

MANAGEMENT OF MERCURY DENTAL AMALGAM

This information sheet identifies and recommends acceptable industry management practices when handling mercury amalgam waste generated by dental clinics and offices.

Mercury dental amalgam is a metal alloy that is made up of mercury (about 50% by weight), silver, copper, and zinc. Dental amalgam waste consists of liquids and 50% to 70% solids that in addition to the metals mentioned above also contains small quantities of gold, platinum, and organic and inorganic dentistry by-products (tooth particles). The waste is produced simultaneously at many locations in very small quantities over a period of weeks or months.

Regulatory Status of Waste Dental Amalgam

Though mercury dental amalgam residues are generated by human health care facilities, this waste is not considered biomedical waste because it does not generally contain pathogens that may cause disease in humans.

For purposes of the *Environmental Protection and Enhancement Act (EPEA)* and the *Waste Control Regulation (WCR)*, mercury dental amalgam waste is considered a hazardous leachable toxic waste based on the *Alberta User Guide for Waste Managers* (Class 9.3, Product Identification Number NA9500, Packing Group III).

In the *Transportation of Dangerous Goods Regulations (TDGR)*, mercury dental amalgam waste is classified as an Environmentally Hazardous Substance (Class 9, UN 3077 if a solid or UN3082 if a liquid, Packing Group III, N.O.S.) due to the mercury concentration in the leachate. Wastes are toxic when the mercury concentration in leachates obtained from a *Toxicity Leaching Characteristic Procedure* is greater than 0.1 milligrams of mercury per litre.

The three documents mentioned here are available at www.qp.gov.ab.ca/index.cfm, environment.gov.ab.ca/info or www.tc.gc.ca/tdg/clear/tofc.htm, respectively.

There is a small quantity exemption of 5 litres or 5 kilograms that apply to both, the *WCR* and *TDGR* regulations. However, even when generated in small quantities, we strongly recommend that small quantities of mercury amalgam waste, regardless of the source, be handled wherever possible as described in this document, to minimize releases of mercury to the environment. On-site management of dental amalgam waste as described below does not require an authorization under *EPEA*.

Recommended Management

Dental amalgam waste should be collected on-site in amalgam traps and filters that may be part of a settling tank provided to dental clinics/offices by specialized waste management companies. At this stage a disinfectant should be added to the receiving settling tanks to sterilize the waste to avoid biological hazards related to its management. The amalgam waste is then directed to appropriate facilities for recovery of the mercury, silver, etc. Information on available service companies operating in Alberta may be obtained by consulting the local yellow pages under the heading of *waste disposal*, or by contacting the Environmental Services Association at 1-800-661-9278 or www.esaa.org.

The best management practices identified by the Canadian Council of Ministers of the Environment Canada-Wide Standard on Mercury for Dental Amalgam Waste include the use of ISO certified amalgam traps, or equivalent, and appropriate management of the waste so mercury does not enter the environment. This document is available on-line at www.ccme.ca/initiatives/standards.html. A summary of CCME main recommendations include:

- disinfection/sterilization at the dentist's offices or clinics;
- collection for recycling to recovery the mercury, silver, or copper;
- treatment by solidification/stabilization in a form that does not produce toxic leachates; and
- disposal at Class I or Class II landfills upon stabilization/solidification, as appropriate.

When no recycling opportunities are available, landfill disposal after disinfection and stabilization after mixing with sulphur-based additives followed by encapsulation or containment with lime or limestone is an acceptable disposal method.

Transportation Requirements

In Alberta, when this waste goes for disposal it has to be accompanied by a manifest. When going for recycling, TDGR documentation or a recycle docket suffice if the recycling is done in Alberta.

Application forms for a Personal Identification Number (for generators, carriers or receivers), a recycle docket, and related attachments may be downloaded from Alberta Environment's web site at www.gov.ab.ca/env/waste.html or by phone at (780) 427-0666.

Multiple pick-ups of dental amalgam waste going for recycling are covered by the use of attachments to the recycle docket. A recycle docket is not required when the amount of hazardous recyclables being transported is less than 205 litres or 205 kg. In these circumstances when transporting more than the limit, TDGR documentation is the only requirement. More information on the use of the manifest or recycle docket is available in the *Alberta User Guide for Waste Managers*, found at the web sites identified above.

When moving dental amalgam outside Alberta, no manifest is required provided that an application for a permit of equivalent level of safety has been made to Transport Canada and issued by this Department under the *Transportation of Dangerous Goods Act and Regulations*. For more information and to ensure full compliance with *TDGR* contact Alberta Infrastructure, Dangerous Goods and Rails Safety at 1-800-272-9600.

The person responsible should, prior to shipment of this waste, contact the environmental agency with jurisdiction on the receiver to ensure compliance with export requirements and sound management practices.