MOVEMENT AND TRANSPORT OF LMO AND RELATED MATERIAL

PREPARED BY :	APPROVED BY :
SIGNATURE :	SIGNATURE :
NAME : DR. CHE NOR ZARIDA CHE SEMAN	NAME : ASSOC. PROF. DR. ZARINA ZAINUDDIN
POST : SO	POST : IBBC MEMBER
DATE : 12/12/2022	DATE : 12/12/2022
CONTROLLED COPY NO. :	

REVISION HISTORY

Revision Number	Revision Date	Description of Amendment / Change

1. OBJECTIVE

The Standard Operating Procedure (SOP) for movement and transport of the Living Modified Organism (LMO) and related materials is to reduce risks and further complications to the environment in the future.

2. SCOPE

This SOP covers all procedures specifically on the movement and transport of the LMO and related materials from the laboratories under Kulliyyah of Science to other laboratories and vice versa.

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.	BSL or BL	-	Biosafety Level
8.	NBB	-	National Biosafety Board
9.	IBC	-	Institutional Biosafety Committee
10.	PPE	-	Personal Protective Equipment

4. PREREQUISITES

4.1 All laboratory users handling the LMO movements are required to understand and adhere to the procedures outlined. They must also wear suitable personal

protective equipment (PPE) such as covered shoes, a lab coat, rubber gloves, masks 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 this standard operating procedure.

6. PROCEDURES

6.1 For the movement and transport of LMO and related materials (including import and export), the following shall apply:

6.1.1 The regulatory authorities (IBC and NBB) shall be notified using the relevant forms.

6.1.2 LMO being transferred should be packaged in secure containers capable of preventing material loss during transportation. LMO should be kept separate from other materials.

6.2 Microorganism and cell lines

6.2.1 Cultures of microorganisms or cell lines should be placed in a primary container that is secure closed-watertight and sift-proof.

6.2.2 The primary container should be placed within a sealed and leak-proof secondary container, which is resistant to breakage or water damage.

6.2.3 Padding material should be placed at the top, bottom and sides between primary and secondary containers to prevent breakage of the primary container during transport.

6.2.4 Sufficient absorbent material should be included (e.g. paper towel) to absorb the entire contents of the primary containers in case of breakage or leakage.

6.2.5 For local surface transport, each set of primary and secondary containers should then be enclosed in an outer container made of corrugated fiberboard, corrugated cardboard, wood or other material of equivalent strength. For air transport and shipment, the primary, secondary and outer container should follow International Air Transport Association (IATA) requirements.

6.3 Plant

6.3.1 Seeds, propagules or plant parts

- These materials should be transported in a durable bag or a sealed envelope or package constructed of tear and moisture resistant material as the primary container.
- Primary container can contain only plant material of a single type derived from one line of a single event.
- The primary container should be placed within a sealed, leak-proof secondary container which is resistant to breakage or water damage.

6.3.2 Seedlings and plants

- Seedlings and small plants should be transferred in a non-breakable container as primary container.
- The primary container should be placed within a leak-proof secondary container, which is resistant to breakage or water damage.
- Sufficient packing material should be included around the primary container to prevent movement and damage in the transport.
- GM plants that are two meters or more in height, and have not started flowering, will need to be transported in a fully covered vehicle which has a floor layered with durable plastic. No plants bearing flowers or buds should be transported. The vehicle compartment containing the GM plants should be sprayed with pesticide before and after transportation.
- All plant materials for shipment to a foreign country should adhere to the Biosafety Act 2007 and also plant quarantine regulations of Malaysian Quarantine and Inspection Services (MAQIS) and of the recipient country.

6.4 Animal

6.4.1 Animals should be placed in primary shipping containers made of a sturdy, crush-proof frame of wood, metal or material of equivalent strength, surrounded by escape-proof mesh or netting of strength and mesh size sufficient to prevent the escape of the smallest organisms in the shipment, with edges and seams of the mesh or netting sealed to prevent escape of organisms.

6.4.2 Each primary shipping container should be securely placed within a larger secondary shipping container made of wood, metal or equivalent strength material.

6.4.3 The primary and secondary shipping containers should then be placed securely within an outer shipping container made of corrugated cardboard, wood or other material of equivalent strength.

6.4.5 The outer container may have air holes or spaces in the sides or ends of the container, provided that the outer shipping container retains suffficient strength to prevent crushing of the primary and secondary shipping containers.

6.4.6 Animals should be treated in the most humane manner. Handling and treatment of animals during transport should follow the requirements of Malaysian Guidelines on the Principles and Guide to Ethical use of Laboratory Animals (2000) and Guidelines for Humane Transportation of Research Animals (2006).

6.4.7 Animals for shipment to a foreign country should adhere to the Biosafety Act 2007 and also animal quarantine regulations of Malaysian Quarantine and Inspection Services (MAQIS) and the recipient country.

6.5 Antropod

6.5.1 Arthropods (any life stage) should be placed in a sealed escape-proof primary container to prevent escape.

6.5.2 The primary container should be placed in a sealed, secure and leak-proof secondary container, which is resistant to breakage or water damage.

6.5.3 Sufficient packing material should be included around the primary container to prevent movement and damage in the transport.

6.5.4 For local surface transport, each set of primary and secondary containers should then be enclosed in an outer container made of corrugated fiberboard, corrugated cardboard, wood or other material of equivalent strength.

6.5.5 For air transport and shipment, the primary, secondary and outer container should follow IATA requirements.

6.6 Aquatic Organism

6.6.1 Aquatic organisms should be placed in a secure closed-watertight container that is leak-proof and sift-proof as the primary container.

6.6.2 The primary container should be placed within a sealed and leak-proof secondary container, which is resistant to breakage or water damage.

6.6.3 A single primary container should not contain more than 1,000 ml of liquid.

6.6.4 Two or more primary containers, with combined volumes, should not exceed 1,000 ml when placed in a single secondary container.

6.6.5 Padding material should be placed at the top, bottom and sides between primary and secondary containers to prevent breakage of the primary container during transport.

6.6.6 Sufficient absorbent material should be included (e.g. paper towel) to absorb the entire content of the primary containers in case of breakage or leakage.

6.6.7 Each set of primary and secondary containers should then be enclosed in an outer shipping container made of corrugated fiberboard, corrugated cardboard, wood or other material of equivalent strength.

6.7 Additional Procedures

6.7.1 Labelling Requirements

- Clearly label the outside of the package. The label should include:

  i) Contains LMO
  ii) Biosafety level of containment
  iii) Type of materials
  iv) Amount of materials
  v) Contact details of the person to contact in the event of an unintentional release

6.7.2 All containers used should be sanitised prior to filling and after the LMO have been removed, if intended to be re-used. Alternatively, containers should be destroyed after use by autoclaving or burning. Any residual materials recovered during the process of sanitisation should be rendered non-viable.

6.7.3 If an unintentional release of LMO during transport occurs, all attempts should be made to recover as much of the materials as possible. The location should be marked and treated in a manner that ensures that no additional release of materials occurs. Any corrective actions taken should be documented and the regulatory authorities notified.

6.7.4 After corrective action is taken to address a compliance infraction, the authorised party should undertake a timely review of the situation to identify its cause(s) and then institute any changes in management practices or additional training of personnel to ensure that the situation is not repeated.

6.7.5 Adequate records of the transport of LMO as they move between research facilities, storage facilities and field trial sites should be maintained by IBC to ensure an adequate system is in place for tracking the movement of this material.

6.7.6 The shipper should notify the recipient of the date, kind and amount of material that will be sent before shipped. Upon receiving the material, the recipient should confirm that the shipment has arrived intact and that no material has been lost.

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.