1. OBJECTIVE

This standard operating procedure outlines the process in which biological wastes generated in the research laboratories of Department of Medicine located at MD, MD6 and NUH, are to be treated and disposed of in a safe and environmentally sound manner to the Waste Collection Room.

2. SCOPE

This biological waste disposal procedure is applicable to all staff and students and details how the biological waste are to be transported from the laboratory to the Waste Collection Room.

3. RESPONSIBILITIES AND ACCOUNTABILITY

3.1 The principal investigator is to provide on-the-job training for all laboratory staff and students for the safe disposal of biological waste and ensure that they abide by the guidelines established in accordance to the applicable environmental legislations. The principal investigator shall also ensure that all wastes are segregated and stored at the designated storage areas and maintain good housekeeping for all biological wastes stored in the common area under his/her jurisdiction.

3.2 Staff and students working with biological materials must be aware of potential hazards, obtain proper training on biological waste disposal and must be knowledgeable of this SOP.

3.3 YLLSOM Research Facilities Management (RFM) team is responsible for liaising with the licensed waste service contractor, on the relevant waste disposal requirements of MD1 and MD6 building.

4. BIOLOGICAL SAFETY TRAINING

All individuals handling biological waste are required to complete the relevant safety training (Biological Safety and Safe Handling of Human Tissue and Fluids) via IVLE @ https://ivle.nus.edu.sg/.

5. PROCEDURE

5.1 Safety Precautions

a. Wear proper personnel protective equipment including long sleeved lab coat, latex gloves, safety goggles and covered toe shoes when handling biological waste.
b. All biohazard wastes are to be placed in double yellow plastic bag with biohazard sign printed on it.
c. Biohazardous wastes must be classified based on their treatment or disposal methods (NUS Laboratory Biorisk Management Manual, v4.2, Appendix B.4). The

Faculty Safety & Health Officer or the Office of Safety, Health and Environment (OSHE) shall assist the principal investigator in determining waste and hazard classification, if required.

d. Sharps should be placed in appropriate sharps containers.
e. If the biohazardous waste is contaminated with chemical agent, the waste is to be treated as chemical waste (NUS Laboratory Biorisk Management Manual, v4.2, Section 8.4.1).

Appendix B.4 Classification of Biohazardous Wastes Based on Treatment or Disposal Methods

	Classification	Examples
1	Sharps	Blood-drawing equipment, needles, syringes, slides, Pasteur pipettes, capillary tubes, broken glass and scalpel blades.
2	Autoclavable wastes	All laboratory specimens or materials consisting of, containing, or contaminated with blood, plasma, serum, urine, faeces or other human or animal tissues or fluids, as well as inoculated media, cultures, contaminated paper wastes such as wrappers and towels and other potentially infectious materials
3	Wastes for incineration or cremation	Animal carcasses, human tissues, organs, etc.
4	Chemical decontaminated wastes	Wastes that cannot be autoclaved.
5	Environmentally benign and not contaminated with infectious agents for disposal into sewer	Uninoculated liquid medium, nutrient fluids, tissue cultures that do not contain any infectious agents.

5.2 Biohazardous Waste Disposal

a. All wastes containing biohazardous material should be handled with gloves and placed in double yellow plastic bag with biohazard sign printed on it. Indicate name of principal investigator, laboratory location, date of disposal and contact number on each waste bag.
b. In MD1 and MD6 labs, the double yellow biohazard bags must be disposed in the 240L Biohazard Bin provided by the licensed waste collection company. When the bin is filled up, fasten strap buckle before transporting to the Biohazardous Waste Holding Area. Use cargo/service lifts for bin transportation on a thrice weekly basis for MD6: Tuesdays, Wednesdays and Fridays between 9am and 10am, except public holidays; twice weekly basis for MD1: Monday and Thursday between 9am to 1pam, except public holidays. The biohazard waste disposal form must be filled by the laboratory personnel at the Biohazardous Waste Holding Area upon depositing of the full biohazard bins and empty bins will be collected and transported back to the laboratory using the cargo/service lift. The bin is then collected regularly by licensed contractor arranged by YLLSOM Research Facility Management (RFM) team. For enquires: medbox50@nus.edu.sg.
c. In NUH labs, the double yellow biohazard bags are collected by the licensed waste collector from the laboratory.
d. Liquid biohazardous wastes should be decontaminated with the use of an appropriate chemical disinfectant (e.g. presept solution).

5.3 Sharp Waste Disposal

a. Biologically contaminated sharps are to be handled separately and differently from the ordinary trash.
b. All contaminated sharps include blood-drawing needles, syringes, slides, broken glass and scalpel blades. Contaminated needles shall not be recapped or separated from syringes prior to disposal.
c. Sharps containers should be impervious, rigid and puncture proof.
d. Filled sharps containers should be sealed once they reach the ¾ full mark and disposed of through the licensed biohazardous waste contractor.

5.4 Cytotoxic Waste Disposal

a. Cytotoxic solid waste (Ethidium Bromide or Safeview Gel) should be collected in the bucket labeled 'Cytotoxic Waste' with proper double purple bags.
b. Cytotoxic liquid wastes are collected in carboys container provided by YLLSOM RFM team with 'Cytotoxic Waste' labeled. The carboys is placed in a secondary container.
c. Cytotoxic waste should not be disposed in yellow biohazard bags as they are incinerated in different temperatures at the waste disposal company.
d. Both cytotoxic solid and liquid wastes are to be collected by the licensed waste contractor arranged by YLLSOM RFM team.

5.5 Non Infectious and Environmentally Benign Waste

Materials that can be directly discarded into the sewer include nutrient fluids, tissue culture, uninoculated medium, serum, blood, plasma and tissue culture provided these specimens have been chemically decontaminated and the chemical is not prohibited from discharge into the sewer.

6. ACCIDENTS AND INCIDENTS REPORTING

Accidents resulting in injuries or spill incidents must be reported to the Principal Investigator and/or laboratory safety lead immediately after first aid is applied.

Seek medical attention when necessary at the University Health Centre or proceed to the Accident & Emergency units of National University Hospital after office hours.

All incidents or accidents have to be notified to OSHE within 24 hours via the online NUS Accident and Incident Management System (AIMS) @https://inetapps.nus.edu.sg/osh/portal/eServices/ehs360_aims.html. The AIMS report can be submitted by the injured staff/student, safety leads, his or her supervisor/representative if the staff or student is unfit/unable to do the initial report.

7. REFERENCE

NUS Laboratory Biorisk Management Manual
https://share.nus.edu.sg/corporate/procedures/safety_and_health/Biological-Safety-Manuals/Manual-lab-biorisk-management.pdf

8. REVISION HISTORY

Date Revised	Version No.	Author	Summary of Revisions
06-03-2016	001	Seet Bee Leng / Yeo Soh Bee	
01-10-2016	002	Seet Bee Leng / Yeo Soh Bee	Section 6: Revised Accident and Incident Reporting System (AIRS) to Accident and Incident Management System (AIMS)