

MANAGEMENT OF USED MERCURY VAPOUR LAMPS AND MERCURY-CONTAINING ARTICLES

This document describes Alberta Environment's recommended approach when dealing with mercury fluorescent lamps, including ultraviolet ray light tubes. Some of the information is also applicable to the management of obsolete or broken mercury-containing articles.

Fluorescent mercury vapour lamps contain mercury, cadmium, phosphorus and other regulated substances that are known to be harmful to health and to the environment. A standard 1.2 metre (4 foot) fluorescent lamp contains approximately four to six grams of white phosphorous, thirteen to fifty milligrams of mercury, and thirty milligrams of cadmium.

Legal Framework and Waste Classification

Fluorescent light tubes, including mercury vapour lamps and drained broken/obsolete instruments such as thermostats, barometers, manometers or thermometers that contained mercury are not considered hazardous waste according to the *Alberta User Guide for Waste Managers*, available at environment.gov.ab.ca/info/home.asp.

Free mercury or mercury-phosphor powder that has been removed from fluorescent light tubes or mercury-containing articles must be dealt with as a dangerous good regardless of quantity. Mercury is a Class 8 dangerous good (UN2809), Packing Group III. Ground or crushed lamps or broken instruments and mercury-phosphor powder recovered from recycling fluorescent lamps generally show hazardous characteristics and fall in Class 9.3, (UN3077), Packing Group III.

The collection, storage, and processing of fluorescent vapor lamps and drained mercury-containing instruments do not require an approval under the *Environmental Protection and Enhancement Act, Activities Designation Regulation*. The applicable legislation includes the *Waste Control Regulation* that can be found at www.gov.ab.ca/env/waste.html or through the Alberta Queen's Printer at www.qp.gov.ab.ca.

Recycling Options

Three Alberta companies that recycle spent mercury lamps:

- Custom Environmental Services Ltd., available at 1-800-661-5792 or (780) 440-1825 or www.proeco.com.
- Environmental Lamp Disposal, telephone at (780) 413-0542 or www.environmentallamp.com.
- Nu Life Industries Inc., available at 1-800-247-6724 or (604) 857-5588 or www.nulife-ind.com.

These companies recover all lamp components, including glass, aluminum end caps, mercury, and mercury/phosphor powder. More comprehensive and updated information on additional recycling/management options is available by contacting the Environmental Services Association of Alberta at 1-800-661-9278, (780) 439-6363, or at www.esaa.org.

Disposal Options

Components of mercury vapour lamps should be characterized, classified and disposed of according to their classification. The disposal of used lamps or mercury-drained instruments should be done with an appropriate mercury sorbent material such as calcium polysulphide or a sulphur-based sorbent. When a sulphur-based sorbent is used, it is further recommended that the mixture be repacked in a secondary container with lime or limestone to provide a layer of alkaline material surrounding the package which contains the waste. Used lamps, in addition to broken and obsolete instruments pre-treated as described, are suitable for disposal at any Class I or Class II landfill provided the landfill operator's permission is obtained.

Alberta Environment's preferred approach in dealing with household mercury wastes is to segregate these items and direct them to the annual toxic round ups, the local eco-stations for recycling, or have them handled by a waste service company. Otherwise, small quantities of these wastes from households or small businesses should, for safety reasons, be encapsulated with a sulphur-based compound or vermiculite (cat litter) and bagged or containerized before disposal into Class I or Class II landfills.

Transportation Requirements

Both provincial and federal legislation must be complied with when transporting hazardous waste, hazardous recyclables, or dangerous goods. The federal legislation includes the *Interprovincial Movement of Hazardous Waste Regulations* and the *Transportation of Dangerous Goods Regulations*.

When shipping ground mercury lamps, instrumentation, mercury, or mercury-phosphor powder as waste, a manifest is required. Movement within the province of these materials for the purposes of recycling requires a recycle docket. Application forms for a Personal Identification Number (generator, carrier, or receiver number) and copies of manifest or recycle docket forms can be obtained by contacting Alberta Environment at (780) 427-0666. Manifest and waste management requirements are identified in the *Waste Control Regulation*.

Summary

- Recycle used mercury lamps and mercury control instrumentation at approved recyclers;
- Properly package used mercury lamps and mercury control instrumentation for disposal at approved Class I or Class II landfills; and
- Document shipments as per the waste manifest requirements.

Note: The management options identified in this document *do not apply to sodium vapour lamps or fluorescent lamps with PCB ballasts*. As for other lamps or fluorescent light tubes containment, preceded when possible by volume reduction, should be undertaken prior to shipment of the waste for disposal. This procedure minimizes safety concerns when handling this waste material. If you have any questions on the above, please call Alberta Environment Information Centre at (780) 422-2079.