



Health and Safety Office

EMERGENCY RESPONSE PROCEDURE

BIOHAZARD CONTAINMENT BREACH

Objective

This procedure formalises the steps to be taken to deal with a significant breach of containment of biohazardous materials in NUI Galway leading to serious and imminent danger to one or more persons.

Scope

This procedure applies when a breach of containment of any biohazard, by virtue of its quantity, nature or otherwise, is such that University management may require the marshalling of affected university personnel to a safe area, the administration of first aid or other treatments to specific person(s), or the assistance of the outside Emergency Services (Fire Brigade, Ambulance, Gardai).

The harmful nature of biohazardous materials is generally by way of infection and disease to humans and/or the environment. The volumes of biohazardous materials in NUI Galway are generally less than those associated with hazardous chemical agents, and they generally do not manifest the broad spectrum of hazards associated with chemicals (hazards described as explosive, flammable, corrosive). However, in some cases, biohazardous materials may be associated with hazardous chemicals and their breach of containment may have to be primarily handled as a chemical release.

Context

There are a range of biohazards in the NUI Galway. These include:

- Micro-organisms
- Cell cultures
- Possible human endoparasites
- Genetically-modified micro-organisms, animals, plants

Biohazardous materials are classified according to their risk of infection:

- **Hazard Group 1:** unlikely to cause infection or disease.
- **HG2** can cause disease and might be a hazard to employees, but are unlikely to spread in the wider community.
- **HG3 and HG4** are those which are likely to spread in the community and, for HG4, there is no effective treatment.

NOTE: There are no HG4 biological agents in use in NUI Galway.

Biohazardous materials are handled according to a Containment Level (CL) classification:

- There are 4 Containment Levels, 1-4.
- CL1 is the lowest level, CL4 the highest.
- Generally speaking, the CL is equivalent to the HG classification; for example, biological agents in HG2 must be handled at CL2 (or higher).

NOTE: There are no CL3 or CL4 facilities in NUI Galway.

Circumstances in which human and/or environmental exposure to biological agents may cause an emergency include:

- Handling human-derived material, such as blood, serum, faeces, urine, etc.
- Handling infectious microorganisms
- Handling laboratory animals (dead or alive)
- Handling infectious waste including animal waste
- Handling genetically modified animals and plants
- Working in areas where infective biological agents may be present (laboratories, buildings & grounds)

Persons who may be exposed to biological agents include:

- Laboratory personnel
- Laboratory students
- Buildings, Maintenance and Housekeeping staff
- ISS staff
- Students
- Contractors and suppliers
- Visitors
- Emergency Services personnel

Routes by which infection may occur:

- Skin contact
- Puncture wound
- Cut/Incision
- Inhalation
- Ingestion

The risks from the release of a biohazard depend upon:

- The type of biological agent involved, e.g. its HG class.
- The amount of material released.
- The nature of the material, e.g. culture, blood.
- Whether the spilled material easily forms an aerosol.

Events that might lead to an emergency:

It is not envisaged that incidents/accidents involving biohazardous materials in HG1 will pose such a substantial risk as to require the evacuation of a premises, the intervention of University management staff (such as Buildings Office personnel), or the assistance of the external Emergency Services. Therefore, the events listed below are relevant only when applied to HG2 biohazards, or greater:

1. Major Spills and Aerosol release, where there is significant liquid spread, splashing or aerosol release.
2. From possible exposure to infectious substances following an injury or accident.
3. Escape of laboratory animals, including genetically modified animals.
4. Unscheduled release of genetically modified plants.
5. Break-in of premises.
6. Loss of buildings' services.
7. Fire, severe weather, building collapse.

IN THE EVENT OF:

1. A major spill and/or aerosol release:

a. In an open CL2 laboratory:

- i.** Evacuate the laboratory.
- ii.** If safe to do so, leave/switch on any microbiological safety cabinets.
- iii.** Notify laboratory supervisor and relevant incident controller.
- iv.** Leave behind any protective or contaminated clothing.
- v.** Where possible, wash hands before leaving affected area.
- vi.** Exposed persons to be immediately referred to physician.
- vii.** Cordon-off, sign, and enforce affected area(s).
- viii.** Allow any aerosol to be carried away or to settle – approx 1 hour if assisted; 24hr if not assisted.
- ix.** Wearing appropriate personal protective equipment such as gloves, coverall, respirator, spilled infectious substances should first be covered with cloth or paper towels or proprietary absorbent and then poured over with disinfectant and allowed to stand for at least 20 minutes contact time.
- x.** Glass fragments should be handled with forceps.
- xi.** Thoroughly disinfect all surfaces.
- xii.** All recovered materials and all items used in the disinfection process should be treated as infectious waste.
- xiii.** Where dustpans are used in the clean up, these may be autoclaved or disinfected for further use.
- xiv.** Do not re-occupy the affected area(s) until the 'All Clear' has been given.
- xv.** In the case of spill or release of genetically modified organisms, the EPA must be formally notified.

b. In a corridor or public area: As for open CL2 laboratory.

2. A possible exposure to infectious substances following an injury or accident:

- a.** Notify laboratory supervisor and relevant incident controller.
- b.** Cordon-off, sign, and enforce affected area(s).
- c.** Wearing appropriate personal protective equipment such as gloves, coverall, respirator, spilled infectious substances should first be covered with cloth or paper towels or proprietary absorbent and then poured over with disinfectant and allowed to stand for at least 20 minutes contact time.
- d.** Glass fragments should be handled with forceps.
- e.** Thoroughly disinfect all surfaces.
- f.** All materials used in the disinfection process should be treated as infectious waste.
- g.** Where dustpans are used in the clean up, these may be autoclaved or disinfected for further use.
- h.** Do not re-occupy the affected area(s) until the 'All Clear' has been given.

3. Escape of laboratory animals:

- a.** Refer to respective animal facility supervisors.
- b.** In the case of escape of genetically modified animals the EPA must be formally notified.

- 4. Release of genetically modified plants:**
 - a. In the case of release of genetically modified plants the EPA must be formally notified.

- 5. Break-in of premises:**
 - a. Notify laboratory supervisor and relevant incident controller.
 - b. Cordon-off, sign, and enforce affected area(s).
 - c. When permitted, conduct audit on inventory of all relevant biological agents.
 - d. Record findings and report missing items to the authorities.

- 6. Loss of building services (Electricity and gas supplies & HVAC):**
 - a. Ensure that all devices and equipment necessary for containing and maintaining biological agents, such as incubators, refrigeration facilities, are backed-up on an emergency power supply.
 - b. Where back-up power has failed to engage, cordon-off, sign, and isolate affected equipment.
 - c. Notify laboratory supervisor and relevant incident controller.
 - d. Evacuate the affected areas.
 - e. Notify Buildings Services Engineer.
 - f. Ensure that biological agents remained safely contained for the duration.
 - g. Do not re-occupy the affected area(s) until the 'All Clear' has been given.

- 7. Fire, severe weather, building collapse:**
 - a. Evacuate the laboratory.
 - b. If safe to do so, retrieve plan of where all biological agents are located.