NON-LIVING MODIFIED ORGANISM (NLMO) / OTHER MICROORGANISMS DISPOSAL

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REVISION HISTORY

Revision Number	Revision Date	Description of Amendment / Change

1. OBJECTIVE

The Standard Operating Procedure (SOP) for disposing of the Non-Living Modified Organisms (NLMO) / other microorganisms is to reduce risks and further complications to human health, animal and the environment in the future.

The NLMO / other microorganisms used in the research pose a risk to human beings and the environment. Therefore, it requires the implementation of Biosafety Safety laboratory settings and guidelines for its disposal.

2. SCOPE

This SOP covers all procedures, specifically on the disposal of solid and liquid waste contaminated with NLMO / other microorganisms and the disposal of NLMO / other microorganisms from the Kulliyyah of Science laboratories.

3. DEFINITION

1.	IIUM	-	International Islamic University Malaysia
2.	KOS	-	Kulliyyah of Science
3.	IBBC	-	Institutional Biosafety and Biosecurity Committee
4.	SOP	-	Standard Operating Procedure
5.	SO	-	Science Officer
6.	LMO	-	Living Modified Organism
7.	EQA	-	Environmental Quality Act 1974
8.	PPE	-	Personal Protective Equipment

4. PREREQUISITES

4.1 All laboratory users handling the NLMO / other microorganisms disposal must understand and adhere to the procedures outlined. They must also wear suitable

Personal Protective Equipment such as covered shoes, a lab coat, rubber gloves, masks (when required), and goggles (when required).

Cross-reference with IIUM-KOS-SOP-40: Personal Protective Equipment Management

5. RESPONSIBILITIES

5.1 All laboratory users shall be responsible to comply with the safe operating procedure.

6. PROCEDURES

6.1 NLMO / other microorganisms waste should be inactivated before leaving the facility. The preferred method is autoclaving, and is detailed as follows:

- Biohazard waste: 121°C for at least 30 minutes per bag
- Liquids (contain NON-LMO): 121°C for 25 minutes per gallon
- Glassware (contain NON-LMO): 121°C for a minimum of 25 minutes

6.2 Chemical disinfection (e.g., treatment with household bleach or 70% ethanol) may also be carried out as deemed appropriate or necessary in some cases.

6.2.1 Disposal of NLMO / other microorganisms / solid and liquid wastes contaminated with NLMO:

a) Storage for all non-inactivated waste is restricted within the generating laboratory.
b) NLMO waste should be held in a closed/covered biowaste container and should not be stored longer than 24 hours before inactivation.
c) The wastes should be packed in heavy metal autoclavable plastic bags (Blue/Yellow) with the biohazard symbol prior to autoclaving.
d) The preferred method is by autoclaving the waste at 121°C, 15 psi pressure, for a minimum of 30 minutes. The time required for autoclaving depends on the amount of waste (autoclave load), the presence of water, and the type of container used.
e) Filled or partially filled NLMO waste containers or bags should not be held for more than 180 days.
f) Stock solutions of suitable disinfectants should be maintained in each laboratory for disinfection. Chemical disinfection using (5-10%)

hypochlorite and (Chlorine) may also be used to inactivate or decontaminate the waste.

g) The NLMO waste containers or bags should be packed, clearly labeled and stored following Environmental Quality (Scheduled Wastes) Regulations 2005 (EQSWR 2005).
h) NLMO should be disposed of at prescribed premises only, and disposal inventory shall be maintained up to date and accurate.

6.2.2 Disposal of handling materials:

a) Gloves/paper/tissues/disposable plastics contaminated with NLMO / microorganisms shall be removed before touching other surfaces (e.g., doorknobs, keyboards, handphones).
b) Place the waste handling materials in a solid yellow plastic bag and put them in the biohazard bin.
c) Sharps shall be stored in a sharp bin and disposed of accordingly.
d) Dispose of all the waste from the clean-up of instruments in a suitable bag/bin. The waste shall be handled as per SW regulation in EQA 1974.

Cross-reference with IIUM-KOS-SOP-18: Schedule Waste Management

7. REFERENCE

7.1 Biosafety, D. O. (2010). Biosafety Guidelines Contained Use Activity of Living Modified Organism. Putrajaya, Malaysia: The Ministry of Natural Resources and Environment Malaysia.

7.2 IIUM-KOS-SOP-17: Biological Management

7.3 IIUM-KOS-SOP-18: Scheduled Waste Management

7.4 IIUM-KOS-SOP-40: Personal Protective Equipment Management

8. APPENDIX

N/A.