Basic Principles for the Safe Handling of Laboratory Biohazardous Materials

Laboratory biological waste is any item of a biological nature, or association with a biological agent (use link for the definition), and classified as waste material, that is, an unwanted by-product. This includes genetically modified organisms.

Biohazardous waste and non-hazardous biological waste. The risk assessment of biological waste (produced or encountered at work) must include how hazardous the material is and how it is to be managed. However, the waste may comprise additional potential hazards to those who come into contact with the material inside or outside the university, and these hazards must be considered in the overall risk assessment.

Biological agents are classified into four risk categories and the management of waste from each category is different.

- Class (Risk) 1 biological agents are regarded as unlikely to cause human disease, and generally are classified as non-hazardous biological waste.
- Class (Risk) 2 biological agents can cause disease and might be a hazard to humans, animals or the environment. These biological agents must be rendered safe before leaving the laboratory by means of immediate and direct containment and/or steam sterilisation or chemical disinfection. Once disinfected and decontaminated (by a validated means) the material may be classified as non-hazardous biological waste.
- Class 3 and class 4 biological agents are not in use in NUI Galway. Persons wishing to use such material must contact the university safety office.

Use of Licensed Waste Carrier. Some biological waste may be shipped off site for inactivation and incineration by a licensed waste management agent operating an authorised facility. Such waste may still be viable, but many producers of biological waste use waste disposal agents after they have inactivated their waste material on site. The waste producer and the licensed agent must ensure that the material is transported in an approved manner, that full records and documentation covering the transit and final destruction are in order, and that adequate containment measures for interim on-site storage and transit are in place.

For GM material, the waste facility must be licensed by the EPA. Records of GMM inactivation must be retained by the user for inspection by the EPA on request. Full traceability of this waste is of paramount importance and is the responsibility of the GMM licensee.

Disposal procedure for Sharps. See Biological Agents webpage.

Disposal procedure for Cultures and stocks. These include microbiological cultures (solid or liquid media) in which micro-organisms have been experimentally cultivated. Examples include micro-organisms in Petri dishes, culture flasks and bottles, and broths.

- Class (Risk) 1 biological agents.
  - Solid and liquid waste. Remove all labels from plates and containers. Segregate from other waste. Containers must not be filled more than ¾ full. For reasons of propriety, autoclave under suitable conditions. Dispose as per Buildings Office protocol. Frequent validation of autoclave treatment should be conducted and records retained.
- Class 1 GMMs. Section 3.3.1.1 applies, unless this waste is to be taken off-site for further treatment at an authorised facility (see Use of Licensed Waste Carrier above.)

- Class (Risk) 2 biological agents.
    - Solid waste. Segregate from other waste into bags marked 'biohazard' as primary containment and secondarily contained in a spill-proof UN Approved Container (yellow rigid box with sealable yellow lid). Containment bags and bins must not be filled more than ¾ full. Autoclave under suitable conditions. When inactivated the waste is non-biohazardous. Dispose as per Buildings Office protocol. Validation of inactivation of each waste load must be conducted, preferably by use of a biological indicator. Inactivation records must be kept for inspection.
    - Liquid waste. Inactivate by appropriate means (autoclave or chemical). When inactivated the waste is non-biohazardous. Dispose as per Buildings Office protocol. Validation of inactivation treatment must be conducted and records maintained.

- Class 2 GMMs. Instructions for class 2 biological agents above apply. Inactivation must take place on the same site as the contained use activity. Records of GMM inactivation must be retained by the user for inspection by the EPA on request. Only after inactivation may this waste optionally be taken off-site for further treatment at an authorised waste facility (see **Use of Licensed Waste Carrier** above).

Disposal procedure for Tissues, gloves, masks, etc.

- Class (Risk) 1 biological agents. Dispose as normal laboratory waste as per Buildings Office protocol.
- Class 1 GMs. Autoclave and dispose via Buildings Office protocol or dispose via waste company.
- Class (Risk) 2 biological agents. Autoclave by validated means and dispose via Buildings Office protocol.
- Class 2 GMs. Autoclave on site and either dispose via Buildings Office protocol or waste disposal company.

Disposal procedure for Equipment and apparatus.

- Class (Risk) 1 biological agents. For reasons of propriety, decontaminate by valid means and dispose via Buildings Office protocol.
- Class (Risk) 2 biological agents, and all GM classes. Decontaminate by valid means and keep inactivation records.

Disposal procedure for Soils, sludges and other organic matter. Consult with the Buildings Office for details. For GM activities, refer to the particular conditions of the EPA licence.

Disposal procedure for Animal carcases, body parts, etc. Strict regulations apply. Place in biohazard bags and store in secure, designated freezer.

GM animals or animals inoculated with Class 1 or Class 2 GMMs

Where on-site decontamination is not feasible or practical, the animal remains containing any surviving GMM shall be sent off site to a decontamination facility, provided that facility is registered and regulated in accordance with Genetically Modified Organisms (Contained) Use Regulations, S. I. No. 73 of 2001. Inactivation records of such waste should be retained by the GMO/GMM user and made available for inspection by the EPA on request. Full traceability of this waste is of paramount importance and is the responsibility of NUI Galway.

Storage of biological waste in the university.

All biological waste (hazardous or otherwise) must be stored in secure containers, designed and fit for use, and labelled appropriately. The containers must be in a secure, designated area, which is vermin-proof and cleanable.