

## **POLICY NOTICE: OHSU P12 (Revised 2001)**

### **CODE OF PRACTICE ON THE SAFE HANDLING, STORAGE, TRANSPORT AND DISPOSAL OF CLINICAL WASTE**

#### **1 Introduction**

Quantities of clinical waste are produced on a daily basis from a wide range of activities in the University and unless the handling, storage, transport and disposal are properly managed, such waste can present risks to the health and safety of people who work in the University, members of the public and the environment.

This document, therefore, provides guidance on managing safe handling, storage, transport and disposal of clinical waste in the University.

However, Schools/Departments must carry out the necessary risk assessments etc, required by legislation, including The Control of Substances Hazardous to Health Regulations 1999 and the Management of Health and Safety at Work Regulations 1999.

**IF THERE ARE ANY DOUBTS AS TO THE REQUIREMENTS OF THIS CODE, THEN THE OCCUPATIONAL HEALTH AND SAFETY UNIT SHOULD BE CONSULTED FOR ADVICE.**

#### **2 Definition of Clinical Waste**

Clinical Waste is defined in the Controlled Waste Regulations 1992 as:-

- any waste which consists wholly or partly of:
  - human or animal tissue;
  - blood or other body fluids;
  - excretions;
  - drugs or other pharmaceutical products;
  - swabs or dressings;
  - syringes, needles or other sharp instruments;

which unless rendered safe may prove hazardous to any person coming into contact with it.

- and 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, being waste which may cause infection to any person coming into contact with it.

This allows for most of the Biological Waste generated in the University to be excluded from this definition provided it has been made safe, for example, by disinfection or autoclaving.

In practice, arrangements for managing clinical waste are based on categorisation of the waste into groups which present different hazards. The categories of clinical waste produced at the University of Wales, Bangor are shown below. They are taken from the Health and Safety Commission's guidance produced by the Health Services Advisory Committee entitled "Safe Disposal of Clinical Waste".

<u>Waste Group</u>	<u>Type of Clinical Waste</u>
<b>Group A</b>	Includes the following items: identifiable human tissue, blood, animal carcasses and tissue from veterinary centres, hospitals or laboratories. Soiled surgical dressings, swabs and other similar soiled waste. Other waste materials, for example, from infectious disease cases, excluding any in Groups B-E. .....
<b>Group B</b>	Discarded syringe needles, cartridges, broken glass and any other contaminated disposable sharp instruments or items. .....
<b>Group C</b>	Microbiological cultures and potentially infected waste from research laboratories. .....
<b>Group D</b>	Drugs or other pharmaceutical products. .....
<b>Group E</b>	Other bodily secretions assessed as not falling within Group A eg. Faeces, urine, vomit and items used to dispose of the secretions. .....

### 3 Legislation

There is a great deal of legislation which applies to the handling, storage, transportation and disposal of clinical waste. The main regulations are as follows:

- The Health and Safety at Work Act 1974 (HSW)
- The Control of Substances Hazardous to Health Regulations 1999 (COSHH)
- The Management of Health and Safety at Work Regulations 1999 (MHSW)
- The Environmental Protection Act 1990 (EPA)
- The Environmental Protection (Duty of Care) Regulations 1991 (EPDC)
- The Waste Management Licensing Regulations 1994 (WML)
- The Special Waste Regulations 1996 (SW)
- The Carriage of Dangerous Goods (Classification, Packaging and Labelling) and Use of Transportable Pressure Receptacles Regulations 1996 (CDGCPL2)
- The Controlled Waste Regulations 1992 (CW)

- The Personal Protective Equipment at Work Regulations 1992 (PPE)

The requirements of some of these Regulations, as they apply to clinical waste, are discussed in more detail in Appendix 1.

#### **4 Precautions for dealing with Clinical Waste**

The precautions required when handling clinical waste depend on the results of the risk assessment and the relevant legal requirements. The following paragraphs provide guidance on the range of measures that need to be considered in relation to:

- training and information
- personal hygiene
- personal protective equipment
- immunisation
- segregation
- handling
- packaging
- labelling
- storage
- transport
- accidents, incidents and spillages and
- treatment and disposal

##### **4.1 Training and information**

All staff and students who are required to handle or move clinical waste must receive adequate training, information and instruction. The training will be arranged through the Occupational Health and Safety Unit.

Those involved in handling clinical waste need training, information and instruction in:

- the risk associated with clinical waste, its segregation, handling, storage and collection
- personal hygiene
- any procedures which apply to their particular type of work
- procedures for dealing with spillages and accidents

- emergency procedures and
- the appropriate use of protective clothing

For those involved in the collection, transfer, transport or handle quantities of clinical waste, the training needs to cover:

- checking the storage containers are sealed effectively before handling
- ensuring that the origin of the waste is marked clearly on the container
- handling sacks correctly
- checking that the seal on any used waste storage container is unbroken when movement is complete
- special problems relating to sharps disposal
- procedures in case of accidental spillage and
- safe and appropriate cleaning and disinfection procedures

A record of training received by individuals should be kept by the School/Department.

#### **4.2 Personal Hygiene**

Basic personal hygiene is important in reducing the risk from handling clinical waste. Areas where clinical waste is handled or stored have washing facilities available close by.

#### **4.3 Personal Protective Equipment**

Any personal protective equipment which is necessary as a result of the risk assessment must be provided, worn and maintained. All persons issued with this equipment must use it in the correct manner. Personal protective equipment must be checked periodically by a competent person and a record should be kept by the School/Department.

#### **4.4 Immunisation**

Hepatitis B and Tetanus primary immunisation or reinforced doses (as appropriate) should be considered for all staff and students at risk from handling clinical waste.

#### **4.5 Segregation**

Proper segregation of different types of waste is critical to safe management and helps control disposal costs. Wastes need to be sorted at the point of origin so that they can follow appropriate routes for treatment and/or disposal.

The system of colour-coding should be instituted to aid the process of waste segregation. The following system of colour-coding is widely used for waste containers:

- **yellow** – Group A and B clinical wastes which will be incinerated in a clinical waste incinerator.

- **yellow with black stripes** – non-infectious waste, eg Group E and sanpro which is suitable for landfill or other means of disposal.
- **light blue or transparent with blue lettering** – waste for autoclaving or equivalent treatment before disposal; and
- **black** – treated clinical waste, non-clinical or household waste.

In addition to colour-coding, the containers need to be of the correct standard for the waste they will contain (see section 4.8 Packaging).

Aerosols and other pressurised containers must not be placed in clinical waste containers destined for incineration, but in separately identified containers specifically for them.

#### **4.6 Handling clinical waste before disposal**

While segregation provides the basis for the safe handling of wastes, other precautions are needed to ensure that risks are managed as the waste moves downstream from source to final disposal.

##### **Group A wastes**

Procedures for Group A wastes should include the following measures:

- placing waste in waste sacks in sack holders or other appropriate containers at the point of generation
- replacing sacks daily or when three-quarters full
- not transferring loose contents from container to container
- sealing sacks with a plastic tie, closure or heat sealer, purpose-made for clinical waste sacks
- prohibiting the use of staples to close the sack, as they do not provide a secure closure and may puncture the sack
- providing lids for bins which can be sealed before collection
- labelling sacks to indicate their origin, and
- collection at appropriate frequency

Where waste accumulates in small quantities daily, the interval between collections ought to be as short as reasonably practicable and not less than once per week.

##### **Group B wastes (including broken glass)**

Many needle stick injuries happen during resheathing, therefore, needles should not be resheathed by hand. Syringes/cartridges and needles should be disposed of intact. Sharps must never be placed in containers used for the storage of other wastes eg waste paper bins. They need to be put safely into properly constructed sharps containers. Such containers should either meet the requirements of BS7320 and/or the UN type-approved.

To avoid the risks associated with overfilling, sharps containers need to be removed when three-quarters full, sealed and labelled and they should not be placed in sacks.

**Used needles and syringes must not be disposed of in domestic waste.**

### **Group C wastes**

Cultures of Advisory Committee on Dangerous Pathogens (ADCP) Hazards Group 2 biological agents should be made safe, by autoclaving, before leaving the premises for final disposal.

### **Group D wastes**

These wastes are likely to be Special Waste and the Occupational Health and Safety Unit should be contacted to arrange for disposal.

## **4.7 Storage**

Clinical waste should be removed from its place of origin for storage prior to disposal. The waste should not be allowed to accumulate in unsuitable places such as corridors. Schools/Departments should nominate a responsible person from each area where clinical waste is produced to carry out this task.

Storage areas for clinical waste should be designated by the School/Department. They should be:

- reserved for clinical wastes only
- well lit and ventilated
- sited away from food preparation and general storage areas, and routes used by the public
- totally closed and secure
- readily accessible but only to authorised persons
- kept locked when not in use
- secure from entry by animals and free from insect or rodent infestation
- provided with wash-down and washing facilities
- clearly marked with warning signs
- provided with separate clearly labelled areas for containers going to landfill or incineration and
- provided with first-aid facilities

Appropriate protective equipment, including gloves, overalls and materials for dealing with spillages, should be provided at the storage facility.

Animal carcasses/tissues that cannot be disposed of immediately after use should be placed in a labelled yellow sack and stored in a suitable freezer until the time for collection.

## **4.8 Packaging**

Requirements for packaging vary depending on, for example, the category of the waste and the method of final disposal. This section outlines some of the factors that need to be considered when making decisions about packaging.

### **Packaging of Group A waste – clinical waste sacks**

Most infectious waste (other than contaminated sharps) is disposed of in clinical waste bags. Bags used to contain Group A material need to comply with the requirements of CDGCPL2 and the Approved Requirements. This means that they need to be design type-tested and certified (usually referred to as “UN type-approved”). Treated and /or sterilised waste is not considered dangerous for carriage, and the requirements do not apply to such waste.

### **Packaging of Group B waste – sharps containers**

Infectious Group B waste should be placed in sharps containers which conform to the standard contained in the Carriage of Dangerous Goods Regulations. The majority of sharps waste is transported under UN3291. The sharps containers should also conform to British Standards BS7320. Type-approved containers do not have to be used for waste which is treated and/or sterilised before transport.

### **Packaging of Group C wastes**

In most cases, Group C wastes are sterilised on-site before disposal. Such waste is not considered dangerous for carriage, and there are no special packaging requirements under CDGCPL2. Packaging, nevertheless, needs to be suitable for containing the waste, and the waste must be clearly marked as having undergone sterilisation before leaving the site.

Any Group C waste which is not sterilised before leaving the site has to be packaged in accordance with the approved Requirements.

### **Packaging of Group D wastes**

Group D waste must be transported in appropriate UN type-approved packaging. The use of clinical waste bags is not acceptable.

### **Packaging of Group E wastes**

Group E wastes are not considered dangerous for transport by road under CDGCPL2 and do not have to be packaged in UN type-approved containers. Risk assessments under COSHH may however, indicate the need for precautions to ensure the health and safety of people handling the waste.

## **4.9 Labelling**

Packaging for clinical waste needs to be labelled to show clearly the type of waste, the hazards, and, if appropriate, the method of disposal. Labels for waste to be transported off-site must meet the requirements of CDGCPL2. These Regulations prohibit consigning the waste for transport unless the following information is clearly shown:

- the appropriate designation of the waste

- the appropriate UN number. In the case of “CLINICAL WASTE, UNSPECIFIED, N.O.S.” this would be UN3291.
- The appropriate danger sign.

CDGCLP2 also sets out methods of labelling. It requires the specified information to:

- be positioned so that it can be clearly read when the package is loaded for transport
- stand out from the background
- be clearly and indelibly marked either directly on the package, or on a label securely fixed to the package

Packaging should be marked in accordance with the Approved Carriage List to indicate any subsidiary hazard. Danger signs must conform in form, colour and size to the requirements of CDGCPL2. A relaxation is allowed in the case of the yellow plastic sacks commonly used for the transport of clinical waste; In this case, the danger signs may be printed directly on to the sacks unless the package is an awkward shape, or too small. In such cases, the signs need to be as large as practicable.

## **4.10 Transport**

### **Internal transport**

Dedicated trucks, trolleys or wheeled containers are needed to transport waste containers to storage areas. In order to prevent contamination they should not be used for any other purpose. They need to be designed and constructed so that they:

- are easy to clean and drain
- contain any leakage from damaged receptacles or containers
- are easy to load and unload
- do not allow particles of waste to become trapped on edges or in crevices.

Containers for on-site transport need to be steam cleaned or disinfected following leakages or spills, and at regular intervals.

### **Transport off or between sites**

While CDGCPL2 covers the classification, packaging and labelling of clinical waste a number of other requirements apply to transport of clinical waste off-site. These are summarised below:

#### **Transport of packaged clinical waste – key points**

The consignor of the waste:

- must ensure that the operator of the vehicle receives information about the load, including designation, classification, UN number and packaging group, as well as the number and capacities of the packages and the name and address of the consignor. For goods in Package

Group II, for example UN3291 Clinical Waste, N.O.S., this requirement applies only if goods are in receptacles over 10litres/10kg.

The vehicle operator must ensure that:

- any vehicle used for the transport of clinical waste is suitable for the purpose and is adequately maintained.
- the driver receives specified information. The operator is required to keep this information for at least three months after the relevant journey.
- where large quantities of clinical waste are transported on a regular basis, the driver must be trained in accordance with the requirements of the Carriage of Dangerous Goods by Road (Driver Training) Regulations 1996.
- the goods are loaded, stowed and unloaded in away that does not create a risk or significantly increase any existing risk of health.
- the vehicle is marked at the front and rear with an orange plate (if carrying over 500litres/500kg of waste).
- adequate precautions against fire or explosion are in place, this includes the provision of fire extinguishers.

#### **4.11 Dealing with accidents, incidents and spillages**

Schools/Departments should have written local procedures giving clear guidance for dealing with accidents, incidents and spillages involving clinical waste which must be notified to the Occupational Health and Safety Unit.

Written procedures for dealing with accidents and incidents need to cover:

- immediate first-aid measures
- immediate reporting to a responsible person
- recording of the accident/incident
- investigating the accident/incident, and implementing remedial action
- retaining, if possible, the item and information about its source to help identify possible infection risks
- attending by any injured person at hospital as soon as possible .

Written procedures for dealing with spillages should specify the following:

- reporting and investigation procedures
- use of a safe system of work for clearing up the spillage
- appropriate requirements for decontamination

- protective clothing

A clinical waste spillage kit comprising of disposable apron, disposable gloves, clinical waste bags, sharp container, disinfectant, absorbent granules, disposable scoop and spatula, should be readily available. Spilled sharps should not be handled directly. Disinfectants containing 10,000ppm available chlorine are recommended.

#### **4.12 Treatment and disposal**

Clinical waste may be treated in a number of ways before disposal. Treatment reduces the risk of infection during handling and transport, and may also be used to alter the state of the waste so that it is no longer clinical waste by definition.

##### **Treatment methods**

###### (i) Heat Treatment

Thermal treatment processes maintain the temperature of the waste at specified values for specified lengths of time to reduce the number of infectious agents in the waste, heat activation systems can be divided into those using relatively low temperatures (such as autoclaves and microwaves) and those using high temperatures (such as pyrolysis and gasification).

###### (ii) Chemical Treatment

Chemical treatment methods include disinfection with sodium hypochlorite, chlorine dioxide, peracetic acid and calcium oxide.

##### **Disposal methods**

There are three principle methods: discharge to sewer, incineration and landfill.

###### (i) Discharge to sewer

The sewerage system is designed and operated to accept infectious material in the form of domestic sewage. Any discharge to sewer, other than domestic sewage, must have prior agreement of the statutory responsible authority. In England and Wales this is the Environment Agency and the local sewage undertaker. Any person intending to dispose of any waste to the sewer must contact the Occupational Health and Safety Unit beforehand for advice.

Waste pharmaceuticals are likely to be prescription-only medicines and therefore subject to the Special Waste Regulations 1996. they should not be discharged to public sewers.

###### (ii) Incineration

Clinical waste which needs to be disposed of by incineration will be collected from the University on a regular basis by a licensed carrier and disposed of at a licensed incinerator. Schools/Departments may arrange their own carrier service or utilise the University's Special Waste collection service.

All transfer/consignment notes, which describe the type and quantity of the waste being transferred to the waste carrier, should be held either by the Occupational Health and Safety Unit or the School/Department arranging their own collection.

All documentation must be held for at least three years after the relevant collection.

(iii) Landfill

*Group A, B C wastes*

Wastes in Groups A (other than identifiable human tissue), B and C must be treated and made safe before they are landfilled, at a licensed site. Making the waste safe may sometimes not be practicable, for example, waste which is likely to contain infective quantities of a pathogen that:

- continues to be active after treatment
- persists for long periods outside the human body
- can be ingested when wastes are crushed at landfill

Such waste must not be sent for landfill

*Group D wastes*

Group D wastes should not be landfilled, but should be incinerated or otherwise treated by a process which destroys the component chemicals.

*Group E wastes*

Waste in Group E can be landfilled at sites licensed to receive it.

*Human Tissue*

Identifiable human tissue must not be landfilled. This type of waste must only be disposed of in a clinical waste incinerator.

Appendix 2 summarises the treatment/disposal options suitable for the different groups of clinical waste.

## **5 Monitoring and review**

To assess the effectiveness of the arrangements for reducing the risks from clinical waste, Schools/Departments should have in place systematic procedures for monitoring and review. These procedures need to check in particular that clinical waste is not entering the non-clinical waste and that the different categories of clinical waste are treated and disposed of appropriately.

## APPENDIX 1

### **Main Legislation applicable to the handling, storage, transportation and disposal of clinical waste**

Under health and safety law, employers who generate clinical waste must ensure that the risks from it are properly controlled. In practice this involves:

- assessing the risk
- developing policies
- putting arrangements into place to manage the risks, and
- monitoring the way the arrangements work

The first step in the effective management of clinical waste is the proper identification and assessment of risk. The University must assess the risks to its employees, students and others under both **the Control of Substances Hazardous to Health Regulations 1999** (COSHH) and **the Management of Health and Safety at Work Regulations 1999** (MHSW).

The **COSHH** Regulations provide a framework of actions designed to control the risk from a range of hazardous substances, including clinical waste. The key points are:

- the risks to employees and others from clinical waste must be assessed
- arrangements for reviewing the assessment as and when necessary must be made
- the risks must be adequately controlled
- suitable and sufficient information, instruction and training must be provided for employees about the risks
- health surveillance and immunisation should be provided, where appropriate

The **MHSW** Regulations and their associated Approved Code of Practice provide a framework for managing risks at work, including the risks from clinical waste, not covered by more specific requirements such as **COSHH**. The key points are:

- a suitable and sufficient assessment of the risks to employees and others must be made. The significant findings of the assessment must be recorded.
- particular account must be taken in the assessment of risks to new and expectant mothers and their unborn and breast feeding children.
- particular account must be taken in the assessment of risks to young people
- arrangements for the effective planning, organisation, control, monitoring and review of any precautions must be made
- health surveillance should be provided where appropriate

In addition to the above Regulations those who produce, transport, treat and dispose of clinical waste all have duties under environmental law. The most important of these are:

- the “duty of care” in the management of waste
- the duty to control polluting emissions to air, and
- the duty to control discharges to sewers

The statutory requirements covering duty of care in waste management are contained in section 34 of the **Environmental Protection Act 1990** (EPA) and the **Environmental Protection (Duty of Care) Regulations 1991**. The key points of the Environmental Duty of Care are:

- a written description of the waste must be supplied which includes:
  - its nature, source and quantity
  - sufficient information to enable people who handle the waste further down the chain to discharge their duty of care
  - anything likely to affect the handling or disposal of the waste
- satisfy themselves that the means of treatment and disposal are appropriate to the waste

**The Environmental Protection Act 1990** and the **Waste Management Licensing Regulations 1994** provide a legislative system to regulate waste management. Waste must be managed in a way that does not cause pollution or harm to human health. Under the legislation, controlled waste (which includes clinical waste) must be kept, treated or disposed of in accordance with a waste management licence, unless it:

- is consigned to a process which is subject to other regimes in accordance with regulation 16 of the 1994 Regulations or
- falls within an exemption under schedule 3 of the 1994 Regulations

These exemptions mean, among other things, temporary stores and laboratory autoclaves do not require a waste management licence.

A few clinical wastes ie, waste containing ACDP Hazard Group 4 biological agents and waste containing or consisting of prescription-only medicines, are subject to more stringent controls under the **Special Waste Regulations 1996**. Under these Regulations, all movements must be tracked using consignment notes until they reach an appropriate waste management facility.

## APPENDIX 2

### TREATMENT/DISPOSAL OPTIONS OF CLINICAL WASTE

<u>Category of Waste</u>	<u>Treatment/Disposal Option</u>	<u>Container</u>
The following <b>Group A</b> waste	Must be disposed of in a clinical waste incinerator	Yellow Sack
1 identifiable human waste:		
2 any wastes known or likely to contain ACDP Hazard Group 4 biological agents;	Items 2, 3 and 4 opposite should be autoclaved before disposal	(Those items for autoclaving should be placed in a light blue or transparent bag with light blue lettering, before autoclaving and then placed in a yellow sack after autoclaving)
3 all waste from containment laboratories level 3		
4 all cultures of ACDP Hazard Group 2 biological agents		
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Other <b>Group A</b> waste	May be heat or chemical treated  The residue may be either incinerated or sent for landfill	Black sack
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The following <b>Group B</b> waste	Must be disposed of in a clinical waste incinerator	Yellow sack
1 identifiable human waste;		
2 any wastes known or likely to contain ACDP Hazard Group 4 biological agents;	Items 2,3 and 4 opposite should be autoclaved before disposal	(Those items for autoclaving should be placed in a light blue or transparent bag with light blue lettering, before autoclaving and then placed in a yellow sack after autoclaving)
3 all waste from containment laboratories level 3;		
4 all cultures of ACDP Hazard Group 2 biological agents		
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Other <b>Group B</b> waste	May be heat or chemical treated.  The residue may be either incinerated or sent for landfill	Black sack
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<b><u>Category of Waste</u></b>	<b><u>Treatment/Disposal Option</u></b>	<b><u>Container</u></b>
<b>Un-autoclaved Group C</b>	Must be disposed of in a clinical waste incinerator	Yellow sack
<b>Autoclaved Group C</b>	May be heat or chemical treated.  The residues may either be incinerated or sent to landfill	Black sack
<b>Group D</b>	Must be disposed of in a clinical waste incinerator	Secure container eg bottle, jar NOT in a yellow sack or sharps container
<b>Group E</b>	Clinical waste incinerator, heat or chemical treatment. Direct to landfill	Yellow sack with black strips
<b>Group E – faeces, urine, vomit and the like</b>	Sewer	