Aqueous Waste Disposal

Purpose

The purpose of this procedure is to prevent the pollution of UBC's sanitary sewer system and the environment, by routine and planned aqueous waste discharges from research activities. Following this procedure will also ensure compliance with all applicable legislation.

Scope

This procedure applies to planned and routine discharges of aqueous waste to the sanitary sewer (sink disposal) from research and teaching laboratories at the UBC Point Grey campus.

Off-campus research laboratories must follow specific hospital sites pollution prevention plans in addition to these guidelines.

Discharges from operational activities are covered under a separate procedure - "UBC Pollution Prevention Sanitary and Storm Sewers".

Background

Discharges of hazardous materials, oil and grease to the sanitary sewer can compromise the health and safety of staff managing the drain system and/or damage the operation of the sewers and sewage facilities.

Metro Vancouver's Sewer Use Bylaw 299, 2007 regulates pollutants that are discharged into sanitary sewers to protect the environment as well as human health and safety. This bylaw specifies prohibited and restricted pollutant discharges and includes monitoring and permit requirements for non-domestic discharges.

Small amounts of waste solutions that are not regulated because they do not exhibit any of the hazardous characteristics (toxicity, corrosivity, flammability, or reactivity) as defined by BC Hazardous Waste Regulation, 2009 and is not classified under the Transportation of Dangerous Goods (TDG) Regulations. If this waste is not restricted or prohibited by the Metro Vancouver Sewer Use Bylaw it can be disposed of via the sanitary sewer.

Some diluted aqueous wastes may have very low concentration components classified as health hazards under the Workplace Hazardous Materials Information System (WHMIS) or the Globally Harmonized System (GHS). These aqueous wastes may be toxic to aquatic life (but are not regulated under TDG class 9), or may have high volume, high frequency, or are ongoing discharges - thus cannot be disposed safely down the drain.

Refer to the SRS Environment Pollution Prevention - Sanitary Sewer webpage for detailed information.

Procedure

A. Aqueous Chemical Waste

- Complete the **Aqueous Waste Profile** (sample excel sheet shown below) for diluted liquid chemical waste streams which may not be considered hazardous.
- Wait for SRS Environmental Protection and ESF to assess and determine if your waste streams of concern can be disposed via sanitary sewers.
    - Aqueous solutions may need to be further tested to determine if they meet the Hazardous Waste Regulation Schedule 1.2 effluent standards requirements
    - e.g. toxicity test, such as limit bioassay- 50% survival of Rainbow trout after 96 hours
- Use the online Chemical Waste Inventory System (CWIS) to dispose of any solutions that are potentially hazardous, toxic to aquatic life, of high volume/frequency and ongoing.

- Note: in general, if a material is hazardous it is also disposed as hazardous waste.
- Contact the Environmental Protection Advisor at 604-822-9840 if you have questions.

B. Bleach (Sodium Hypochlorite NaClO)

- Neutralize all bleach solutions with very high pH (11-14) prior to sink disposal.
  - Bleach can be quite damaging to plumbing if used in excess or if inappropriately disposed of.
- pH must be tested for each new experimental set-up.
  - A common tissue culture protocol requires decontamination of cells prior to disposal using 10% fresh bleach added to the culture and media.
  - In general, culture media exhibits a buffering effect on bleach and the resulting pH is in the range of 6-8, but this depends on the media.
  - Bleach is also used to deactivate and/or decontaminate human blood and body fluids.
- Use safe and practical bleach neutralizers: sodium bicarbonate ($NaHCO_3$), sodium metabisulphite ($Na_2S_2O_5$), sodium bisulphite ($NaHSO_3$), sodium sulphite (Na_2SO_3), sodium thiosulphate ($Na_2S_2O_3$), 3% hydrogen peroxide (H_2O_2).
  - The use of ¼ to 1 teaspoon of solid neutralizer is typically sufficient to neutralize 1-4L of volume of 10% bleach solution.

C. Acids and Bases

- Neutralize corrosive waste (acids and bases) that does not exhibit any other hazards to an acceptable pH range (5.5-10.5) before going down the drain.
- Exercise caution and only neutralize (strong) acids and bases if it is safe to do so - the neutralization of an acid and a base is an exothermic reaction.
- Use appropriate and safe neutralizing agents, e.g. sodium bicarbonate or sodium carbonate for acids, citric acid for bases
  - Check the Safety Data Sheets (SDS) for more information.
  - Do NOT use solid spill neutralizers (Spill-X-A and Spill-X-C), as they are not suitable for drain disposal.

D. Formalin Waste

- Collect formalin aqueous waste (e.g. mixtures of< 4% paraformaldehyde, and phosphate-buffered saline solutions) for disposal at ESF.
- Use clear/white plastic containers with caps/lids (preferred) or red jerry cans for collection.
- Attach the **Toxic Waste Disposal Tag (Brown)** shown below.
- Affix your generator barcode.
- On the tag mark the correct waste.
- Contact ESF at 604-822-1285 if you have additional questions.

E. Paint Aqueous Waste

- Check if paint contaminated aqueous waste to determine if it meets the Sewer Use Bylaw requirements and is therefore fit for drain disposal – waste must be assessed and tested.
- Follow the “Disposal of Waste Paint Procedure” if the waste is determined to be hazardous.
- Contact ESF at 604-822-1285 for additional questions.

Aqueous Waste Profile

Drain Disposal Assessment Tool: Certain laboratory liquid waste streams which are not hazardous (i.e. not toxic, corrosive, flammable, or reactive), **may** fit drain disposal under certain conditions.
Complete the online **aqueous waste profile** to allow Environmental Services to determine if the waste stream of concern can be disposed via the sanitary sewer.

*Refer to the SRS **Pollution Prevention - Sanitary Sewer** webpage for the online excel sheet and see summary below.*

Contact Information							
Chemical Name(s)							
Contaminants (per HWR+MV Bylaw+WHMIS/GHS)	Conc %	Volume	Freq	pH	LD50	Health hazards, Marine pollutant	SDS
Corrosive							
Toxic							
Phenols, BETX (benzene, toluene, xylene), PAH's (naphthalene), etc							
Flammable							
Oxidizing							
Dangerously Reactive							
Oil & Grease							
Metals (As, Cd, Hg, Pb, Ag, Zn, etc)							
Other (cyanide, sulphide, etc)							
Large particles							

NOTE: Dilution of waste for the purpose of meeting concentration limits is NOT ALLOWED.

Toxic Waste Disposal Tag

TOXIC WASTE

The University of British Columbia, Environmental Services Facility

T071900001

Parcel Identification No:

TOXIC WASTE

T071900001

Parcel Identification No:

GENERATOR TO COMPLETE THIS SECTION ONLY

AFFIX IDENTIFICATION BARCODE LABEL HERE

WASTE CONTENT

☐ Toxic Liquid

☐ Toxic Solid

Other _____

Office use only:

Quantity ____ kg ____ 5L ____ 20L ____ 205L

Environmental Services Facility (ESF)
Phone 604.822.1285