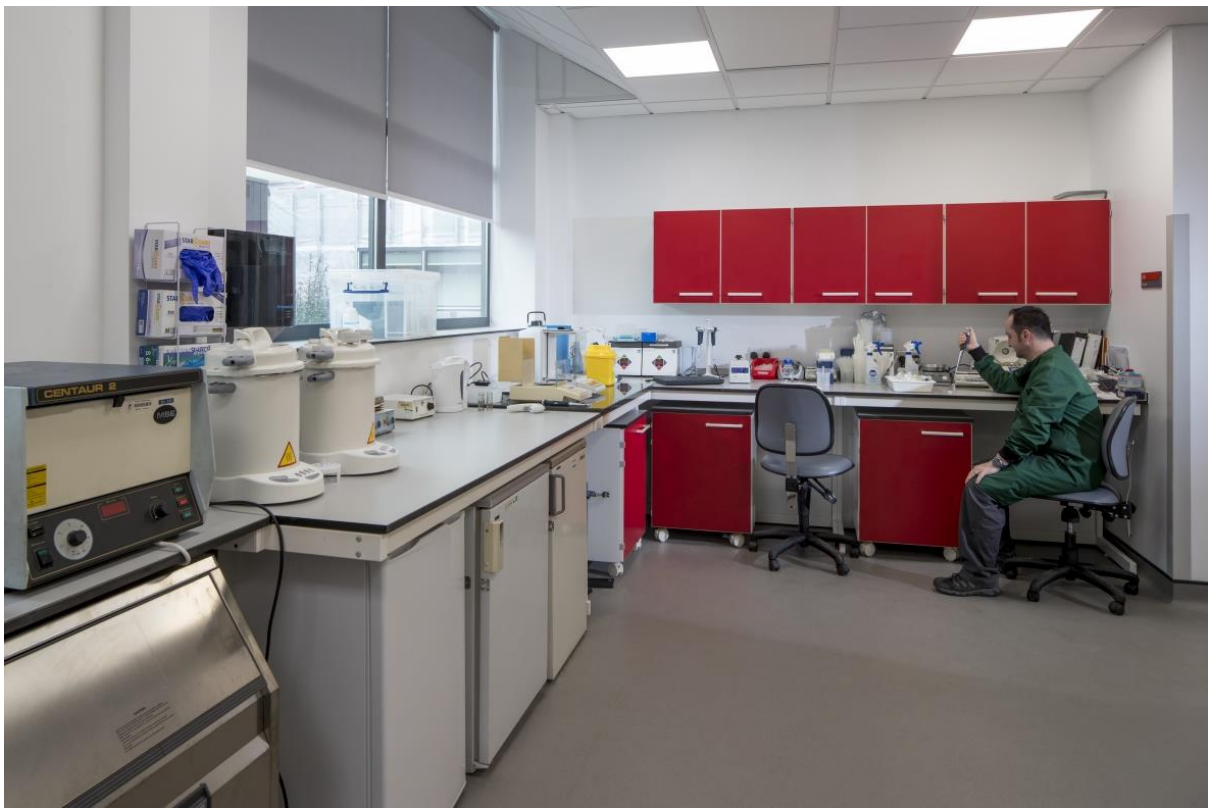
University of Nottingham
Environmental Management System – Documented Information

Procedure for the identification, segregation, and disposal of Biological / Clinical waste



Author:	**Gavin Scott; Louise Cupitt; Amy Scoins**
Approved by:	**Gavin Scott**
Review date:	**August 2026**
Clause Ref:	**EcoCampus: 3.5** **ISO14001(2015): 8.1**

Contents

1. Scope

This procedure document relates to the production, identification, segregation, handling, safe storage, collection, transfer, treatment, and disposal of all biological / clinical waste generated and controlled by the University. The procedure is appropriate for university run facilities, noting that there may be other processes in place in specific locations. It is to be read in conjunction with the Hazardous Waste Policy where waste is classified as hazardous.

Note – This guidance covers the handling of Hazard Group 1 & 2 and GM Class 1 and Class 2 waste. For HG3, GM Class 3 and SAPO waste please see the University's and the SAPO regulations (document SAF-ARR-BIO-CLS).

2. Responsibilities

All employees are responsible for with complying with university policies and procedures.

The specific responsibilities relating to hazardous waste are contained with the University's Hazardous Waste Policy. Any business unit that produces hazardous waste is required to appoint a Hazardous Waste Co-ordinator (HWC) by contacting sustainability@nottingham.ac.uk

3. Training

All staff working within the laboratory environment should be given a departmental laboratory induction where segregation and disposal of waste should be covered, in addition to other laboratory training topics.

Specific training will be given to the HWCs, as well as those involved with the identification and classification of waste and completing disposal documentation.

Periodic refresher training will be given to all employees involved in the disposal of biological and clinical waste, to consider any changes in legislation and remind employees of their responsibilities.

For information about any upcoming training, please contact: sustainability@nottingham.ac.uk

4. Definitions of Waste

Clinical / Biological Waste is defined as:

> (a) any waste which consists wholly or partly of human or animal tissue, blood or other bodily fluids, excretions, drugs, syringes, needles or other sharp instruments, being waste which unless rendered safe may prove hazardous to any person coming into contact with it;
>
> (b) any other waste arising from medical, nursing, dental, veterinary, pharmaceutical or similar practice, investigation, treatment, care, teaching or research, or the collection of blood for transfusion, which may cause infection to any person coming into contact with it.

Sometimes clinical waste can be hazardous. Waste is classed as hazardous if it has one or more of the following properties:

- **H1:** Explosive
- **H2:** Oxidising
- **H3:** Flammable and highly flammable
- **H4:** Irritant
- **H5:** Harmful
- **H6:** Toxic or very toxic
- **H7:** Carcinogenic
- **H8:** Corrosive
- **H9:** Infectious
- **H10:** Toxic for reproduction
- **H11:** Mutagenic
- **H12:** Releases toxic gases in contact with water, air or an acid
- **H13:** Substances capable, by any means after disposal, of yielding another substances e.g. a leachate which possess any of the characteristics listed above
- **H14:** Ecotoxic

See section 5. for further information about specific waste classifications.

The most common clinical and biological wastes streams include:

Genetically Modified Organisms waste GM waste is waste containing active genetically modified organisms or genetically modified micro-organisms capable of interacting with animal, human or plant species. Inactivated GMOs / GMMs which are sufficiently disabled so that they cannot survive outside the laboratory and cannot interact with the environment due to this inherent disability, are not deemed as GM waste. There are different classes of GM and they each have different requirements in terms of inactivation, handling, and disposal. GM waste should be inactivated before leaving site unless identified in an approved GM risk assessment (see **Biological Waste Guidance** for guidance regarding the on-site inactivation of waste). **Please also refer to the university's Biological Safety Policy.**
Anatomical waste Anatomical waste includes body parts, other recognisable anatomical items, and animal carcasses, which may be offensive to those who come into contact with such items.
Sharps Sharps are items that could cause cuts or puncture wounds. They include needles, hypodermic needles, scalpels, other blades, knives, glass pasteur pipettes and other sharp laboratory instruments. See here for further sharps safety awareness.
Semi Sharps These are items such as plastic pipettes; pipette tips or other items that may puncture a bag and could cause a scrape, graze or cut but are not classified as sharps (above).
Waste medicines A cytotoxic and cytostatic medicine is a medicinal product (human and animal) possessing any one or more of the following hazardous properties: • H6: Toxic

- H7: Carcinogenic
- H10: Toxic for reproduction
- H11: Mutagenic

Offensive waste

Offensive waste is waste that is non-infectious, does not possess any hazardous properties and does not require specialist treatment (i.e. disinfection) or disposal, but which may cause offence to those coming into contact with it due to the presence of recognisable healthcare and laboratory waste items. This may include:

- Any laboratory disposables including gloves, pipette tips, tubes, non-infectious syringes etc.
- Soiled animal bedding from healthy animals and autoclaved laboratory waste (inactivated GM waste and non-GM).

5. Identification of waste

The Principal Investigator or their nominated representatives, in conjunction with their HWC, should assess the waste of a particular activity, identify which waste streams are produced and follow the appropriate storage and disposal method for each. Where a waste system is already in place, they should ensure it is appropriate for the waste being generated.

Full guidance on how to classify the type of waste being generated can be found in the Guidance on the classification and assessment of waste Technical Guidance WM3. This guidance also includes the relevant thresholds for determining whether a waste is hazardous or not.

Wastes are divided into three types of entry within the technical guidance:

- wastes that may be hazardous or non-hazardous, known as 'mirror' entries
- wastes that are always hazardous, known as 'absolute hazardous' entries
- wastes that are always non-hazardous, known as 'absolute non-hazardous' entries.

Below are the typical categories of waste generated within the University, including their European Waste Catalogue (EWC) code and their associated descriptors:

EWC code	Description
18 01	**Waste from natal care, diagnosis, treatment or prevention of disease in humans**
18 01 01	Sharps except 18 01 03*
18 01 02	Body parts and organs including blood bags and blood preserves (except 18 01 03*)
18 01 03*	Waste whose collection and disposal is subject to special requirements in order to prevent infection
18 01 04	Waste whose collection and disposal is not subject to special requirements in order to prevent infection, e.g. dressings, plaster casts, linen, disposable clothing
18 01 08*	Cytotoxic and cytostatic medicines
18 02	**Waste from research, diagnosis, treatment or prevention of disease involving animals**

18 02 01	Sharps except 18 02 02*
18 02 02*	Waste whose collection and disposal is subject to special requirements in order to prevent infection
18 02 03	Waste whose collection and disposal is not subject to special requirements in order to prevent infection
18 02 08	Medicines other than those mentioned in 18 02 07*
02 01 03	Plant Waste

Table 1. European Waste Catalogue codes

This assessment should be undertaken at the planning stage. This should cover classification of the waste, its segregation and packaging to make sure risks are managed, and transport, treatment and disposal arrangements appropriate to the type of waste and the risk it poses. Once you have identified the waste type you will then need to identify the appropriate disposal route.

6. Categorisation of waste for disposal

The University's waste contractor uses a tagging system called BioTrack to identify and track each individual consignment of waste. The information is contained on a unique colour-coded luggage-label style tag that must be applied to every container to be collected. The barcode on each label holds data regarding producer information, type of waste, treatment requirements, ADR carriage requirements, and relevant UN number to ensure correct treatment and disposal of your waste. Please see Table 2. for examples. Tags can be ordered as follows:

Site	**How to order**
Medical School	Contact Paul Sharpe, Environmental & Sustainability Officer for Nottingham University Hospitals NHS Trust: Email Paul.Sharp2@nuh.nhs.uk Tel 07812 275125
All other sites	Contact Stericycle support email stating your campus, building location, and site number: Email SupportUK@STERICYCLE.com

Here are some example labels:

HI – Infectious waste for incineration

HS - Infectious sharps

HT - Infectious waste for treatment

HL – Non-hazardous waste

HA - Infectious anatomical waste

HY – Cytotoxic / Cytostatic waste

HP – Non-hazardous medicines

7. Segregation, Storage, on-site inactivation, sealing and labelling of waste

Segregation at the point of origin, aided by suitable and consistent storage and packaging, is vital in enabling different forms of waste to be handled, transported, and disposed of in a manner which is safe and in keeping with the nature of the waste.

Clinical/biological waste must be carefully segregated from other wastes whilst in production and storage, while non-hazardous waste should not be disposed of in the clinical waste stream. **Under no circumstances must Clinical/biological waste be allowed to enter the University general waste stream.**

Waste should be segregated and contained in accordance with the following table:

Bio-track Category	Description	Typical waste components	Container	EWC
HA	Infectious healthcare waste (anatomical)	Recognisable human and animal tissue	Yellow bags, placed into EU approved sealed units/rigid containers with a red lid, transported in HA consigned 770l carts.	180103*
HI	Infectious healthcare waste (clinical waste)	Diagnostic (human & animal) samples contaminated with hazardous chemical	UN approved yellow rigid containers or yellow bags, placed into 770 litre carts.	180103*

		preservatives or pharmaceuticals.		
HS	Sharps	Needle/syringe systems, single-use instruments, pipettes, tips & other Eppendorf consumables, slides.	UN approved rigid containers (yellow base/lid) into 770 litre carts.	180103* /180109
HY	Waste contaminated with cytotoxic & cytostatic medicines	Needles, sharps, and other items contaminated with cytotoxic / cytostatic medicines.	UN approved rigid containers (purple lid). 770L carts??	180108*
HL	Non-infectious healthcare waste contaminated with bodily fluids.	Soiled gloves, tissues, trays, aprons, and other wastes where bodily fluids may present; no evidence of infection but not suitable for disposal in the general waste stream (may be 'offensive')	Offensive waste (yellow/black 'tiger') bags, placed into 770 litre carts	180104
LX	Non -infectious waste from healthcare research & testing	Lab waste which has been autoclaved in a fully validated autoclave.	Offensive waste (yellow/black 'tiger'), placed into 770 litre carts.	180104
LI	Infectious waste from healthcare research & testing	Untreated lab waste (e.g. gloves), Contaminated plastic ware. Disinfectant treated plastic ware	UN approved yellow rigid containers or yellow bags, placed into 770 litre carts.	180103
VL	Non-infectious veterinary waste	Waste that is not suitable for disposal in general waste stream (may be 'offensive') but is not hazardous and so does not require treatment before disposal	Offensive waste (yellow/black 'tiger') bags, placed into 770 litre carts	180203
VA	Infectious veterinary waste (anatomical)	Animal anatomical parts that require incineration due to infection	UN approved yellow rigid containers or yellow bags, placed into 770 litre carts.	180202
VP	Non-hazardous veterinary medicines for incineration	Veterinary medicines, NOT cytostatic or cytotoxic. Cannot go for alternative treatment, require incineration.	UN approved blue lidded sealed units.	180208
NA	Non-hazardous anatomical waste	Small healthy animals sourced from food grade abattoirs	UN approved yellow rigid containers or yellow bags, placed into 770 litre carts.	180103
GM	Inactivated microorganism waste	Waste containing inactivated GMMOs	UN approved yellow rigid containers or yellow bags, placed into 770 litre carts.	180104
GX	Modified Plant waste	Waste containing modified plant waste for incineration	UN approved yellow rigid containers or yellow bags, placed into 770 litre carts.	020103

A2	Animal By product Waste	Category 2 Animal By-product. Materials unsuitable for consumption or processing	UN approved yellow rigid containers or yellow bags, placed into 770 litre carts.	020203

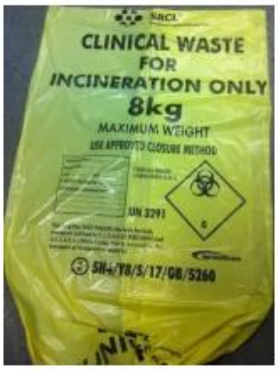
Table 2.BioTrack categories & corresponding EWC codes

Storage of waste

All waste containers should be capable of containing the waste without spillage or puncture, especially during transport and handling. Where there are quantities of liquid present, an inner liner or absorbent material must be present to soak up the liquid.

Bagged waste

Bags must be used in accordance with the designated disposal route and should never contain any sharp items likely to puncture the bag. Double bagging is not a requirement and should be avoided. This can be mitigated by using an appropriate gauge of bag. Ensure that clinical waste bags are closed when three quarters full.

Offensive waste - Yellow and black bag (Tiger Bag)	**Yellow Clinical bag Class 6.2 danger sign & UN3291 clinical waste, unspecified.**
	

Any bagged waste for autoclaving must be bagged using a clear or opaque bag with blue text. After autoclaving it should then go in the appropriate bag for the final disposal route.

Sharps containers

All sharps, such as needles and scalpels, must be contained in a rigid yellow sharps container for disposal. All bins for the collection of sharps must be UN approved and conform to BS 7230, and compliance with this should be indicated on the boxes. As sharps boxes are not impervious to liquids, partially used vials and sharps must not be poured / discharged into sharps boxed. Sharps containers should be signed and dated upon assembly (see Labelling).

Rigid containers

Rigid containers can be used for the disposal of objects that could puncture bags. Items that may cause a cut or scratch injury such as graduated pipettes, pipette tips, toothpicks etc must be contained in a rigid container to provide protection when handling the waste. Soft waste e.g. gloves, paper towel wipes, should be effectively segregated into the bagged clinical waste stream and not placed into a rigid or sharps container.

Sharps bins and other rigid containers must meet the P621 standard and be marked with the UN approved mark and with a Class 6.2 danger label.

On site inactivation of waste

The Control of Substances Hazardous to Health (COSHH) Regulations 2002 do not require explicitly that cultures of biological agents are inactivated on-site, but they place a duty on employers to assess risk and apply control measures to reduce the risk of exposure to harmful substances to a minimum.

It is **recommended that Hazard Group 2 waste is inactivated on-site before final disposal** because it may contain high concentrations of biological agents and pose an increased risk of exposure.

Those staff working under the Genetically Modified Contained Use Regulations will generate contaminated waste, which **must be inactivated by a validated means at class 2**. Inactivation at class 1 is subject to a risk assessment. **All Class 2 waste must be inactivated on site** in accordance with legislation.

Disinfection is not as effective as steam sterilisation in destroying viable organisms, nor is it as easily monitored and validated. **Disinfection must not be used for treating waste from CL 3 facilities. Contact your local BSO or HSD for advice on CL 3 arrangements.**

It should be noted that the mixing of hazardous and non-hazardous waste is prohibited under regulation 18 of The Hazardous Waste (England and Wales) Regulations 2005 statutory duty to segregate hazardous and non-hazardous waste.

Where clinical waste has been subjected to a process that which renders it non-hazardous, it should not then be mixed with other hazardous waste. Waste that has been autoclaved and therefore no longer contains infectious material should not be disposed of in yellow clinical waste bags unless it is pharmaceutically/chemically contaminated such that it would possess other hazardous properties.

Further guidance on the inactivation of waste can be found here: Biological Waste Guidance

Sealing of waste receptacles

All Receptacles/sacks should never be overfilled and should be closed and replaced when they are three quarters full, reach the fill line, or reach the weight specified on the container. Receptacles should be securely sealed and any bags should be secured using the swan neck technique (a cable tie can provide the seal).

How to complete a swan neck tie:

1. Hold the neck of the bag and twist until tight
2. Fold the neck of the bag over on itself to form a swan neck
3. Place a cable tie or similar around the folded neck. Tighten this until a sturdy seal is formed

Sharps bins should be replaced when they are three quarters full or reach the fill line. **The label on the box should be completed in full** (see Labelling Waste).

Where biological waste, excluding sharps, accumulates in small quantities receptacles/sacks should emptied once a week, unless the waste is refrigerated. Sharps receptacles should be changed every month.

Labelling of waste

You have a **duty of care to label waste** to ensure that it can be traced back to where it came from if there are any incidents before final disposals. Waste receptacles from all waste streams except domestic waste must be labelled at the point of origin. This includes bags and rigid containers. This will also benefit any internal auditing of waste generation.

Labelling can be done by whatever means the department feels most appropriate, but must as a minimum include:

- Date
- Laboratory number / Suite
- Department.

Once the bag/box has been sealed and labelled it should be moved directly to a dedicated waste storage area. Waste should not be allowed to accumulate in laboratories, corridors, or other similar places accessible to employees, students or members of the public. **Sharps container labels should be filled in upon assembly and on sealing prior to transport.**

8. Transport of waste

Within the lab / building

Deep-sided and leak-proof trays or boxes should be used to transport higher risk materials. They should be made of smooth impervious material, e.g. plastic or metal, which can be effectively cleaned and disinfected.

If trolleys are used for transfer of materials, they should be loaded so that samples cannot fall off. Spill kits should be readily available in the event of a spillage during transport, and appropriate people trained in their use.

Trolleys used to transport waste from laboratories to storage areas and from storage areas to waste contractor vehicles:

- Must not be used for any other purpose.
- Should contain any leakage from damaged receptacles
- Should not allow particles of waste to become trapped on edges or crevices or offer harbourage for insects or vermin.
- Must be disinfected regularly and following leakages or spills.

In addition to the above control measures, transfer of infectious materials from one laboratory to another within the same building should be planned, organised and carried out to minimise transit through communal areas and public spaces.

To external bin stores

Transport containers should be suitably labelled to identify their contents. Waste should be double contained and this can be achieved with a trolley with deep sides or a bucket trolley or wheelie bin with a false bottom. It is recommended that large or unwieldy containers are transported by trolley with some form of guard rail or raised sides to secure the load during transit.

Trolleys used to transport waste from laboratories to storage areas and from storage areas to waste contractor vehicles must not be used for any other purpose. They should contain any leakage from damaged receptacles, not allow particles of waste to become trapped on edges or crevices or offer harbourage for insects or vermin. Trolleys should be disinfected regularly and following leakages or spills.

The 700L carts within the bin store must contain an appropriate BioTrack tag to indicate the waste that is within the bin. Different BioTrack waste types cannot be disposed of within the same bin. The BioTrack tag is a requirement for the waste to be consigned and legally moved from site. Please note that there is a 100 kg weight limit on the carts.

External Waste Compounds

There are a number of waste compounds provided across the University for clinical and biological waste. These compounds should be kept locked at all times to ensure that the University meets its ‘duty of care’ under the Environmental Protection Act 1990 and ADR 2017 (Carriage Regulations). Refer to your local Hazardous Waste Coordinator to locate your nearest appropriate bin compound.

If you find that the bin store isn’t locked, or the locking mechanism is broken, please report it to the Estate Office Helpdesk on Ext 16666

Waste is collected in 700L lockable carts provided by the University’s contractor (Stericycle) within each of these stores. The carts are UN approved to comply with the Carriage Regulations. These bins must be kept locked at all times.

If you find one of the yellow lockable carts isn’t lockable or is broken, do not use the cart and report it to your local Hazardous Waste Co-ordinator. All faulty carts should be tagged with a ‘broken bin’ tag and sent back to Stericycle to be replaced.

9. Dealing with Spillages

Spills and breached containers should only be dealt with by a trained member of laboratory staff and processes documented within the local procedures for the disposal of waste. Spillages must be cleared up immediately and the area cordoned off. They should be covered by an absorbent material and suitable disinfectant poured onto the absorbent material. Enough should be applied to soak the spill material through and the spill should be left for a short period of time. The spill should then be cleaned up using cloths, paper towels or a strong piece of card, and any waste disposed of in the appropriate waste stream depending on the material/substance spilled. Anyone cleaning up a spill should wear protective gloves.

If the container is damaged or has been breached, then the remaining content must be carefully transferred to an undamaged container.

Spills of biological or clinical waste should be reported as a near miss on the university's Health and Safety Incident Reporting system here.

Spills should be reported as a near miss and then categorised as a release of hazardous substance. Further guidance on how to deal with spills can be found here.

10. Consigning waste

Where hazardous clinical/biological waste is being produced holders of hazardous waste are subject to a Duty of Care requirement under Section 34 of the Environmental Protection Act 1990 and a system of consignment notes. Consignment notes fulfil the Duty of Care requirement for a written description to accompany the transfer of waste. Consequently, a consignment note is the only document that needs to be completed when hazardous waste is collected for disposal.

The consignment note in most cases will be prepopulated by Stericycle, however where you are consigning the waste you must ensure that the waste has been consigned correctly. Stericycle operates an e-consignment note system. The e-consignment note is completed in the same way as a paper consignment note – the only difference is that you will review the information displayed on our service driver's mobile device and sign on the device instead of a piece of paper. Completed consignment notes are then sent to the contact email address registered with each particular site number.

A consignment note is divided into 5 sections, parts A to E.

The producer or holder of the waste must complete **part A** of the note, which should contain the following information:

- Consignment note code;
- Address of where the waste was removed from;
- Details of where the waste will be taken to;
- Details of the waste producer if different from 2.

The producer or holder of the waste should complete **part B** of the note, a description of the waste, which must contain the following information:

- The process giving rise to the waste(s)

- The Standard Industry Code (SIC) code, which is 85421
- A written description of the waste including:
    - Appropriate six-figure code from the European Waste Catalogue;
    - Quantity (kg);
    - Chemical/biological components of the waste and their concentrations;
    - Physical form of the waste (i.e. gas, liquid, solid, powder, sludge or mixed);
    - Hazard code(s);
    - Container type, number and size;
    - UN identification number(s);
    - Proper shipping name(s),
    - UN Class(es);
    - Packing group(s);
    - Details of any special handling requirements.

Part C is completed by the waste carrier. This should include the following:

- Carrier name and address;
- Carrier registration number or details of exemption;
- Vehicle registration number (or mode of transport if not road);
- The carrier must also sign and date the consignment note.

Part D is completed and signed by the University. By signing Part D the consignor is certifying that:

- All information in Parts A, B and C are correct;
- The carrier is registered or exempt;
- The carrier was advised of any precautionary measures regarding the collection;
- All of the waste is packaged and labelled correctly and the carrier has been advised of any special handling requirements.

Part E is completed by the consignee. The consignee should complete section E and verify that the wastes listed in Part B match the wastes received. The consignee must provide a return to the University to confirm that the waste has reached its final destination. This copy of the completed consignment note, and the quarterly return documentation, must be kept for a minimum of three years

11. Further advice

Biosafety advice can also be sought from the Safety Office: h&s@nottingham.ac.uk

Please also refer to the university's **Biological Safety Policy.**

Biological waste guidance and template documents can be found here: Biological Waste Guidance.

Further support and advice can be sought from the Sustainability Team within Estate & Facilities: sustainabilty@nottingham.ac.uk

You can also find further information and resources, including posters and signage, on the Stericycle website here: https://www.stericycle.co.uk/en-gb/resource-centre

As a university we employ the retained services of a Dangerous Goods Safety Advisor. Please contact sustainability@nottingham.ac.uk if you would like to get in contact with them.

Version control

Date	Version	Author	Authorised by:
August 2024	V1.0	Amy Scoins, Gavin Scott, Louise Cupitt.	Gavin Scott