UNITY HEALTH TORONTO

Caring hearts. Leading minds.

Title:	**Chemical Storage- Research**		
Document Type:	Procedure	Document #:	UHT0001950
Program:	Research Facilities	Effective Date:	November 17, 2014
Executive Sponsor:	Vice President, Research and Innovation	Last Reviewed:	January 01, 2019
Owner/Lead:	Director Research Facilities, Research Biosafety Officer	Last Revised:	October 6, 2022
Approval Body:	Research Biosafety Committee	Review Cycle:	3 year
Applicable Sites:	☐ **Unity Health** ☐ **Providence** ☐ **St. Joseph's** ☒ **St. Michael's**		
Keyword(s):	Chemicals, storage, safety, SDS		

1.0 PURPOSE

A lot of hazardous chemicals are used in a laboratory setting; hence it is essential for everyone's safety that such chemicals are stored appropriately and according to compatibility. Safety Data Sheets (SDSs) contain general recommendations for the safe storage of a hazardous product. These recommendations provide a good starting point for deciding where and how the product should be stored. The storage conditions in a workplace should be based on workplace-specific factors: the hazards of the product (health, fire, and reactivity), the amounts in storage, types of containment (bulk or smaller containers), and the way the product is used.

2.0 PROCEDURE

Guidelines-

- Always read the label before handling and storing controlled products.
- Avoid arranging alphabetically – unless chemicals have already been separated by incompatibilities.
- Ensure that incompatible chemicals are not stored in close proximity to each other.
- These are general guidelines to follow – however one should note that in some instances chemicals of the same category may not be compatible (e.g. acetic acid is not compatible with chromic, nitric or perchloric acid).
- Keep an inventory of materials in storage and their amounts and locations.
- Keep storage area separate from work areas and emergency exits.
- Ensure all stored materials are properly labeled. Always put a date of receiving or opening on the chemicals.

- Ensure everyone is aware of emergency procedures.
- Ensure appropriate spill control and fire protection equipment is readily available in or near the storage area.
- Restrict access to chemical storage areas to authorized personnel only. Keep highly hazardous materials under lock and key.
- Maintain good housekeeping and minimize clutter.
- Inspect storage area and containers regularly for signs of leaks, corrosion or other damage. Use first-in, first-out system (oldest chemicals first); to avoid degradation of older chemicals and their containers.
- Do not store glass chemical containers on the floor (without secondary containment) or window ledges.
- Avoid storing all chemicals above shoulder height. Large containers (1 gal or larger), liquids, and corrosive materials should be stored no higher than eye level.
- Frequently inventory chemicals stored in refrigerator/freezers and defrost occasionally to prevent chemicals from becoming trapped in ice formations.
- Use secondary containment, such as polyethylene or stainless steel trays, to separate incompatible chemicals stored in the same area and to provide spill containment. Use secondary containers for storage of solvents and concentrated acids and bases. Use secondary containers during storage of all hazardous chemicals on the floor.
- Store oxidizers separate from other chemicals.
- Check the expiry date of chemicals, this is especially important for peroxide forming chemicals that should not be stored for more that year once opened (Diethyl ether, Dimethyl ether, 1,4-Dioxane, Ethylene glycol, dimethyl ether, perchloric acid etc.)

Overview-

Category	Guideline	Example
Flammables	• Store in grounded flammable liquid cabinet • Keep away from oxidizing material	Acetone Ethanol Toluene DMSO
Non- flammables	• Store in cabinet • May be stored with flammables • Separate from oxidizers	Carbon tetrachloride Ethyleneglycol Perchlorethylene
Acids	• Store in cabinet of non-combustible material	Nitric acid Hydrochloric acid Phosphoric acid

	• Separate oxidizing acids, organic acids and mineral acids • Use plastic bins to provide separate areas in the same cabinet • Separate percholoric acid from all other acids using bins • Separate from caustics, cyanides, sulfides	Sulfuric acid
Caustics	• Store in dry area • Separate from acids	Ammonium hydroxide Sodium hydroxide Potassium hydroxide
Water reactive	• Store in cool and dry area • Separate from aqueous solutions	Metallic Sodium Metallic Potassium Metallic Lithium
Oxidizers	• Store in non-combustible cabinet • Separate from flammable and combustibles	Benzoyl peroxide Potassium permanganate Sodium hypochlorite
Oxidized compressed gas	• Store securely and away from flammable compressed gasses	Oxygen, chlorine, nitrous oxide
Non- oxidized compressed gas	• Store in well-ventilated area, secured and separate from oxidizing compressed gases	Nitrogen, hydrogen, Carbon dioxide
Non-volatile, non-reactive solids	• Store in open cabinet or open shelves with edge guard	Agar Sodium chloride Sodium bicarbonate
Cytotoxic and highly toxic chemicals	• Store under lock and key	Doxorubicin Sodium Arsenite

3.0 DEFINITIONS

Term/Acronym	Definition
SDS	Safety Data Sheet

4.0 REFERENCES

https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/occupational-health-safety/whmis-quick-facts-storage-requirements-health-canada-2008.html

https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/occupational-health-safety.html

Version	Approval/Sub-approval body	Approval date
01	Director, Research Facilities	October 6, 2022
02		
03		