Swansea University
Prifysgol Abertawe

Swansea University

Waste Management Guidance Note WMGN30:

- **Biological Waste Disposal (including GMO, GMMs, Pathogen, Tissue and Cell Culture Wastes)**

Updated by:	Ben Harris (Environment Officer)
Approved by:	Teifion Maddocks (Sustainability Manager)
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Waste Management Guidance Note WMGN30 Biological Waste	
Location Generated	**Laboratory Category CAT 1/2**
EWC	18 01 03* / 18 01 06* / 18 01 07 / 18 02 02* / 18 02 05*
Transport Class & UN Number	Class 6.2 / UN 3291
Type	**Waste Category CAT A / B** Controlled – hazardous waste HP9 Infectious
Disposal Method	Inactivation / Neutralised through autoclaving or chemical inactivation followed by segregated for high intensity incineration
Bin/Bag Type	Autoclave bag – Sterilised External disposal – Tiger Bag Clinical waste box Clinical waste services

Duty of Care Requirements

Clinical 18 01 - wastes from natal care, diagnosis, treatment or prevention of disease in humans

EWC 18 01 03* Wastes whose collection and disposal is subject to special requirements in order to prevent infection

EWC 18 01 06* Chemicals consisting of or containing hazardous substances

EWC 18 01 07 Chemicals other than those mentioned in 18 01 06*

Research 18 02 - Wastes from research, diagnosis, treatment or prevention of disease involving animals

EWC 18 02 02* Wastes whose collection and disposal is subject to special requirements in order to prevent infection

EWC 18 02 05* Chemicals consisting of or containing hazardous substances

It is a legal requirement to ensure all wastes are correctly classified. Incorrectly disposing of hazardous waste via a non-hazardous waste stream can lead to legal and financial penalties dependent upon the severity of the noncompliance with The Hazardous Waste (England and Wales) Regulations 2005.

The Genetically Modified Organisms (Contained Use) Regulations 2014 require that GMMs in contaminated material and waste from Class 2 to 4 GM activity are inactivated by validated means.

Definition

Description; Biological waste; Genetically Modified Organisms, Genetically Modified Micro-Organisms, Cell and Tissue Culture Media.

The assessment of HP 9 relies on understanding the terms in the definition:

'micro-organisms' - a microbiological entity, cellular or non-cellular, capable of replication or of transferring genetic material (includes algae, bacteria, fungi, parasites, plasmids, prions, viruses, rickettsia, and genetically modified variants thereof);

'viable' - micro-organisms that have been killed are not considered infectious. Viability relates solely to the state of the organism at the point and time of the production of the waste;

'**or their toxins'** - toxins produced by micro-organisms which can render the waste 'infectious' even if the producing organism is no longer present;

Please note this WMGN provides guidance on disposal requirements only, please consult the University's appointed Biological Safety Officers for further guidance.

Your risk assessment must specify the type and form of waste(s) generated, their treatment.

Waste types and Management

Waste Items contaminated and/or containing biological wastes including, but not limited to;

- Petri dishes
- Pipettes, plastic tips, serological pipettes
- Tissue culture flasks
- Syringes
- Needles
- Cell culture media
- PPE – gloves, masks, aprons
- Blue roll/ paper towels

All biological waste (non-infectious and infectious) generated during laboratory teaching and research must be inactivated by autoclaving or by chemical inactivation.

For Category A waste (Microbiological cultures Class 1/2 GMMs and HG2 pathogens), produced in CAT 2 Laboratories, on-site autoclaving is mandatory to ensure waste is inactivate due to the significant risks to the community in terms of human and animal health.

If chemical inactivation is used (which is less effective than heat treatment) it is acceptable to rely on validation data provided by the manufacturer for the particular micro-organism(s) if it is being used at the manufacturers' recommended concentrations and exposure times according to the requirements and conditions of use.

Biological Waste Table

Waste Type	Waste Classification	Laboratory Type	Internal Waste Pre-treatment	Internal Disposal Route	External Disposal Route
GMO Waste GMM Class 1/2/3	CAT A	CAT 2	Autoclave Within the laboratory	Tiger Bag	ILS 1 Autoclave Skip
Biological Waste Pathogens HG2/3/4	CAT A	CAT 2	Autoclave Within the laboratory	Tiger Bag	ILS1 Autoclave Skip
Tissue Waste and associated contaminated wastes	CAT B	CAT 1	Chemical Inactivation	Yellow Bag / Yellow lidded Sharps box	See WMNG24
Cell Culture Waste and associated contaminated wastes	CAT B	CAT 1	Disinfect Chemical Inactivation	Yellow Bag / Yellow lidded Sharps box	Dedicated external Yellow Bin See WMGN26

Table 1 - Biological Waste Table

GMO / GMMs / Pathogen wastes

GM and biological waste must be autoclaved in the laboratory before disposal. Once the waste has been autoclaved it must be placed into tiger bags (yellow/black-striped) and placed into the relevant external autoclave waste skip, or bin.

If any CAT A waste needs to be transported to an autoclave external to the laboratory, waste must be transported via a sealed metal box. Waste must then be taken from the metal box and placed into the autoclave. The metal box must then be decontaminated for each consignment with Virkon, or similar.

For further guidance on autoclave management form HSE see; Safe working and the prevention of infection in clinical laboratories and similar facilities

Tissue/Cell Culture wastes

Tissue and cell cultures must be disinfected before disposal. Sharps must also be disinfected before disposal via yellow lidded sharps boxes. Disposal of human tissue must comply with the requirements of the Human Tissue Act 2004. The COSHH Regulations stipulate;

- Tissue culture waste (culture medium only) – inactivate for at least 2 hours in a solution of hypochlorite (10,000ppm) prior to disposal to drain with an excess of water.
- Contaminated pipettes should be placed in hypochlorite solution (2500ppm) overnight before disposal by autoclaving and incineration.

Disposal Instructions

External Storage - Category A waste

- **For FMHLS and FSE:**

Figure 1: Cat A Waste disposal route for FMHLS/FSE

Once waste is autoclaved within the laboratory, autoclave bags must be placed into tiger bags. Once autoclaved and deactivated waste is classified Offensive Waste EWC 18 01 04 or 18 02 03 and can be placed into the ILS1 waste compound autoclave bin (Clinical Waste) – access via Technicians/Stores**.**

External Storage - Category B waste

Figure 2: Internal use yellow-lidded clinical waste box & external-based yellow autoclaved waste bin

Please note: Sharps must be disinfected before disposal via yellow-lidded sharps boxes.

Yellow bags can be obtained and signed out from the following locations:

- **Singleton Campus -** FSE/FMHLS: ILS1 Waste Compound
- **Bay Campus -** FSE: Engineering Service Yard Office

External - Disposal

For disposal, please ensure the lid is sealed for transport and full sharps bins must be taken back to the following locations:

- **Singleton Campus -** FSE/FMHLS: ILS1 Waste Compound
- **Bay Campus -** FSE: Engineering Service Yard Office (dedicated external 1100 yellow bins) See service yard office staff for access

Disposal Cost:
There is a charge for this service, please contact estates-waste@swansea.ac.uk for details

For further guidance contact Estates-Waste@Swansea.ac.uk and the Universities Biological Safety Advisor.