



TITLE

**HAZARDOUS CHEMICAL WASTE**

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**NOTE:** The first appearance of terms in bold in the body of this document (except titles) are defined terms – please refer to the Definitions section.

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## OBJECTIVES

- To outline Alberta Health Services' (AHS) roles and responsibilities for handling, transporting, and disposing of **hazardous chemical waste** in a safe and efficient manner.
- To promote a safe and healthy work environment and protect **patients**, visitors and **AHS representatives** from environmental contamination, disease transmission and/or injury.

## APPLICABILITY

Compliance with this document is required by all Alberta Health Services employees, members of the medical and midwifery staffs, students, volunteers, and other persons acting on behalf of Alberta Health Services (including contracted service providers as necessary).

## ELEMENTS

### 1. Hazardous Chemical Waste

- 1.1 Hazardous chemical waste requires special handling, treatment, and **disposal** due to environmental, health and safety, and aesthetic concerns and includes:
  - a) **substances**, or mixtures of substances (whether solid, liquid, or gaseous), that exhibit characteristics of flammability, corrosiveness, reactivity or toxicity.

## 2. Hazardous Chemical Waste Exclusions

2.1 The following **waste** types are generally not considered hazardous chemical waste. For confirmation, review the requirements in the *Waste Control Regulation* and the *Alberta User Guide for Waste Managers*:

- a) general waste;
- b) agricultural waste;
- c) domestic sewage;
- d) radioactive waste; and
- e) biomedical waste.

## 3. Health & Safety

3.1 AHS **accountable leaders** are responsible for confirming their program training requirements. AHS representatives must complete role specific education/training prior to completing activities with hazardous chemical waste and comply with the AHS *Waste Management Policy*; *Transportation of Dangerous Goods* and the *Alberta Waste Control Regulations*.

3.2 AHS representatives must handle hazardous chemical waste in a safe and efficient manner that minimizes the likelihood of spills, leaks, or exposure including but not limited to the following:

- a) using appropriate personal protective equipment (PPE) when handling or transporting hazardous chemical waste.
  - (i) The need for PPE must be identified as part of completing the Hazard Identification, Assessment and Control (HIAC) Process. AHS representatives must speak to their manager/**supervisor** if appropriate PPE cannot be found or is not readily available.
  - (ii) PPE includes, but is not limited to:
    - gloves (e.g., puncture resistant, chemical resistant, disposable, waterproof);
    - apron and/or gown;
    - safety glasses, safety goggles or face shield;
    - mask or respirator; and/or
    - protective footwear (e.g., shoe covers).
- b) following the AHS *Hand Hygiene* Policy Suite; and

- c) Immediately reporting any hazardous chemical waste related hazards or incidents, such as improper packaging, leaks, spills, and/or accidental exposure (including any symptoms or infections that may be related to exposure to hazardous chemical waste) through the AHS MySafetyNet reporting system and following applicable AHS policies and procedures, including the *Workplace Health & Safety Policy*, and *Emergency Response Codes Policy*.

3.3 Information on Infection Prevention & Control (IPC) hand hygiene and PPE resources are available through the AHS external website and Insite. Additional information on Respiratory Protective Equipment (RPE) is available on Insite.

#### 4. Hazardous Chemical Waste Segregation

- 4.1 AHS representatives must **segregate** hazardous chemical waste from other waste streams at the point-of-origin.
  - a) If hazardous chemical waste materials are inadvertently mixed with other waste streams (including biomedical waste), the entire waste stream must be treated and disposed of as hazardous chemical waste.

#### 5. Packaging

- 5.1 Hazardous chemical waste must be packaged in accordance with the *Transportation of Dangerous Goods Regulations (Canada)*.
- 5.2 The AHS representative or department generating the waste must ensure that hazardous chemical waste is properly packaged and labelled per sections 5.3 and 6 of this document.
  - a) Improper packaging creates further risk to waste handlers and increase disposal costs.
- 5.3 Packaging Procedures:
  - a) All **containers** must be closed except when adding material.
  - b) Containers must not be more than three-quarters (3/4) full.
  - c) Incompatible materials must not be mixed together in a single container (e.g., organic acids with inorganic acids, oxidizers with organic materials, etc.) (See Appendix A: *Chemical Waste Incompatibilities* of this document).
  - d) Wastes must be stored in containers compatible with the chemicals stored.
  - e) Halogenated and non-halogenated solvents must be packaged separately.

- f) Biomedical waste bags must not be used to package solid hazardous chemical waste.

## 6. Labelling

- 6.1 AHS representatives must label hazardous chemical waste in accordance with the *Transportation of Dangerous Goods Regulations* (Canada). Information on the label must include:
  - a) generator of the hazardous chemical waste (person or department);
  - b) origin of waste;
  - c) full chemical name(s) (no abbreviations or brand names); and
  - d) a complete list of all chemicals in the container, unless properly classified as identified by the Government of Canada *Transportation of Dangerous Goods Regulations*.

## 7. Collection and Transportation

- 7.1 The AHS accountable leader responsible for waste collection within an AHS facility must designate and document corridor and elevator routes for transporting hazardous chemical waste ensuring:
  - a) planned routes minimize the passage through patient care, public, and other clean areas; and
  - b) planned routes are available to AHS representatives required to collect and move hazardous chemical waste; and
  - c) AHS representatives collecting and transporting hazardous chemical waste within the AHS facility are trained on appropriate routes prior to collecting waste containers.
- 7.2 AHS representatives must move hazardous chemical waste along the planned routes to mitigate exposure to patients, visitors, and AHS representatives. Detailed information on planned routes is dictated by local facility protocols and must follow section 7.1 of this document.
- 7.3 All three quarters (3/4) full hazardous chemical waste containers must be collected by an AHS representative and transported to the **final storage area**.
  - a) Hazardous chemical waste must not be collected and transported with other waste streams.
  - b) Hazardous chemical waste containers transported within an AHS facility, or which have been moved to final **storage**, must not be re-opened.

## 8. Storage

- 8.1 AHS representatives must ensure hazardous chemical waste moved to the final storage area is properly labelled, documented, and stored as follows:
- a) Refer to the Safety Data Sheet (SDS) for more information on how to properly dispose of the hazardous chemical waste material.
  - b) Only dispose of hazardous chemical waste through the sanitary sewer if it is compliant with local municipal regulations.
  - c) Ensure hazardous chemical waste is properly segregated according to chemical compatibility according to the appropriate SDS.
    - (i) Incompatible chemicals should be stored in such manner that they do not come into contact with one another (e.g., stored on different shelves). (See Appendix A: *Chemical Waste Incompatibilities* of this document).
  - d) The following types of hazardous chemical waste must be segregated from one another:
    - (i) flammable liquids;
    - (ii) flammable solids;
    - (iii) mineral solids;
    - (iv) organic acids;
    - (v) caustics;
    - (vi) oxidizers;
    - (vii) perchloric acid;
    - (viii) water-reactive substances;
    - (ix) air-reactive substances;
    - (x) heat-reactive substances requiring refrigeration; and
    - (xi) unstable substances (shock-sensitive substances or explosives).
  - e) Hazardous chemical waste must be stored in a secured designated space which does not present a hazard to patients, visitors, or AHS representatives see section 9 of this document.

## 9. Hazardous Waste Storage Room

9.1 The AHS accountable leader responsible for hazardous chemical waste storage within an AHS facility must ensure a designated Hazardous Waste Storage Room (HWSR) is utilized as a final storage area when hazardous chemical waste cannot be immediately removed from an AHS facility.

- a) The HWSR must be:
- (i) well-ventilated;
  - (ii) cool;
  - (iii) dry;
  - (iv) be equipped with explosion/corrosion-proof devices and accessories;
  - (v) have a proper fire-suppression system;
  - (vi) equipped with grounded cabinets and/or shelving units that have a minimum half (1/2) inch retaining lip for containerized wastes as per the *Alberta Fire Code* (Section 40.1.8.2, Division B);
    - Such cabinets or shelves should be securely fastened to the wall(s) and floor.
  - (vii) equipped with suitable equipment to handle an emergency situation involving a chemical leak or spill as per the local site processes, the SDS, and the local Code Brown procedure;
  - (viii) properly marked or identified as “Hazardous Waste Storage” and is kept locked except when occupied: and
  - (ix) accessed only by AHS representatives authorized by the waste generating department.
- b) Hazardous chemical waste must be stored within the HWSR in the following manner:
- (i) liquid hazardous chemical waste is stored in a **secondary containment system** so that leakage or spillage can be prevented from entering the sewer system or from spreading into adjacent areas of the storage room;
  - (ii) corrosive waste materials must be stored in corrosion-resistant cabinets; and
  - (iii) flammable and/or combustible liquid waste must be stored in a special flame-resistant cabinet.

- c) An inventory of all hazardous chemical waste stored on-site for longer than a month must be maintained.
    - (i) Hazardous chemical waste must not be kept on site for a period of longer than one (1) year.
  - d) Cleaning of the HWSR must be completed when all hazardous waste materials are removed. The frequency of cleaning is dictated by the local facility protocol.
  - e) Inspections of the HWSR must be completed annually, to check for electrical and/or air-handling faults. This should be conducted by the appropriate designated Facilities Maintenance & Engineering (FM&E) AHS representatives.
- 9.2 AHS representatives must complete and submit a Request for *Hazardous Material Service Order* Form prior to any hazardous chemical waste disposal.
- a) The *Hazard Waste Disposal* Form should be completed for each container and provided to the licensed hazardous chemical waste carrier upon arrival at the site to pick up the waste materials.
  - b) All containers must be thoroughly checked/inspected to ensure that no leaks are present before either transporting or placing chemical waste materials in the HWSR.
    - (i) If container is leaking, follow local Code Brown procedure.
  - c) Mixing and/or transferring hazardous chemical waste (e.g., chemicals or solvents) within the HWSR is strictly prohibited.

## 10. Records Retention

- 10.1 Information and records pertaining to hazardous chemical waste must be maintained in accordance with **regulatory requirements** and the *AHS Records Management Policy and Records Retention Schedule*.

### DEFINITIONS

**Accountable leader** means the individual who has ultimate accountability to ensure consideration and completion of the listed steps in the management of the Hazardous Chemical Waste Procedure. Responsibility for some or all of the components of management may be delegated to the appropriate level responsible administrative leader, but accountability remains at the senior level.

**AHS representatives** means Alberta Health Services employees, members of the medical and midwifery staffs, students, volunteers, and other persons acting on behalf of Alberta Health Services (including contracted service providers as necessary).

**Container(s)** means any receptacle for the storage of waste.

**Disposal / disposed** means the removal of waste, treated waste, or residue from a facility, off-site waste treatment facility, or transfer station to a final location. Disposal includes placement in a landfill or discharge to a sanitary sewer.

**Final storage area** means an area where the hazardous chemical waste is transported to and stored just prior to disposal.

**Hazardous chemical waste** means unwanted substances that have the potential to harm life, property or the environment; and/or contains one or a mixture of chemical compounds (e.g., solvents, reagents, paints, fuels) and is classified as hazardous. Examples of hazardous waste include, but are not limited to:

- Toxic;
- Corrosive (pH 1 - 12 pH);
- Flammable;
- Reactive (explosive, water reactive, shock sensitive);
- Genotoxic (carcinogenic, mutagenic, teratogenic, or otherwise capable of altering genetic material).

**Patient** means an individual, inclusive of residents and clients, who receives or has requested health care or services from Alberta Health Services and those authorized to act on behalf of Alberta Health Services. In the context of informed consent or other decision-making, patient also means any alternate decision-maker or co-decision maker for the individual, when applicable.

**Regulatory requirements** mean acts, legislation, regulations and bylaws.

**Secondary Containment System** means a method or system used to prevent unplanned releases of liquid hazardous chemical waste in order to prevent pollution. It is a level of containment that is external (in addition) to the primary mode of containment for liquid hazardous chemical waste.

**Segregate / segregated** means the separation of wastes, according to classification, at the point of generation and prior to storage.

**Storage** means the accumulation of wastes after segregation into a specified container(s).

**Substances** means any matter that is capable of becoming dispersed in the environment, or is capable of becoming transformed into matter that is capable of becoming dispersed in the environment.

**Supervisor** means a person, whether unionized or non-unionized, who has charge of a work site or authority over an AHS representative.

**Waste** means an unwanted substance or mixture of substances and includes refuse and garbage.

## REFERENCES

- Appendix A: *Chemical Waste Incompatibilities*
- Alberta Health Services Governance Documents:
  - *Emergency Response Codes Policy (#1132)*
  - *Enterprise Risk Management Policy (#1125)*
  - *Hand Hygiene Policy Suite (#PS-02 and #PS-02-01)*
  - *Records Management Policy (#1133)*
  - *Records Retention Schedule (#1133-01)*
  - *Waste Management Policy (#ESM-01)*
  - *Workplace Health & Safety Policy (#1121)*
- Alberta Health Services Resources:
  - *Hazard Identification, Assessment and Control (“HIAC”) Process*
- Alberta Health Services Forms:
  - Hazardous Waste Disposal Form (#18960)
  - Request for Hazardous Material Service Order Form (#18961)
- Non-Alberta Health Services Documents:
  - *Alberta Fire Code*
  - *Alberta User Guide for Waste Managers*
  - *Canadian Environmental Protection Act*
  - *Environmental Protection and Enhancement Act: Waste Control Regulation (Alberta)*
  - *Handling of Health Care Waste Materials (CSA-Z317.10-2021) (Canadian Standards Association)*
  - *Occupational Health and Safety Act (Alberta)*
  - *Public Health Act: Nuisance and General Sanitation Regulation (Alberta)*
  - *Transportation of Dangerous Goods Act (Canada)*

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## APPENDIX A

## Chemical Waste Incompatibilities

The tables below list general and specific chemical waste incompatibilities. Use the tables below to assist with determining how to pool/segregate specific chemical waste.

Additionally, refer to the SDS for more details.

General Chemical Waste Incompatibilities

Chemical	Keep separate from:
Acids	Bases, organic acids, flammable and/or combustible materials, active metals such as sodium, magnesium and potassium, chemicals which can generate toxic gases upon contact such as sodium cyanide and iron sulfide, caustics
Alkali and alkaline metals	Water
Carbides	Acids
Caustics	Acids
Flammables	Oxidizing agents
Hydrides	Halogenated organic compounds
Hydroxides	Oxidizing agents
Oxides	Chromates, dichromates, chromium trioxide
Peroxidase	Halogens, halogenating agents, hydrogen peroxides and other peroxides, nitric acid and nitrates, perchlorates and chlorates, permanganates, persulfates
Inorganic azides	Acids, heavy metals and their salts, oxidizing agents
Inorganic cyanides	Acids and strong bases
Inorganic nitrates	Acids, metals, nitrates, sulfur
Organic nitrates	Acids, oxidizing agents
Inorganic sulfides	Acids
Organic compounds	Oxidizing agents
Organic acyl halides	Bases, organic hydroxy compounds
Organic anhydrides	Bases, organic hydroxy compounds
Organic halogen compounds	Aluminum metal
Organic nitro compounds	Strong bases
Oxidizing agents	Flammable, combustible materials reducing agents, e.g., zinc, alkaline metals, oxidizing agents
Powdered metals	Acids, oxidizing agents

Specific Chemical Waste Incompatibilities

Chemical	Keep separate from:
Acetic acid	Chromic acid, nitric acid hydroxyl compounds, perchloric acid, peroxides, permanganates
Acetylene	Chlorine, bromine, copper, fluorine, silver, mercury
Alkali metals	Water, carbon tetrachloride and other chlorinated hydrocarbons, halogens, alcohols, aldehydes, ketones, acids
Ammonia	Anhydrous mercury, chlorine, calcium hypochlorite, hydrofluoric acid, iodine, bromine
Ammonium nitrate	Acids, metal powders, chlorates, nitrites, sulfur, flammable liquids, finely divided organic combustibles
Aniline	Nitric acid, hydrogen peroxide
Bromine	Ammonia, acetylene, butadiene, butane, methane, propane or other petroleum gases, hydrogen, turpentine, benzene, sodium carbide, finely divided metals
Carbon	Activated calcium, hypochlorite, all oxidizing agents
Chlorates	Ammonium salts, metal powders, sulfur, finely divided organic combustibles
Chromic acid	Acetic acid, naphthalene, camphor, sulfur, glycerine, flammable liquids in general, turpentine, alcohol
Chlorine	Ammonia, acetylene, butadiene, butane, methane, propane or other petroleum gases, hydrogen, turpentine, benzene, sodium carbide, finely divided metals
Chlorine dioxide	Ammonia, methane, phosphate, hydrogen sulfide
Flammable liquids	Ammonium nitrate, chromic acid, hydrogen peroxide, nitric acid, sodium peroxide, halogens
Hydrocarbons	Fluorine, chlorine, bromine, chromic acid, sodium peroxide
Hydrocyanic acid	Nitric acid, alkali
Hydrofluoric acid	Aqueous and anhydrous ammonia
Hydrogen peroxide	Copper, chromium, iron, most metals or their salts, oxidizing agents, alcohols, acetone, organic materials, aniline, flammable liquids, nitromethane
Hydrogen sulfide	Fuming nitric acid, oxidizing agents
Iodine	Acetylene, ammonia, hydrogen
Mercury	Acetylene, fulminic acid, ammonia
Nitric acid	Acetic acid, aniline, chromic acid, hydrocyanic acid, hydrogen sulfide, flammable liquids, flammable gases
Oxalic acid	Silver, mercury
Perchloric acid	Acetic anhydride, alcohol, paper, wood, bismuth and its alloys
Potassium	Carbon tetrachloride, carbon dioxide, water
Potassium chlorate	Sulfuric acid and other acids
Potassium permanganate	Glycerin, ethylene glycol, benzaldehyde, sulfuric acid
Silver	Acetylene, oxalic acid, tartaric acid, ammonium compounds
Sodium	Carbon tetrachloride, carbon dioxide, water
Sodium peroxide	Ethyl or methyl alcohol, glacial acetic acid, acetic anhydride, benzaldehyde, carbon bisulfite, glycerin, ethylene glycol, ethyl acetate, methyl acetate.
Sulfuric acid	Potassium chlorate, potassium persulfate, potassium permanganate