

CHEMICAL STORAGE PROCEDURE

Approved by: Academic Coordinating Committee

Authorizer: Occupational Safety Manager

Reference Code: OSP-034 / O31_V1

Effective Date: 7/17/2013

PURPOSE:

The purpose of this procedure is to establish a set of minimum standards and provide guidance regarding safe storage of hazardous chemicals. This procedure was developed in accordance with Conestoga's directive on health and safety to ensure compliance with Ontario Occupational Health and Safety regulations and the Ontario Fire Code.

SCOPE:

This procedure applies to all hazardous chemicals stored on Conestoga sites and to all members of the Conestoga Community, including employees, students, guests, visitors and contractors, who work with hazardous chemicals.

DEFINITIONS:

Combustible Liquid

A liquid having a flash point at or above 37.8° C. These are subdivided in Class II and Class IIIA liquids.

Flammable Liquid

A liquid with a flashpoint below 37.8°C and lowering a vapour pressure not more than 275.8kPa (absolute) at 37.8°C.

Flash Point

The lowest temperature at which a flammable liquid, within a container, gives off enough vapour to form an ignitable mixture with air near the surface of the liquid.

General Storage Area

Indoor storage area (any room, space, cabinet) where commodities or plastics are stored in piles, on pallets, on shelves or in bin boxes or racks for departmental, laboratory or individual use.

Hazardous Products

Products regulated by the WHMIS regulation (Ont. Regulation 860).

MSDS

Material Safety Data Sheet. A document required under WHMIS regulation containing specific data about hazardous material properties and safe handling procedures.

WHMIS

Workplace Hazardous Materials Information System. A Canada-wide information system that deals specifically with safe management and use of hazardous materials legislated by both federal and provincial governments.

RESPONSIBILITIES:

Employer (Conestoga)

- Ensure workers who work with or in proximity to controlled products receive training in the procedures for the safe use, storage, handling and disposal of a controlled product.
- Provide Personal Protective Equipment as necessary.

Supervisor

- Ensure workers are complying with rules and regulations.
- Establish and maintain current inventory and ensure MSDSs are forwarded to the Occupational Safety Office for database inventory and update.
- Ensure all hazardous products are labeled and stored correctly.
- Ensure contractors/sub-contractors comply with policies and procedures.

Worker

- Comply with the proper use and storage of controlled and hazardous products.
- Participate in WHMIS training as required.
- Follow all labeling requirements.
- Report to supervisor any contraventions.

Occupational Safety Office

- Provide assistance when required regarding materials, training, storage, etc.
- Maintain MSDS database.
- Review training requirements.

PROCEDURE:

General

- Containers of corrosive chemicals shall be stored in trays large enough to contain spills or leakage.
- Chemicals shall be stored by reactive class (i.e., flammables with flammables, oxidizers with oxidizers).
- Incompatible chemicals shall be physically separated from each other.
- MSDSs and chemical inventory shall be reviewed annually in coordination with the Occupational Safety Office.
- Chemicals shall be transported in an appropriate manner (i.e., propane tanks on a cart and chained, bottle carriers for glass bottles).
- Spill kits shall be accessible and in proximity to chemical storage areas and storage areas shall be designed to contain spills, including the water used for firefighting purposes.
- All containers shall be properly labeled with appropriate WHMIS supplier labels or workplace labels.
- Labels shall be firmly attached to the containers and be legible.
- Requests for special consideration of non-compliance or large quantities of chemical storage shall be approved by the Occupational Safety Office.
- Storage locations shall be equipped with Type B fire extinguishers in accordance with Section 6 of the Ontario Fire Code.
- In all cases, the MSDS shall be consulted for specific instruction on safe storage and incompatibility information.
- Areas that have chemicals in use or stored shall be equipped with an eye-wash station or deluge shower as required by the MSDS.
- Ventilation shall be used as required by the MSDS.

Storage Areas

- Storage areas shall be secured when not in use and accessible to authorized personnel only.
- Storage areas shall be well illuminated.
- Open flames, smoking and localized heating units shall not be permitted near storage areas.
- Mixing of chemicals on surfaces used for storage shall not be allowed.
- Aisles surrounding storage areas shall be free from obstruction and other tripping hazards.

Shelf Storage

- Large or heavy bottles and containers shall be stored on shelves no higher than waist level.
- Empty bottles shall be removed from the shelves.
- Shelving units shall be securely fastened to the wall.
- The weight limit of the shelves shall not be exceeded.
- Shelves shall be clean and free from chemical contamination.

Storage Containers

- Storage containers shall be inspected periodically for rust, corrosion and leakage.
- Damaged container(s) shall be replaced or repaired immediately.
- Chemicals shall be stored in sealed containers, not beakers or open vessels.
- Stoppers shall be easily removed from bottles or containers.
- Eye-dropper bottles shall not be used for storing corrosive or water-reactive chemicals.

Flammable Liquids Storage Cabinets

- Storage cabinets for flammable liquid containers serve a number of purposes:
 - To protect flammable liquids against flash fires;
 - To prevent excessive internal temperatures in the presence of fire; and
 - To contain spilled flammable liquids to prevent the spread of fire.
- Flammable liquid storage cabinets shall conform to ULC-C1275.
- It is not a requirement for flammable storage cabinets to be ventilated. If there is ventilation in the cabinet the ventilation opening shall be sealed with materials providing fire protection at least equivalent to that for the construction of the cabinet or the cabinet shall be vented outdoors using appropriate fire protection piping.
- Cabinets shall be conspicuously labeled, indicating that the cabinet contains flammables, to keep open flames and sources of ignition away.
- Containers stored in the cabinet shall be closed and well-sealed.
- The permissible storage capacity shall not be exceeded for the flammable storage cabinet or for the fire compartment in which the cabinet(s) is/are located.
- Flammable and combustible materials shall not be stored with non-compatible materials.
- All electrical equipment in flammable liquid storage locations shall conform to the Ontario Electrical Safety Code.
- Flammable cabinets shall be located at least 6 feet away from exits.

Maximum Permissible Quantity Storage for Flammable Liquids

A Maximum quantity of 500 litres of flammable and combustible liquids may be stored in an approved cabinet, of which not more than 250 litres may be Class 1 liquids (Flashpoint below 37.8°C and vapour pressure below 275kPa absolute at 37.8°C). In addition, in educational institutions, the total quantity of flammable and combustible liquids stored in cabinets in a single fire compartment may not exceed the quantity permitted for one cabinet.

Chemical Storage

Acids

- Large bottles shall be stored on a low shelf or in acid cabinets.
- Oxidizing acids shall be segregated from organic acids, flammable and combustible materials.
- Acids shall be separated from caustics and from reactive metals such as sodium, magnesium and potassium.
- Acids shall be segregated from chemicals which can generate toxic gases on contact such as sodium cyanide and iron sulphide.

Caustics

- Caustics shall be stored away from acids.
- Solutions of inorganic hydroxides shall be stored in polyethylene containers.

Oxidizers

- Oxidizers shall be stored away from flammable, combustible and reducing agents (e.g., zinc, alkaline metals).
- Oxidizers shall not be stored on combustible surfaces.

Toxic Materials

- In all areas where toxic materials are in use, a work instruction and training shall include the use of Personal Protective Equipment and fume hoods.
- Toxic materials shall be stored separately from flammable liquids.

Compressed Gases

- Compressed gases shall be stored away from heat and ignition sources.
- Cylinder temperature shall not be elevated.
- Cylinders shall be stored in an upright position and care taken to avoid damaging valves with caps in place. All cylinders shall be stored with straps, chains.
- Full containers shall be separated from empty ones.

Explosives

- Explosives shall be stored in a cool, dry area protected from shock, elevated temperature or rapid temperature changes.
- The site shall be remote from other storage/activities.

Peroxide Forming Chemicals

- Peroxide forming chemicals shall be stored in airtight containers in a dark, cool and dry place.
- Peroxide forming chemicals shall be properly disposed of prior to the date of expected peroxide formation.
- Chemicals shall be labeled with date received and date of disposal.

REFERENCES:

[Occupational Health and Safety Act, R.S.O. 1990](#), Section 37(1)

[Industrial Establishments Regulation, \(R.R.O 851/90\)](#), Sections 22, 121, 122

National Fire Code of Canada 2005: Subsection 3.233: General Indoor Storage Table 3.2.7.6: Separation Chart for Storage of Dangerous Goods – Classification 3: Flammable and Combustible Liquids

[Workplace Hazardous Materials Information System \(WHMIS\) Regulation, \(R.R.O 860/90\)](#)

[Building Code Regulation \(Ontario 403/97\)](#)

[Designated Substances Regulation \(Ontario 490/09\)](#)

REVISION LOG:

Policies and Procedures Committee – July 15 2013

Academic Coordinating Committee – July 17 2013