

"Determined Efforts" for Polyvinyl Chloride (PVC) and Mercury Containing Products used in Saskatchewan Hospitals

Background:

Hospital waste incinerators have been identified as a source of toxic air pollutants such as mercury, dioxins and furans. However, waste minimization and segregation, source reduction, recycling and other pollution prevention techniques can effectively reduce or eliminate the release of air pollutants.

Saskatchewan's overall approach to managing mercury, dioxin and furan emissions from existing waste incineration facilities is to incorporate the Canada-wide Standards for Dioxins and Furans into the conditions of permits to operate issued under Saskatchewan's *Clean Air Act* and *Clean Air Regulations*.

Hospital waste incinerators in Saskatchewan are small, with a capacity of less than 120 tonnes per year. The Canada-wide Standard allows small incinerators to choose between pollution control upgrading and stack testing or "determined efforts" which includes mercury diversion planning and waste audits. "Determined efforts" is the preferred choice for small facilities. This Saskatchewan Ministry of Environment fact sheet describes how small facilities can use "determined efforts" to comply with the Canada-wide Standard.

Determined Efforts for Mercury:

"Determined efforts" for mercury are best management practices that have been found to effectively prevent the release of mercury into the environment. By implementing "determined efforts" Saskatchewan hospitals can help to avoid the future

need for increased regulations. The preferred best management practice is to replace mercury-containing products with a mercury-free product. The mercury-containing waste product would then be disposed of through recycling or through disposal at an out-of-province hazardous waste landfill. Disposal at an out-of-province landfill requires prior approval from the receiving jurisdiction. It may not be possible to replace all of the hospital's mercury products at once or there may not be a substitute that is considered reliable and cost-effective. In this case, best management practices are effective procedures for handling and recycling or disposing of the mercury-containing products. Best management practices should include:

- using Eco-procurement or Environmentally Responsible Procurement which involves adjusting purchasing actions and policies to integrate cradle-to-grave environmental factors with performance, cost, safety and other factors. This ensures that environmental impacts and legislation are considered when purchasing goods, services, construction and maintenance work.
- Extended Producer Responsibility should be considered when buying equipment and/or material that may produce mercury waste and result in dioxin or furan formation.
- access to manufacturers of hospital instruments and/or chemicals that have a collection and recycle program in place.

- access to a waste management company that recovers or disposes of mercury.

Other best management practices may include the treatment and disposal of mercury to a hazardous waste landfill.

Mercury-containing products include medical instruments, clinical laboratory chemicals, electrical equipment and cleaning solutions. Below is a list of products that should be managed according to the above practices.

Fever Thermometers - Mercury thermometers should be replaced with mercury-free thermometers at the end of their useful lives.

Gastrointestinal Tubes - Gastrointestinal tubes typically have expiration dates after which their use must be discontinued. Collecting, recycling or disposing of mercury-containing tubes should be considered.

Sphygmomanometers - Mercury spilled when refilling this apparatus or recovered from an instrument that is being replaced should be collected, recycled or disposed of by using best management practices. Some spills may require the services of a professional clean up firm which could prove to be expensive. Options to prevent spills, such as replacing mercury-containing equipment with a mercury-free alternative, may prove cost effective.

Laboratory Chemicals - Whenever laboratories use mercury-containing chemicals, there is the potential for mercury to be released into the environment. There should be a

phase-out of all non-essential uses of mercury in laboratories and, unless there is no alternative, mercury-containing compounds that are used in clinical, research and teaching laboratories should be eliminated. It is also recommended that all nonessential mercury devices such as thermometers and barometers be replaced. Laboratories and storage areas should be cleared of all unnecessary mercury compounds.

Batteries - Recycling batteries is the preferred choice for managing this product. This may occur where some battery manufacturers or recycling corporations offer recycling programs for mercuric oxide batteries. The Saskatchewan Waste Reduction Council has a number of collectors listed for the management of waste batteries. This list may be obtained at www.saskwastereduction.ca.

Lamps – Buy fluorescent and high intensity discharge lamps and purchase that have low mercury content and a long lifespan. Lamp manufacturers have been working to reduce the amount of mercury in fluorescent lamps. Some lamps are now low enough in mercury content to be considered non-hazardous for waste recycling and disposal purposes. Use these lamps as replacement lamps for existing fluorescent lamps. Replaced lamps should be collected and forwarded to a collection depot. Avoid breaking lamps containing mercury.

Electrical Equipment – If there is a question about the mercury content of used electrical equipment destined for

recycling or disposal contact the manufacturer for more information. Mercury switches or thermostats should be removed and recycled.

Thermostat Probes in Gas

Appliances - Remove and recycle thermostat probes.

Industrial Thermometers – During construction and renovations, consider retrofitting or replacing heating or cooling systems with mercury-free thermometers. Recycle or properly dispose of the old thermometers.

"Determined efforts" for Polyvinyl Chloride (PVC):

Polyvinyl chloride's cost effectiveness, flexibility and optical properties make it the most commonly used polymer in the production of plastic hospital products. However, incinerating waste PVC products can result in dioxins and furans being released into the environment. The following products should be diverted from the incinerator waste stream and recycled or disposed of in a municipal landfill.

- Basins
- Bedpans
- Blood bags
- Catheters
- Drip chambers
- Enteral feeding devices
- Hemodialysis equipment
- Inflatable splints
- IV containers
- Lab equipment
- Medical gloves
- Packaging
- Patient ID bracelets
- Respiratory therapy products

Stationery supplies

Thermal blankets

Tubing

Any other items which may include polyvinyl chloride

Note: Some or all of these products are considered medical and, more specifically, biomedical waste. Therefore, these products should not be incinerated. They should be segregated, handled, packaged, transported and disposed of according to the Saskatchewan Biomedical Waste Management Guidelines.

More info?

Contact the Saskatchewan Ministry of Environment
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