Chemical Risk Management Protocol

Safe Methods of Use (SMOU)

UN Class 8 Corrosives

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1 Purpose

This Safe Method of Use (SMOU) applies to principal investigators (PIs), laboratory managers, designated laboratory person (DLPs), and all staff and students who direct or participate in the use of UN Class 8 corrosives at the University of Auckland.

2 Disclaimer

The Safety Data Sheet (SDS) should be consulted for specific information about the chemical you will be using. The Gold FFX SDS Database is available on the Library database. Instructions on how to source this information can be found on the Health, Safety and Wellbeing Databases website:

https://www.auckland.ac.nz/en/health-safety-wellbeing/health-safety-topics/laboratory-safety/chemical-safety/databases.html

For advice on using hydrofluoric acid, please refer to "SMOU Hydrofluoric Acid".

Please read this SMOU in conjunction with the Chemical Risk Management Guidelines.

Note: 'Shall' denotes a mandatory requirement and 'should' denotes a recommendation.

3 Classification

This SMOU covers the use of UN Class 8 corrosives. In the other chemical classification systems of NZ, this includes:

HSNO Class	Corresponding GHS 7 Class
8.1A	corrosive to metals Category 1
8.2A-C	skin corrosion Category 1A-1C
8.3A	serious eye damage Category 1

4 Storage

- HSNO Class 8 chemicals *shall not* be stored with HSNO Class 4.3 substances (reactive with water), HSNO Class 5.1 oxidisers, or HSNO Class 5.2 Organic Peroxides.
- Acids *shall* be stored separately from alkalis.
- Strong mineral acids can react violently with organic chemicals and bases and *shall* not be stored with bases or organic chemicals.
- All containers of strong mineral acids and phosphorous and sulphur halides *shall* be checked annually to ensure adequate labelling.
- Refer to the Chemical Risk Management Guideline "3. Chemical Lifecycle Management" for specific recommendations concerning perchloric and nitric acid.

5 Use

- Fume hoods shall always be used when handling concentrated acids
- When diluting acid, ALWAYS add acid to water ("A comes before W") not water to acid.

6 Personal Protective Equipment

- Safety Glasses and/or face shields shall always be worn when handling any corrosive liquid or solid.
- Face shields, plastic coats and rubber gloves should be worn when handling large quantities of acids.

7 Disposal

- Concentrated acids or bases shall never be discharged to sewer.

- Disposal of concentrated acids or bases shall be undertaken by a licensed chemical waste contractor.
- Refer to the Chemical Risk Management Protocol Guideline "2. Using Chemicals" section 14 for more disposal information.
- Please contact the Chemical Safety Advisor for advice regarding disposal.

8 Spills

Refer to the Chemical Risk Management Protocol Guideline "2. Using Chemicals" section 11 and the specific SDS for full spill response instructions.

- Use gloves compatible with chemical you are handling.
- Neutralise acids with a large volume of sodium bicarbonate or sodium carbonate which will neutralise and absorb liquid leaving a solid which can be swept up.
- Neutralise alkali spills with dilute acetic acid and absorb with absorbent or sawdust.
- Use absorbent material in spill kits to wipe up solvent – wiping from outside of spill toward centre.
- Place used absorbent material in impermeable/airtight container.
- Inform Laboratory Manager and arrange for immediate disposal.

Appendix 1: Representative List of Corrosives

Organic Acids and derivatives that generate acidic solutions in water

Acetic acid	Acetic anhydride	Acetyl Bromide
Acetyl iodide	Benzenesulfonyl chloride	Benzoyl chloride
n-Butyric acid	n-Butyric anhydride	Bromoacetic acid
NN-Dimethylcarbamoyl chloride	Diphenylmethyl Bromide	Formic acid
Propionic acid	Propenoic acid	Propionic anhydride
Thioglycolic acid	Thymol	Toluene trichloride
Trichloroacetic acid	Trifluoroacetic acid	

Mineral Acids

Fluoroboric acid	Fluorophosphoric acid	Fluorosilicic acid
Hydrobromic acid	Hydroiodic acid	Hydrochloric Acid
Hydrofluoric acid	Hydrophosphorous acid	Nitric Acid
Orthophosphoric acid	Sulphuric Acid	Sulphurous acid
Tetrachloroauric acid		

Other Acidic chemicals

Aluminium bromide	Iodine chloride	Sodium hydrogen difluoride
Aluminium chloride	Iodine trichloride	Sulfur trioxide
Ammonium hydrogen difluoride	Iron (III) chloride	Sulfuryl chloride
Antimony pentachloride	Phosphorous pentabromide	Thionyl chloride
Antimony pentafluoride	Phosphorous pentoxide	Tin (IV) chloride
Antimony trichloride	Phosphorous trioxide	Vanadium oxytrichloride
Boron Tribromide	Phosphoryl bromide	Vanadium tetrachloride
Boron trifluoride	Phosphoryl tribromide	Vanadium trichloride
Bromine	Phosphoryl trichloride	Zinc chloride
Chromium oxychloride		Potassium hydrogen sulfate
Copper (II) chloride		Silicon tetrachloride

Bases

2-(2-Aminoethylpiperazine)	Ethanolamine	Potassium sulfide
2-Dimethylaminoethanol	Ethylenediamine	Propylenediamine
Ammonia	Hexamthylenediamine	Sodium hydroxide
Ammonium cerium sulphate	Hydrazine	Sodium hypochlorite
Ammonium polysulphide solution	Hydrazine hydrate	Sodium sulfide
Caesium hydroxide	Lithium hydroxide	Tetraethylenepentamine
Cyclohexylamine	N,N-Diethylenediamine	Tetramethylammonium hydroxide
Di(n-butyl)amine	N,N-Dimethylbenzylamine	Tributylamine
Dicyclohexylamine	N,N-Dimethylcyclohexylamine	Triethylenetetramine
Diethylenetriamine	N-aminoethylpiperazine	Trimethylcyclohexylamine
Diproylenetriamine	Potassium hydroxide	Trimethylhexamethylenediamine