

Standard Operating Procedure for the Disposal of Hazardous Chemical Waste and Biological Waste

1. Purpose

- 1.1. This SOP states how hazardous waste, toxic, cytotoxic and chemical wastes, either solid or liquid used and generated in the laboratory, is to be treated and disposed of, in a safe and environmentally sound manner.

2. Scope

- 2.1. It covers the management, monitoring, disposal and remediation of all solid and liquid chemical and biological waste released from the laboratory.
- 2.2. All Lab users shall be responsible for proper handling and use of hazardous substances in accordance with the applicable MSDS/local legislation.
- 2.3. It is applicable to all NERI lab users i.e. anyone who work in the Laboratory

3. Responsibility

- 3.1 The Lab Technologist is responsible for engaging and informing the licensed toxic industrial waste (TIW) collectors on adequate information of the waste
- 3.2 All Lab users must dispose of their waste in the proper waste bins e.g. general waste, chemical contaminated items, sterilized solid waste (this is usually biological waste).

4 Procedure

The below procedures refer to the treatment, handling and the disposal methods for the various wastes that are commonly generated at NERI. These procedures are in line with the NUS Safety and Health Manual.

Liquid Chemical Waste

- 4.1 The liquid chemical waste here refers to hazardous chemical waste like acid, alkali and solvents.
- 4.2 Lab users must pour all liquid chemical waste into labeled plastic carboy that is provided by the laboratory staff.
- 4.3 Lab users shall transport carboy to the chemical store when it is full and collect a new empty replacement.
- 4.4 Record the nature of the waste, research lab and date in the Waste Disposal record.
- 4.5 Use separate containers for each type of hazardous chemical waste. E.g. Acids, Alkalis, Chlorinated solvents and non-chlorinated solvents. Do not mix liquid waste. E.g. Do not mix acid with alkali waste.
- 4.6 Dispose of leftover chemicals from a completed project.
- 4.6.1 Dispose of expired chemicals or for any other valid reason.
Refer to the Chemical Disposal Procedure normally found in the relevant Materials Safety Data Sheet(s) (MSDS). Ask the supplier if you do not have the MSDS.
- 4.6.2 Obtain approval from the PIs, Research Officer or supervisor.
- 4.6.3 Lab Technologist records the list of chemicals to be disposed on the monthly NERI Chemical Disposal Form.

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- 4.6.4 Lab technologist submits the monthly NERI Chemical Disposal form to the waste disposal company and requests for a quotation. After obtaining a quotation, lab technologist submits the order request on SESAMi which has to be approved by the lab manager. Once approved, a purchase order will be activated.
- 4.6.5 Lab Technologist submits the purchase order to the waste disposal company and schedules a date for waste collection. Lab Technologists submits an online consignment note on NEA's Waste & Resource Management System (WRMS) (<https://wrms2.nea.gov.sg/security/process/WRMS/Index>).
- 4.6.6 Lab Technologist prints out **2** copies of the consignment note. Both copies must be endorsed on the day of collection. One copy will be submitted to the waste disposal company and the other copy is kept by lab technologist.

Segregation and Storage

- 4.7 All chemical wastes are temporarily stored in the chemical store room prior to disposal with proper secondary containers.
 - 4.7.1 All hazardous waste must be handled with caution based on their hazards.
 - 4.7.2 All the disposal records and copies of consignments must be filed into the chemical waste disposal records folder and kept for at least 1 year.

Contaminated Sharps

- 4.8 All needles or broken syringes shall be disposed in the Sharps bin.

Solid Biological Waste and Liquid Biological Waste

- 4.9.1 All culture media (solid biological waste) shall be collected in the biohazard bag and this shall be sterilized with double-bag and sealing in a general waste bag.
- 4.9.2 Liquid biological waste must be treated with a suitable concentration of liquid bleach OR autoclaved to inactivate any micro-organisms. The treated waste can be poured down the drain followed by copious amounts of water (at least 4 times the volume of liquid waste).

5. Safety Measures

Users are required to wear proper PPE when handling chemicals. At minimum a laboratory coat, suitable gloves and safety glasses.

6. References

Refer to NUS Laboratory Chemical Safety Manual, Section 7.7 Chemical Waste Disposal (https://nusu.sharepoint.com/sites/corporate/procedures/safety_and_health/Chemical-Safety-Manuals/Manual-chemical-safety.pdf)

Refer to NUS Laboratory Biorisk Management Manual, Chapter 7, Biological Waste Decontamination and Disposal

(https://share.nus.edu.sg/corporate/procedures/safety_and_health/Biological-Safety-Manuals/Manual-lab-biorisk-management.pdf)

Refer below for licensed TIW collectors

(<https://www.nea.gov.sg/our-services/pollution-control/hazardous-waste/toxic-waste-control/toxic-industrial-waste>)