be provided.

d) Options for Reducing Waste Volumes
1. Encouraging the use of non-amalgam based fillings will reduce a portion of this waste stream; and
2. Use equipment that does not contain mercury where possible.

e) Transportation and Documentation
1. The Transportation of Dangerous Goods Act and Regulations applies to the transport of this waste in volumes over 5 kg.
   i. Shipping Name: WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID/LIQUID, N.O.S (Mercury)
   ii. Class: 8
   iii. Product Identification Number: UN2809
   iv. Packing Group: III

2. The Transportation of Dangerous Goods Act and Regulations apply to the transport of this waste, however if less than 5 kg of this waste is being transported, the Limited Quantities exemption applies. Consult with the waste carrier/receiver to ensure that the
entire waste shipment complies with the Transportation of Dangerous Goods Act and Regulations requirements.

3. Documentation requirements when transporting mercury are as follows:

<table>
<thead>
<tr>
<th>Shipment where</th>
<th>Purpose</th>
<th>Volume</th>
<th>Document Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>within Alberta</td>
<td>recycling</td>
<td>&lt; 5kg</td>
<td>see Note* below</td>
</tr>
<tr>
<td>within Alberta</td>
<td>recycling</td>
<td>&gt; 5kg to &lt; 205 kg</td>
<td>any shipping document</td>
</tr>
<tr>
<td>within Alberta</td>
<td>recycling</td>
<td>&gt; 205 kg</td>
<td>recycle docket</td>
</tr>
<tr>
<td>within Alberta</td>
<td>disposal</td>
<td>any volume</td>
<td>waste manifest</td>
</tr>
<tr>
<td>outside Alberta</td>
<td>disposal/recycling</td>
<td>&lt; 5 kg</td>
<td>see Note* below</td>
</tr>
<tr>
<td>outside Alberta</td>
<td>disposal/recycling</td>
<td>&gt; 5 kg</td>
<td>waste manifest</td>
</tr>
</tbody>
</table>

*Note: There is no specific documentation requirement in these circumstances, however the transport document that is used (e.g., bill of lading) should be retained on file to support waste disposal activities undertaken.

4. When a waste manifest is used as the shipping document, the shipper, transporter and receiver must have PIN numbers issued to them by the provincial regulating authority.

f) Final Disposal or Recycling

1. Do not dispose of elemental mercury with biomedical waste, general refuse, or down the drain.
2. Recycling or recovery of mercury is the preferred management option; either by sending to a waste transfer station for consolidation prior to sending to a recycling facility, or directly to the recycling facility itself.
3. If located in Alberta, the waste transfer station and the recycling facility must operate in accordance with the Environmental Protection and Enhancement Act, and will require an approval if processing or storing greater than 10 tonnes or 10,000 litres per month of hazardous recyclables.
4. If the waste is being sent for disposal in Alberta, the waste transfer station and disposal site must operate and be approved under the Environmental Protection and Enhancement Act to handle this waste.
5. A mercury recycling/disposal facility located outside of Alberta must be approved/authorized to accept and process this waste, as required in that jurisdiction.
3. Empty Amalgam Capsules

a) Description

1. The presence of mercury in amalgam capsules is a concern if the capsule is not empty; and
2. The Environmental Protection and Enhancement Act definition for ‘empty’ is a container containing less than 3% of the original contents.

b) Regulatory Considerations

1. The classification of empty amalgam capsules as hazardous or non-hazardous is dependent on the volume of empty capsules; if the number of unrinsed empty capsules has an aggregate internal volume greater than 5 litres, then the capsules would be classified as hazardous;
2. The small size of amalgam capsules and the decrease in use of amalgam for restorative procedures, it is extremely unlikely that a dental office would generate this volume of empty capsules. Thus empty amalgam capsules would be classified as non-hazardous; and
3. Provincial and territorial agencies agree that empty amalgam capsules are considered non-hazardous and can be thrown into the regular garbage.

c) Storage and Handling

1. Before discarding empty capsules, re-cap to reduce mercury vapour release; and
2. Empty amalgam capsules do not require storage – refer to the Final Disposal/Recycling procedure below

d) Options for Reducing Waste Volumes

1. Encouraging the use of non-amalgam based fillings will reduce the volume of waste amalgam generated in the long term; and
2. Minimize the number of amalgam capsules required for each restoration by stocking a variety of amalgam capsule sizes, so that the appropriate size can be chosen for any one restoration.
e) **Transportation and Documentation**

- The Transportation of Dangerous Goods Act and Regulations do not apply to empty amalgam capsules.

f) **Final Disposal or Recycling**

- Empty amalgam capsules can be disposed of with the general garbage.
- Do not include empty amalgam capsules with biomedical waste or with a plastics recycling program, due to the potential presence of residual mercury in the capsules.

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**FYI**

- Provincial and territorial agencies agree that empty amalgam capsules are considered non-hazardous and can be thrown into the regular garbage.

- If the amalgam capsule is not empty, as per the definition, treat as hazardous; refer to the Scrap Amalgam waste information sheet.
A. Silver Wastes

1. X-ray Fixer;
2. Wash Solution Used to Clean Photographic Equipment; and
3. Undeveloped Film.

1. X-Ray Fixer

a) Description

1. Waste x-ray fixer is generated from the processing of dental films.
   i. The principal hazard issue with waste fixer is contamination with silver, though a low pH may also be a concern. The concentration of silver is dependent on the amount of film processed. Information from Eastman Kodak indicates that waste x-ray fixer can contain high silver concentrations; and
   ii. Data from a Seattle-based waste characterization study indicated that the concentration of silver in the dental operatory waste stream ranged from 12 mg/L to 62 mg/L (Metro Seattle, 1991). These values exceed those established by municipal sewer bylaws for the allowable silver concentration that can be released to sewer systems.

b) Regulatory Considerations

1. Given the high concentration of silver typically found in waste x-ray fixer, the Best Management Practice would be to handle the waste x-ray fixer as hazardous;
2. As a hazardous waste, waste fixer cannot be disposed of via a municipal wastewater/sewer system; and
3. The concentration of silver in waste fixer and likely the pH would exceed the limits for disposal to most municipal sewer systems. Review the sewer bylaw for your local municipality to determine silver and pH limitations, or contact the municipality directly for assistance.

c) Storage and Handling

1. Do not mix x-ray fixer and developer solutions. If this is done, then the entire waste volume must be handled as hazardous. The addition of developer or other chemicals to the waste fixer will inhibit the silver recovery process;
2. The waste container must be clearly labeled: Waste X-ray Fixer – HAZARDOUS; and
3. A liquid hazardous waste/recyclable requires leak-proof secondary containment and must be stored away from incompatible waste streams.
d) Options for Reducing Waste Volumes

- Consider using digital x-ray technology, which would eliminate this waste stream.

e) Transportation and Documentation

1. The Transportation of Dangerous Goods Act and Regulations usually does not apply to this waste. Note the following two exceptions:
   i. Fixer would be regulated under the Transportation of Dangerous Goods Act and Regulations as a corrosive dangerous good if waste fixer caused full destruction of human skin;
   ii. Another possible concern with fixer is if it contains greater than 0.01% of sodium bisulphite – refer to the product MSDS for this information.

2. Documentation requirements when transporting waste fixer are as follows:

<table>
<thead>
<tr>
<th>Shipment where</th>
<th>Purpose</th>
<th>Volume</th>
<th>Document Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>within Alberta</td>
<td>recycling</td>
<td>&lt; 205 kg or L</td>
<td>see Note* below</td>
</tr>
<tr>
<td>within Alberta</td>
<td>recycling</td>
<td>&gt; 205 kg or L</td>
<td>recycle docket</td>
</tr>
<tr>
<td>within Alberta</td>
<td>disposal</td>
<td>any volume</td>
<td>waste manifest</td>
</tr>
<tr>
<td>outside Alberta</td>
<td>disposal/recycling</td>
<td>any volume</td>
<td>see Note* below</td>
</tr>
</tbody>
</table>

*Note: There is no specific documentation requirement in these circumstances, however the transport document that is used (e.g., bill of lading) should be retained on file to support waste disposal activities undertaken.

3. When a waste manifest is used as the shipping document, the shipper, transporter and receiver must have a PIN issued to them by Alberta Environment.

f) Final Disposal or Recycling

1. Silver recovery is the preferred management option for this waste; two options are available;
   i. onsite recycling using a silver recovery unit, or
   ii. offsite recycling by sending the fixer solution to a recycling facility.

2. Onsite recycling;
   i. Electrolytic units or silver recovery cartridges are available for onsite recycling, the latter being more suitable for the small volumes of fixer used in a dental office. Fixer solution is poured through the silver recovery cartridge that contains iron, the silver settles out and iron goes into solution;
ii. The low pH of the fixer solution must also be addressed if silver recovery is being handled onsite. Testing using litmus paper can provide an indication of the pH of the fixer fluid. Neutralization of the fixer may be required prior to disposal to the sewer system; and

iii. Analysis of the treated fixer solution is required to confirm adequate recovery of silver and that the pH is within the required limits.

3. The silver recovery unit or fixer solution would either be sent to a waste transfer station for consolidation prior to sending to a recovery facility, or sent directly to the silver recovery facility;

4. The waste transfer station or recycling facility, must operate in accordance with the Environmental Protection and Enhancement Act, and will require an approval if processing or storing greater than 10 tonnes/10,000 litres per month of hazardous recyclables; and

5. A silver recovery facility located outside of Alberta must be approved/authorized to accept and process this waste, as required in that jurisdiction.

FYI

- Product suppliers may offer recycling services – the supplier must still comply with all documentation requirements and the receiving facility local environmental legislation
2. Wash Solution Used to Clean Photographic Equipment

a) Description

1. The wash water used to clean photographic equipment will be contaminated with silver, and possibly other metals such as chromium depending on the type of cleaning solution used; and
2. The concentration of silver is dependent on the volume of water used in the cleaning process. Information from Eastman Kodak indicates that wash water can contain a silver concentration in excess of allowable limits for release to local sewer systems.

b) Regulatory Considerations

1. The wash water from cleaning photographic equipment may be classified as hazardous, because of the silver and possibly the chromium concentrations;
2. Disposal via the wastewater/sewer system is also a concern because of the silver and Chromium release limits identified in many municipal sewer bylaws.
3. Analysis of a representative sample of the wash water, as discussed under Final Disposal or Recycling, is required to clarify the regulatory aspects of handling this waste.

c) Storage and Handling

- Storage of this waste fluid may be required if procedures identified under Final Disposal or Recycling indicate that disposal to the sewer system is not permitted.

d) Options for Reducing Waste Volumes

1. Digital x-ray technology is available, which would eliminate this waste stream; and
2. Use cleaning solutions that do not contain metals such as chromium.

e) Transportation and Documentation

1. Transportation of this waste to a waste disposal or recycling company is not considered a necessary procedure at this time. However if the waste must be handled offsite, transportation requirements will depend on the waste’s classification determined during the analytical procedure discussed under Final Disposal or Recycling.
f) Final Disposal or Recycling

1. A representative sample of the wash water is required to determine the classification as hazardous or non-hazardous and to determine if the silver and possibly chromium concentrations exceed limits for release to the sewer set by the local municipality; and

2. Disposal via the wastewater/sewer system is permitted provided the wastewater is classified as non-hazardous, and release limits are not exceeded for any parameter. Municipalities without specific guidelines should be consulted to confirm acceptance for disposal to the sewer system. Efforts to reduce metal concentrations to allow release to the wastewater/sewer system include:
   i. pretreatment of the wash water by passing it through an onsite silver recovery unit; and
   ii. eliminating use of cleaners that contain chromium.

Note: If these efforts are unsuccessful at treating the wash water such that sewer disposal is permitted, sending to a hazardous waste recycling or disposal facility is required. Refer to the X-Ray fixer information sheet for the Transportation of Dangerous Goods Act and Regulations and the Environmental Protection and Enhancement Act requirements.

FYI

- The local municipal wastewater agency may be able to provide assistance on handling/ treating waste fluids that exceed release limits.
3. Undeveloped Film

a) Description

1. Undeveloped film becomes a waste concern when it can no longer be used, e.g., expiry date passed; and
2. The hazard issue with undeveloped film is the presence of silver on the film and lead in the lead foil.

b) Regulatory Considerations

- Due to the presence of silver and lead, the Best Management Practice would be to handle scrap film as hazardous.

c) Storage and Handling

- The waste container must be clearly labeled: Waste Film - HAZARDOUS.

d) Options for Reducing Waste Volumes

1. Consider using digital x-ray technology, which would eliminate this waste stream.

e) Transportation and Documentation

1. The Transportation of Dangerous Goods Act and Regulations applies to the transport of this waste, however if less than 5 kg of this waste is being transported, the Limited Quantities exemption applies. Consult with the waste carrier/receiver to ensure that his entire waste shipment complies with the Transportation of Dangerous Goods Act and Regulations requirements;
2. Documentation requirements when transporting lead foil are as follows:

<table>
<thead>
<tr>
<th>Shipment where</th>
<th>Purpose</th>
<th>Volume</th>
<th>Document Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>within Alberta</td>
<td>recycling</td>
<td>&lt; 5kg</td>
<td>see Note* below</td>
</tr>
<tr>
<td>within Alberta</td>
<td>recycling</td>
<td>&gt; 5kg to &lt; 205 kg</td>
<td>any shipping document</td>
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<td>&gt; 205 kg</td>
<td>recycle docket</td>
</tr>
<tr>
<td>within Alberta</td>
<td>disposal</td>
<td>any volume</td>
<td>waste manifest</td>
</tr>
<tr>
<td>outside Alberta</td>
<td>disposal/recycling</td>
<td>&lt; 5 kg</td>
<td>see Note* below</td>
</tr>
<tr>
<td>outside Alberta</td>
<td>disposal/recycling</td>
<td>&gt; 5kg</td>
<td>waste manifest</td>
</tr>
</tbody>
</table>
*Note*: There is no specific documentation requirement in these circumstances, however the transport document that is used (e.g., bill of lading) should be retained on file to support waste disposal activities undertaken.

3. When a waste manifest is used as the shipping document, the shipper, transporter and Receiver must have PIN numbers issued to them by Alberta Environment.

f) Final Disposal or Recycling

1. Metal recovery is the preferred management option for this waste; either by sending to a waste transfer station for consolidation prior to sending to a recovery facility, or directly to the recovery facility itself.
2. The waste transfer station and the recovery facility must operate in accordance with the Environmental Protection and Enhancement Act, and will require an approval if processing or storing greater than 10 tonnes/10,000 litres per month of hazardous recyclables;
3. If the x-ray film is to be disposed of, both the waste transfer station and disposal facility must operate and have an approval under the Environmental Protection and Enhancement Act to receive this hazardous waste; and
4. A metal recovery/disposal facility located outside of Alberta must be approved/authorized to accept and process this waste, as required in that jurisdiction.

FYI

- Product suppliers may offer recycling services – the supplier must still comply with all documentation requirements and the receiving facility must comply with environmental requirements.
C. Lead Wastes
1. Lead Foil Wastes
2. Lead Aprons

1. Lead Foil Waste

a) Description
1. Lead foil is part of the intraoral dental packet; it inhibits scatter radiation; and
2. Lead foil is composed of approximately 95 to 99% lead, with the remaining small percentage composed of tin and antimony.

b) Regulatory Considerations
- Waste lead foil is classified as hazardous under the Environmental Protection and Enhancement Act and is regulated by the Transportation of Dangerous Goods Act and Regulations when being transported on public roads.

c) Storage and Handling
1. The storage container should be located in a clean dry area in the darkroom; and
2. The waste container must be clearly labeled: Waste lead foil - HAZARDOUS.

d) Options for Reducing Waste Volumes
- Consider using digital x-ray technology, which would eliminate this waste stream.

e) Transportation and Documentation
1. The Transportation of Dangerous Goods Act and Regulations applies to the transport of this waste in volumes over 5 kg.

Shipping Name: WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (LEAD)
Class: 9
Product Identification Number: UN3077
Packing Group: III
2. If shipping less than 5 kg, the Transportation of Dangerous Goods Act and Regulations Limited Quantities exemption applies. Consult with the waste carrier/receiver to ensure that his entire waste shipment complies with the Transportation of Dangerous Goods Act and Regulations requirements.

3. Documentation requirements when transporting lead foil are as follows:

<table>
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Note*: There is no specific documentation requirement in these circumstances, however the transport document that is used (e.g., bill of lading) should be retained on file to support waste disposal activities undertaken.

4. When a waste manifest is used as the shipping document, the shipper, transporter and Receiver must have PIN numbers issued to them by Alberta Environment.

f) Final Disposal or Recycling

1. Recycling is the preferred management option for lead foil;
2. A hazardous recyclable facility located in Alberta must operate in accordance with the Environmental Protection and Enhancement Act requirements, and will require an approval if processing greater than 10 tonnes per month of hazardous recyclables;
3. Local waste receivers can include scrap metal dealers;
4. Recycling facilities located outside the province of Alberta must operate in compliance with their respective regulatory requirements; and
5. Do not dispose of lead foil in the general garbage or with the biomedical waste.
2. Lead Aprons

a) Description
1. Lead aprons are used to protect patient health during x-ray procedures; and
2. A lead apron specific MSDS was not available but it is assumed that the lead content would be similar to that contained in the lead foil from a radiographic film packet (i.e, approximately 95 to 99% lead).

b) Regulatory Considerations
• A lead apron is classified as hazardous under the Environmental Protection and Enhancement Act and is regulated by Transportation of Dangerous Goods Act and Regulations when being transported on public roads.

c) Storage and Handling
1. Lead aprons should be stored either hanging so they lie flat, or folded over a round pole; both methods prevent the development of creases; and
2. The waste container must be clearly labeled: Waste lead aprons - HAZARDOUS.

d) Options for Reducing Waste Volumes
• Proper storage is critical to extending the life span and integrity of a lead apron.

e) Transportation and Documentation
1. The Transportation of Dangerous Goods Act and Regulations applies to the transport of this waste in volumes over 5 kg.
   - Shipping Name: WASTE ENVIRONMENTALLY HAZARDOUS
   - Class: 9
   - Product Identification Number: UN3077
   - Packing Group: III

2. If shipping less than 5 kg, the Transportation of Dangerous Goods Act and Regulations Limited Quantities exemption applies. Consult with the waste carrier/ receiver to ensure
that his entire waste shipment complies with the Transportation of Dangerous Goods Act and Regulations requirements.

3. Documentation requirements when transporting lead foil are as follows:

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<td>&gt; 5kg</td>
<td>waste manifest</td>
</tr>
</tbody>
</table>

*Note: There is no specific documentation requirement in these circumstances, however the transport document that is used (e.g., bill of lading) should be retained on file to support waste disposal activities undertaken.

4. When a waste manifest is used as the shipping document, the shipper, transporter and receiver must have PIN numbers issued to them by Alberta Environment.

f) Final Disposal or Recycling

1. Recycling is the preferred management option for lead aprons;
2. A hazardous recyclable facility located in Alberta must operate in accordance with the Environmental Protection and Enhancement Act requirements, and may require an approval if processing greater than 10 tonnes per month of hazardous recyclables;
3. Local waste receivers can include scrap metal dealers;
4. Recycling facilities located outside the province of Alberta must operate in compliance with their respective regulatory requirements; and
5. Do not dispose of lead aprons in the general garbage or with the biomedical waste.

**FYI**

- Some product suppliers may offer lead foil/lead apron recycling programs, documentation requirements still apply and the receiving facility must comply with environmental legislation.
D. Biomedical Waste (infectious)

1. Human Tissue Waste
2. Blood and/or Saliva Soaked Materials
3. Sharps

1. Human Tissue Waste

a) Description

1. This waste stream includes human tissue, organs, and body parts. This waste stream does not include extracted teeth. Sharp teeth or fragments could be segregated and handled as “sharps”); and
2. Biomedical wastes present a risk of exposure to infectious diseases and physical injury such as punctures and cuts caused by sharps.
   i. **Infectious biomedical waste** is capable of causing an infectious disease and includes human tissue, blood and/or saliva soaked materials and Sharps.
   ii. **Contaminated biomedical wastes** are items that have had contact with blood or saliva.

   **Note:** All infectious waste is considered contaminated waste, but not all contaminated waste is considered infectious. Extracted teeth with amalgam restoration need to dealt with as amalgam scrap.

b) Regulatory Considerations

1. Biomedical waste is classified as **non-hazardous** in Alberta, though it is still regulated as a Dangerous Good under the Transportation of Dangerous Goods Act and Regulations.
2. While there is no specific legislation in Alberta that addresses the management of biomedical waste, receivers of this waste stream must operate in accordance with the Environmental Protection and Enhancement Act.
3. The Guidelines for the Management of Biomedical Waste in Canada published by the Canadian Council of Ministers of the Environment provide the minimum national standards on the packaging, storage, and disposal of biomedical waste.

c) Storage and Handling

1. Human tissue waste must be segregated from the general waste stream and from other forms of biomedical waste (e.g., sharps);
2. The container used to store waste human tissue should:
   i. be leak resistant; if a plastic bag is used it must be sturdy enough to resist puncture;
   ii. be colour-coded red, and
   iii. visibly display the biohazard symbol.
3. Anatomical wastes should be stored at 4°C or lower.

d) Options for Reducing Waste Volumes

   • Limited possibilities as this waste usually is incinerated so using recyclable storage containers for example is of no benefit.

e) Transportation and Documentation

1. The Transportation of Dangerous Goods Act and Regulations applies to the transport of this waste.

   Shipping Name: WASTE INFECTIOUS SUBSTANCE AFFECTING HUMANS (biomedical waste)
   Class: 6.2
   Product Identification Number: UN2814
   Risk Group: (RG4) (RG3) (RG2)

2. A shipping document is required when transporting any volume of this waste to a disposal facility in Alberta;

3. When transporting this waste outside the province of Alberta for disposal, a waste manifest is required, and the shipper (i.e., the dentist), the transporter and the receiver must have a PIN issued to them by Alberta Environment;

4. Packaging of this waste for transport must comply with Section 5.16 of the Transportation of Dangerous Goods Act and Regulations; there are different requirements depending whether it is single packaging or a combination of inner and outer packaging.

f) Final Disposal or Recycling

1. Incineration is the preferred and primary disposal method used for biomedical waste in Alberta; and

2. The incinerator facility must be approved under the Environmental Protection and Enhancement Act to handle biomedical waste.
2. Blood and/or Saliva Soaked Materials

a) Description

1. This waste stream includes items saturated or dripping with blood or saliva. Examples from the dental profession include blood or saliva soaked cotton rolls, gauze, pellets, tissue coverings or packs. There are other wastes included in this class, for example blood or blood products, which are not of specific concern to the dental profession;
2. Biomedical waste, infectious, presents a risk of exposure to infectious diseases and physical Injury (such as punctures and cuts) caused by sharps;
3. For clarification and consistency, biomedical waste in this waste document uses the same categories as used in the Infection Prevention and Control document.
   i. **Infectious biomedical waste** is capable of causing an infectious disease and includes human tissue, blood and/or saliva soaked materials and Sharps.
   ii. **Contaminated biomedical wastes** are items that have had contact with blood or saliva.

b) Regulatory Considerations

1. Biomedical waste, infectious, is classified as non-hazardous in Alberta, though it is still regulated as a Dangerous Good under the Transportation of Dangerous Goods Act and Regulations;
2. Biomedical waste, contaminated, is also classified as non-hazardous in Alberta, and is not regulated as a Dangerous Good under the Transportation of Dangerous Goods Act and Regulations;
3. While there is no specific legislation in Alberta that addresses the management of biomedical waste, receivers of this waste stream must operate in accordance with the Environmental Protection and Enhancement Act; and
4. The Guidelines for the Management of Biomedical Waste in Canada published by the Canadian Council of Ministers of the Environment provide the minimum national standards on the packaging, storage, and disposal of biomedical waste.

c) Storage and Handling

1. Blood or saliva soaked waste must be segregated from the general waste stream;
2. The different types of biomedical waste (infectious) should be segregated and stored in the appropriate waste containers;
3. Do not place biomedical waste (infectious) in with general garbage – if it is mixed with general garbage the entire waste would require special treatment and handling.
4. The container used to store blood or saliva soaked waste should:
   i. be leak resistant; if a plastic bag is used it must be sturdy enough to resist puncture;
   ii. be colour-coded yellow; and
   iii. visibly display the biohazard symbol.
5. This type of biomedical waste should be refrigerated at 4°C or lower if stored for more than four days.

d) Options for Reducing Waste Volumes

- Limited possibilities as this waste usually is incinerated so using recyclable storage containers for example is of no benefit.

e) Transportation and Documentation

1. The Transportation of Dangerous Goods Act and Regulations applies to the transport of biomedical waste (infectious).

Shipping Name: WASTE INFECTIOUS SUBSTANCE AFFECTING HUMANS (biomedical waste)

Class: 6.2
Product Identification Number: UN2814
Risk Group: (RG4) (RG3) (RG2)

2. A shipping document is required when transporting any volume of this waste to a disposal facility in Alberta;

3. When transporting this waste outside the province of Alberta for disposal, a waste manifest is required, and the shipper (i.e., the dentist), the transporter and the receiver must have a PIN issued to them by Alberta Environment; and

4. Packaging of this waste for transport must comply with Section 5.16 of the Transportation of Dangerous Goods Act and Regulations; there are different requirements depending whether it is single packaging or a combination of inner and outer packaging.

f) Final Disposal or Recycling

1. Incineration is the preferred and primary disposal method used for biomedical waste, infectious, in Alberta;

2. The incinerator facility must be approved under the Environmental Protection and Enhancement Act to handle biomedical waste; and
3. Biomedical waste, contaminated, can be disposed of with the general garbage: heavy-duty garbage bags or double bagging is recommended.

FYI

- The shipper and carrier of biomedical waste must be trained and certified in the Transportation of Dangerous Goods Act and Regulations.

- Areas used for refrigerating or freezing biomedical waste should only be used for this purpose, display the biohazard symbol, and be identified as containing biomedical waste.
3. Sharps

a) Description

1. Biomedical waste (infectious) presents a risk of exposure to infectious diseases and physical injury (such as punctures and cuts) caused by sharps;
2. Waste sharps include needles, syringes, blades or laboratory glass and extracted teeth and their fragments capable of causing punctures or cuts. Extracted teeth with amalgam restoration need to treated as amalgam scrap;
3. For clarification and consistency, biomedical waste in this waste document uses the same categories as the Infection Prevention and Control document:
   i. **Infectious biomedical waste** is capable of causing an infectious disease and includes human tissue, blood and/or saliva soaked materials and Sharps; and
   ii. **Contaminated biomedical wastes** are items that have had contact with blood or saliva.

b) Regulatory Considerations

1. Biomedical waste, infectious, is classified as non-hazardous in Alberta, though it is still regulated as a Dangerous Good under the Transportation of Dangerous Goods Act and Regulations;
2. Biomedical waste, contaminated, is also classified as non-hazardous in Alberta, and is not regulated as a Dangerous Good under the Transportation of Dangerous Goods Act and Regulations;
3. While there is no specific legislation in Alberta that addresses the management of biomedical waste, receivers of this waste stream must operate in accordance with the Environmental Protection and Enhancement Act; and
4. The Guidelines for the Management of Biomedical Waste in Canada published by the Canadian Council of Ministers of the Environment provide the minimum national standards on the packaging, storage, and disposal of biomedical waste.

c) Storage and Handling

1. Waste sharps must be segregated from the general waste stream;
2. The different types of biomedical waste (infectious) should be segregated and stored in the appropriate waste containers;
3. The container used to store sharps should:
   i. be puncture and leak resistant;
ii. have a lid that can be tightly secured;
iii. be colour-coded yellow; and
iv. visibly display the biohazard symbol.

4. If stored inside a cabinet, the outer cabinet must be labeled as containing sharps, as follows: CAUTION: WASTE SHARPS.

5. Waste sharps should be stored in a cool secure location, and if available, refrigerated with other types of biomedical waste (infectious).

d) Options for Reducing Waste Volumes

- Limited recycling possibilities as this waste is usually incinerated.

e) Transportation and Documentation

1. The Transportation of Dangerous Goods Act and Regulations applies to the transport of biomedical waste (infectious);

   - Shipping Name: WASTE INFECTIOUS SUBSTANCE AFFECTING HUMANS (biomedical waste)
   - Class: 6.2
   - Product Identification Number: UN2814
   - Risk Group: (RG4) (RG3) (RG2)

2. A shipping document is required when transporting any volume of this waste to a disposal facility in Alberta;

3. When transporting this waste outside the province of Alberta for disposal, a waste manifest is required, and the shipper (i.e., the dentist), the transporter and the receiver must have a PIN issued to them by the provincial regulatory agency; and

4. Packaging of this waste for transport must comply with Section 5.16 of the Transportation of Dangerous Goods Act and Regulations. Requirements include a rigid, leakproof reusable container.

f) Final Disposal or Recycling

1. Incineration is the preferred disposal option for waste sharps;

2. While other options are available, (e.g., decontamination and landfilling) incineration is the primary disposal method used for biomedical waste, infectious, in Alberta;

3. The incinerator facility must be approved under the Environmental Protection and Enhancement Act to handle biomedical waste;
4. Do not dispose of biomedical waste (infectious) with the general garbage – if it is mixed with the general garbage the entire waste would require special treatment and handling; and

5. Biomedical waste, contaminated, can be disposed of with the general garbage; heavy-duty garbage bags or double bagging is recommended.

**FYI**

- The shipper and carrier of biomedical waste must be trained and certified in the Transportation of Dangerous Goods Act and Regulations.

- Areas used for refrigerating or freezing biomedical waste should only be used for this purpose, display the biohazard symbol, and be identified as containing biomedical waste.
E. Other Wastes

1. Developer;
2. Spent Chemical, Disinfectants and Sterilization Agents; and
3. Expired Medications.

1. Developer

a) Description

1. Waste developer is generated from the processing of dental films;
2. The principal concern with waste developer is that it may have a high pH capable of causing corrosion of sewer lines.; and
3. Information from Eastman Kodak indicates that waste developer typically has negligible concentrations of silver.

b) Regulatory Considerations

1. Typically, the pH of developer is approximately pH 10.0, as per MSDS information. Based on this pH waste developer would be classified as non-hazardous. A waste fluid becomes hazardous with a pH of less than 2.0 or greater than 12.5; and
2. The pH of this product is a concern when considering disposal via the wastewater/sewer system as pH of 10 may exceed local regulations (e.g., the upper pH limit for disposal of fluids to the City of Medicine Hat sewer system is 9.5).

c) Storage and Handling

• Do not mix spent developer and fixer together. If this is done, then the entire waste volume must be handled as hazardous; refer to the X-ray Fixer waste information section for management instructions.

d) Options for Reducing Waste Volumes

• Consider digital x-ray technology, which would eliminate this waste stream.

e) Transportation and Documentation

1. This waste fluid is usually not regulated by the Transportation of Dangerous Goods Act and Regulations. As a corrosive substance it would only be regulated if it caused
full destruction of human skin; and

2. There are no specific transportation documentation requirements for this waste, however a shipping document or bill of lading should be retained on file to support waste disposal activities undertaken.

f) Final Disposal or Recycling

1. Onsite testing using litmus paper can provide an indication of the pH of the developer fluid. Neutralization of the developer may be required prior to disposal to the sewer system;
2. Consult the sewer bylaw for your local municipality to determine pH limitations. Municipalities without specific guidelines should be contacted directly for assistance;
3. Analysis of a representative sample of the general wastewater fluid would confirm that the final pH of the wastewater was within the required range;
4. An alternative option is to contact a waste service company regarding collection and neutralization of this waste fluid. While this waste is not hazardous, proper management of any waste stream is a basic requirement; and
5. Do not mix x-ray fixer and developer together.
2. Spent Chemical, Disinfectants and Sterilization Agents

a) Description

1. Chemicals used as disinfectants or sterilizing agents vary and can include diluted alcohol, glutaraldehyde, and acid solutions; and
2. MSDS information is available from product suppliers; the MSDS contains hazard information on each product.

b) Regulatory Considerations

1. Most disinfectants or sterilizing agents used in a dental office would be classified as non-hazardous and disposal via discharge to the sewer system is permitted. However the MSDS for each chemical should be reviewed for hazardous components; and
2. Analysis of a representative sample as discussed under Final Disposal or Recycling is required to clarify the regulatory aspects of handling this waste.

c) Storage and Handling

• Storage of this waste fluid is not required unless the analytical procedure identified under Final Disposal or Recycling indicates that disposal to the sewer system is not permitted.

d) Options for Reducing Waste Volumes

• Investigate the use of chemicals that do not contain hazardous components.

e) Transportation and Documentation

• Not applicable to this waste stream.

f) Final Disposal or Recycling

1. Analysis of a representative sample of the general wastewater fluid is required to confirm its suitability for sewer discharge. MSDS information on chemicals used will provide an indication of the analysis required;
2. Disposal via the wastewater/sewer system is permitted provided the wastewater is classified as non-hazardous, and release limits are not exceeded for any parameter.
Municipalities without specific guidelines should be consulted to confirm acceptance for disposal to the sewer system; and

3. If the analysis identifies a concern for sewer disposal, determining which chemical is causing the exceedance and replacing it with a less hazardous substitute is one option. Discussing the issue with the local wastewater authority may provide other options.

FYI

- The local municipal wastewater agency may be able to provide assistance on handling/treating waste fluids that exceed release limits.
3. Expired/Unused Medications

- Expired/unused medications are not regulated by the Transportation of Dangerous Goods Act and Regulation. These items should be incinerated or returned to participating pharmacies for disposal. Look for the sign below at participating pharmacies:
References

5. Environment Canada, Canada Gazette Part 1 May 8, 2010 Notice Requiring The Preparation And Implementation Of Pollution Prevention Plans In Respect Of Mercury Releases From Dental Amalgam Waste

Alberta Dental Association and College
Guide for Best Practice Management of Dental Office Waste

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Appendix A

Waste Minimization Dentists, Dental Specialists and Denturists

Background
Dental offices and laboratories are among the major generators of biomedical waste in Canada. While some of the waste can be classed as hazardous and infectious, the vast majority can be dealt with through standard waste minimization procedures.

Typically, dental offices and laboratories generate the following wastes:

- Disposable tools and hygiene products (syringes, sharps, saliva ejectors, cotton gauze, bibs, masks, latex gloves)
- Denturist plaster, silicon powder, wax
- Plastic products (x-ray film, plastic articulators, packaging film, plastic foam for packaging)
- Paper products (office paper, expired patient records, newspapers and magazines, corrugated cardboard packaging)

This information sheet is intended to help dental office and laboratory personnel minimize waste. The suggestions presented here have been used successfully by other companies to decrease waste volumes and reduce disposal costs. Commitment to an effective waste minimization program helps protect the environment, reduces liability and can enhance a company’s image within its community.

WASTE MINIMIZATION OPPORTUNITIES
The three main ways in which wastes can be minimized are, in order of importance:
1. **Reduce** - change practices, policies and habits which cause wastes to be produced.
2. **Reuse** - recover waste materials and use them “as is” for similar or other purposes
3. **Recycle** – collect waste materials and process them for use as raw materials or new products.

This section provides many specific suggestions for minimizing the wastes produced by dental offices and laboratories. Many other practices can also be effective and should be considered in implementing an overall waste minimization program.

**REDUCE**
- Whenever possible, purchase products in refillable bulk containers
- Reuse plastic film mounts
- Carefully measure and control inventory of products with limited shelf life
- Use durable, returnable shipping containers and avoid excessive packaging
- Provide and encourage the use of toothbrushes with exchangeable heads
• Use gloves which can be washed and sterilized for reuse
• Move to reusable tools and hygiene products made of durable plastics or metals
• Whenever possible, use washable, reusable cloth instead of paper products
• Keep patient records on computer disk

**REUSE**

• Sterilize suction tips for reuse. Purchase durable plastic or metal tips that can endure sterilization
• Offer old denture models to teachers for demonstrating oral health techniques
• Reuse sterilization plastic, paper bags, and cardboard boxes as many times as possible and handle them carefully to promote longer life.
• Offer used way, out-of-date plaster and old tools to artists, students and handicraft groups
• Offer old grinding wheels to jewelers
• Offer old tools to educational institutions for training.

• Use both sides of paper when photocopying or use used-on-one-side paper for notes.
• Use shredded patients records as packaging materials

**RECYCLE**

• Offer used drill bits to manufacturers to be customized into other tools.
• Encourage recycling by purchasing products which contain recycled materials (e.g. paper products)
• Collect waste paper and plastic for your office building’s recycling program.
• Participate in the development of a recycling program in none exists
• Avoid mixing plastic with paper when collecting materials for recycling
• Collect waste materials for recycling where facilities exist. Participate in the development of a community recycling program if none exists
Appendix B

Alberta Environment - Hazardous Waste Consigner Registration Form

HAZARDOUS WASTE
CONSIGNOR REGISTRATION

APPLICATIONS TO BE Faxed TO: Director of Land and Forestry Policy Branch
10th Floor, Oxbridge Place
9820 -106 Street
Edmonton, AB T5K 2J6
(Fax No.: 780-422-4192)

Please specify ☐ New Application ☐ Amended Application (ABG___________)

1. NAME OF CORPORATION


2. Mailing Address


3. SITE ADDRESS AND LEGAL LAND DESCRIPTION (Where waste is produced/generated)


4. NAME OF CORPORATE OFFICER

Mr./Ms.______________________________

5. POSITION PHONE NUMBER FAX NUMBER

_________________________ (___)_________ (___)_________

E-MAIL ________________________________

I certify that the above-named corporation is in compliance with applicable provincial and federal laws, including legislation affecting the transportation and handling of dangerous goods, and including any regulations requiring liability insurance and training of personnel.

6. SIGNATURE ______________________

DATE ______________________________

For office use only

Provincial I.D. Number ABG___________; Approved by _______________; Date _____________
## Appendix C - Examples of transportation documentation

### Alberta Environment – Recycle Docket

Found online at: [http://environment.gov.ab.ca/info/library/7326.pdf](http://environment.gov.ab.ca/info/library/7326.pdf)

![Recycle Docket Form](image)

This recycle docket is equivalent to the Dangerous Goods Shipping Document for Road Transportation as required by Section 19 of the Waste Control Regulation.

<table>
<thead>
<tr>
<th>SHIPPED FROM CONSIGNOR (GENERATOR)</th>
<th>RECEIVED BY CONSIGNEE (RECEIVER)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAME:</td>
<td>NAME:</td>
</tr>
<tr>
<td>ADDRESS:</td>
<td>ADDRESS:</td>
</tr>
<tr>
<td>CITY:</td>
<td>CITY:</td>
</tr>
</tbody>
</table>

CARRIER’S NAME:

<table>
<thead>
<tr>
<th>DG</th>
<th>Shipping Name</th>
<th>Primary Class</th>
<th>Subsidiary Class(es)</th>
<th>PIN</th>
<th>Packing Group</th>
<th>Mass or Volume</th>
<th>Number of Pieces</th>
</tr>
</thead>
<tbody>
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</table>

Type of Placards: ___________________________ Number of Placards: ___________________________

**SPECIAL HANDLING INSTRUCTIONS:**

(24-HOUR EMERGENCY NUMBER 1-800-222-6514)

**EMERGENCY INFORMATION:**

Consignor’s (Generator’s) 24-Hour Emergency Telephone Number: ___________________________

SUMMARY OF EMERGENCY PLAN:

Plan reference number: ______ Plan Activation Telephone Number: ___________________________

Consignor’s (Generator’s) Signature or Mark: ___________________________ Date: ___________________________

Recycle Docket Number: ___________________________

**NOTE:** THIS FORM SHALL BE KEPT BY THE RECYCLER FOR AT LEAST 2 YEARS.
Alberta Environment – Recycle Docket Attachment

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### Attachment to Recycle Docket

Land and Forestry Policy Branch, 10th Floor, 9820 – 106th Street, Edmonton, Alberta T5K 2T6  Phone: (780) 427-3061 Fax: (780) 423-1192

This document is equivalent to the multiple pickup and delivery document authorized under the Transportation of Dangerous Goods Act and Regulations.

**INSTRUCTIONS:**
- use only for multiple pick-up ("milk-runs")
- enter only hazardous recyclables of the same type (for example, all lube oil on this page)
- all items must go to the one consignee (receiver) indicated on the covering recycle docket

The hazardous recyclable described on this form is called _____________.

The covering recycle docket number is _____________.

<table>
<thead>
<tr>
<th>Consignor (Generator)</th>
<th>Name of the Consignor (Generator) of the Hazardous Recyclable</th>
<th>Location from which the Hazardous Recyclable Originated</th>
<th>Amount of Hazardous Recyclable (Kg or Litres times the Number of Pieces)</th>
<th>Signature of Consignor (Generator) or Authorized Representative</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3</td>
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</table>

**NOTE:** THIS FORM SHALL BE KEPT BY THE RECYCLER FOR AT LEAST 2 YEARS
Manifest Sample
- Sample can be found online at: http://environment.alberta.ca/01133.html
Sample Dangerous Goods Shipping Document For Road Transport


<table>
<thead>
<tr>
<th>DESTINATION (City-Town)</th>
<th>CONSIGNOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name:</td>
<td>Name:</td>
</tr>
<tr>
<td>Address:</td>
<td>Address:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name of Carrier</th>
<th>Prepaid</th>
<th>Collect</th>
<th>Transport Unit Number</th>
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<td></td>
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</table>

<table>
<thead>
<tr>
<th>Point of Origin</th>
<th>Shipping Date</th>
<th>Shipper’s No.</th>
</tr>
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<tbody>
<tr>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>REGULATED DANGEROUS GOODS</th>
<th>24-Hour Number:</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERAP Reference ___________</td>
<td>and</td>
</tr>
<tr>
<td>Telephone Number _________</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Shipping Name</th>
<th>Primary Class</th>
<th>Subsidiary Class</th>
<th>UN Number</th>
<th>Packing Group</th>
<th>Quantity</th>
<th>Packages Requiring Labels</th>
</tr>
</thead>
<tbody>
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</table>

This is to certify that the above named articles are properly classified, described, packaged, marked and labelled and are in proper condition for transportation according to the Transportation of Dangerous Goods Regulations.

**Special Instructions**

**NON-REGULATED GOODS**

<table>
<thead>
<tr>
<th>Packages</th>
<th>Description of Articles</th>
<th>Weight</th>
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</tbody>
</table>

Received in apparent good order

- Consignee Signature
- Shipper’s Signature

Received in Apparent Good Order

- Driver’s Signature
- Driver’s No.

Please note that this sample shipping document contains some information that is not required in the TDG Regulations. The additional information reflects current industry practices.