

OCDEM, Churchill Hospital, Oxford OX3 7LE

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## Waste Disposal

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## 1 General

There are five waste streams in OCDEM: domestic (black bags and recycling), clinical (orange bags, yellow 'burn' bins, yellow sharps containers), hazardous waste, radioactive waste and Waste Electronic and Electrical Equipment (WEEE).

Items destined for any of these streams must be strictly segregated. Domestic and clinical waste is disposed of through the Oxford University Hospitals (OUH) NHS Trust; hazardous waste that is not classified as clinical is disposed of through the University of Oxford Safety Office (Safety Office). WEEE cannot be disposed of via either the OUH NHS Trust or the Safety Office unless it is classed as hazardous; a specialist waste contractor has to be hired to dispose of this category of waste.

**Domestic waste:** for example, paper, card, general office type refuse, packing materials, paper towels used for drying hands, kitchen waste.

**Clinical waste:** all material contaminated or potentially contaminated in the laboratory area or the Clinical Research Unit (CRU) such as gloves, pipette tips, plastics, old gels, blots, syringes, needles, blood tubes, tissue used for mopping up blood spills etc. This list is not exhaustive and before discarding any item careful thought should be given to whether it is potentially contaminated.

**Hazardous Waste:** apart from chemical waste, this also includes computer monitors and televisions, aerosol cans, batteries, UV lamps, mercury lamps etc. Equipment containing refrigeration gases, asbestos or oil is classed as hazardous. This list is not exhaustive.

**Radioactive Waste:** all waste that is contaminated with radioactive substances, including for example, disposable pipette tips, gloves, tubes, reagent bottles and possibly syringes is disposed of via this waste stream. Radioactive waste can be solid or liquid and may also contain biological or chemical hazards in addition to the radioactivity; there are strict restrictions and conditions on the route of disposal and advice from the Senior Radiation Protection Officer must be sought. Disposal of waste is via the Safety Office.

**WEEE:** any item that contains electronic or electrical components and does not contain any hazardous material; this covers a whole range of items from small kitchen equipment to large pieces of laboratory equipment.

There is a waste holding room within OCDEM; which is located on the ground floor, opposite the stairwell located between phase one and two of OCDEM. The waste room on the ground floor is secured by a keypad lock. Please contact the DSO or OCDEM administration for the number.

Further information is available in University Policy Statement S6/10: Hazardous Waste Disposal which can be found at

<https://www1.admin.ox.ac.uk/safety/oxonly/upss511/> which was updated in 2014.

## 2 Office Areas and Kitchen Waste

### 2.i Domestic waste

- Office waste and kitchen waste can go into black bags unless it is 'sharp'. There is a small plastic container in the kitchen for holding items of broken glass and crockery until it can be removed to the laboratory for disposal.
- Cardboard boxes are to be flattened and placed in the waste room.

### 2.ii Recycling

- There are several recycling bins located within the department. Please recycle waste wherever possible:
- Bins for recycling paper are available in nearly all office areas. Please remove paper clips if possible
- Clean glass that is not broken can be recycled; note that borosilicate glass (eg Pyrex) cannot be recycled and needs to be disposed of through the laboratory glass bins. Please do not place glass in the black bags in case the glass breaks.
- A lot of plastic and metal can be recycled, check on plastic containers for the recycling logo.
- Paper, plastic, glass and metal (drinks and food cans etc) can all be placed in the same recycling bin. Please be careful when placing glass in the bins to ensure it does not break.
- Information on recycling in laboratory areas is available in the relevant subsection in section 3.

## 3 Laboratory and Clinical Room Waste

### 3.i Domestic Waste

- All 'office type' waste in the laboratory can be placed in black bags or recycled as long as it is not 'sharp' or glass. If in doubt use the orange bags for paper and non-sharp items. Recycle wherever possible.  
**Contaminated waste is not to be placed in black bags.**
- Packing material that is not contaminated can be placed in black bags.
- Cardboard boxes can be broken down and placed in the waste room for recycling, please remove or obliterate all hazard labels.
- Paper towels and tissues in the laboratory that have been used for swabbing a bench with Virkon can be disposed of as domestic waste, as these are effectively disinfected. Paper towels and tissues from the laboratories or the CRU used for mopping blood or chemical spills etc must be disposed of via the clinical waste stream.
- **Note:** All packing material that has been in direct contact with laboratory samples, either human or animal; products derived from human or animal sources or hazardous chemicals must be placed in burn bins marked for incineration. This refers to the inner packaging, not the outer cardboard box, which can be recycled. Several companies recycle the packing material.
- Do not place any ambiguous waste, for example unused consumables that are no longer required, into black bags even if uncontaminated.

Cleaning staff cannot be expected to know that the tube or a bag of tubes, for example, is unused and no longer required.

### 3.ii Clinical waste

- The definition of clinical waste is: 'human or animal tissue, blood and other body fluids, contaminated swabs and dressings, syringes, needles and other sharp instruments'. This also includes gloves, pipette tips, plastics, old gels, blots, syringes, needles, tissue used for mopping up blood spills or any other items that might be contaminated. If in doubt dispose of laboratory and CRU waste into the clinical waste stream.
- Clinical waste must be disposed of in one of the following receptacles:
  - \* orange bags;
  - \* yellow burn bins - 35 or 50 litre containers which are rigid, square or rectangular in shape and are not sealed until full;
  - \* yellow sharps bins with yellow lids - these come in a variety of sizes, the maximum size purchased by the department being 22 litres, they are assembled before use and have an access port for disposal of items.
- Burn bins and sharps bins, must :
  - \* be labelled with the source (room number/dept/hospital), the date and the name of the person sealing the bin;
  - \* be a maximum of 3/4 full;
  - \* be sealed and double checked by a second person;
  - \* removed to a secure collection point (waste room).
- Final disposal of clinical waste through the OUH NHS Trust:
  - \* orange bags, yellow burn bins and yellow sharps bins with orange lids are crushed and treated (autoclaved);
  - \* yellow sharps bins with yellow lids are incinerated; yellow burn bins will be incinerated if marked clearly 'FOR INCINERATION'.
- To avoid the risk of the incorrect disposal route for sharps disposal only yellow sharps bins with yellow lids are to be purchased. These are the only bins that the OUH NHS Trust sends for incineration by default. Ensure that the correct sharps bins are purchased, yellow sharps bins with yellow lids are available from the NHS Supply Chain; if purchasing from scientific suppliers ensure the bins are provided with yellow lids,
- Contaminated **liquid** waste should be disposed of in a rigid bin, either a burn bin, marked for incineration, or a sharps bin with a yellow lid. Sharps bins are the preferred option.
- All tubes containing either whole blood, plasma, red cells, lipoprotein fractions or any other liquid blood product must be disposed of either in yellow sharps bins for incineration, or disinfected with Virkon to a final concentration of 2% and disposed of via the drains. Tissue samples must be placed in sharps bins for incineration.
- Orange bags are adequate for disposal of 'soft' items such as paper towels and gloves and any other such laboratory or clinical items that are potentially contaminated and cannot tear or pierce the bag. If the items are not contaminated and cannot be mistaken as being possibly contaminated, place them in a black bag. Gloves must be placed in orange bags.

- The orange bags **must not** contain liquid waste, radioactive waste, sharps, pipette tips, any glass or tissues/swabs that are wet with organic solvents.

### 3.iii Sharps

- Sharp objects (needles, scalpels etc) and broken or small contaminated glass items (including Vacutainers) must go into rigid yellow sharps containers conforming to BS 7320 and UN 3291.
- Syringes and needles must be disposed of as a single unit, without resheathing needles.
- It is important to note that the yellow 'burn' bins, although rigid, are **not** approved sharps containers and needles and blades must not be discarded into them.
- Sharps must be put into the sharps bin and not left lying on or protruding from the opening. If the box is 3/4 full, then a new one must be started and the old one sealed and labelled for disposal.

### 3.iv Pipette tips and Serological Pipettes

- Pipette tips and serological pipettes **must not** be placed in orange bags, they must be placed in a rigid container.
- Suitable containers are empty media bottles, 'Dispo Safe' jars, 'Bio-bins' or directly into a sharps or burn bin. 'Dispo Safe' jars and media bottles must be sealed and placed in orange bags for disposal when full; 'Bio-bins' can be placed directly into the waste room once they have been permanently sealed.
- Ensure the neck of the container is wide enough for multi-channel pipettes and that any container used for the disposal of serological pipettes is tall enough.
- Dispo Safe jars are available from:  
<http://www.microbiologicalsupply.co.uk/msc06.pdf>;  
Bio-bins are available from the NHS Supply Chain, Fisher Scientific and Appleton woods; it is worth noting that Bio-bins are suitable for autoclaving.

### 3.v Glass

- Uncontaminated/non hazardous glass/metal that is broken or sharp can go into the red glass bins; all non-hazardous borosilicate glass is also placed in these bins. These bins are sent to land-fill for disposal.
- Broken glass that has been in contact with bio-hazards or hazardous chemicals must be placed into sharps bins for incineration.
- Similarly all glassware in contact with biological material must be disinfected prior to disposal, or placed in sharps bins for incineration.
- Empty, small reagent bottles that have contained hazardous chemicals can be placed in sharps bins for incineration.
- All empty containers that have contained substances classed as toxic, carcinogenic, teratogenic or mutagenic **must** be disposed of in sharps bins for incineration.

- **Recycling:**
  - \* When recycling remove or obliterate all labels on chemical bottles.
  - \* Empty reagent bottles for disposal that have contained non-hazardous chemicals must be rinsed thoroughly to remove any residues and can be recycled.
  - \* Empty reagent bottles for disposal that have contained hazardous chemicals (but not toxic, carcinogenic, teratogenic or mutagenic) that do not cause environmental harm, **must** be washed thoroughly with detergent to remove any residues and can be recycled. The Material Safety Data Sheet (MSDS) must be consulted if there is any doubt as to whether the residue can be washed down the sink. Remove or completely obliterate all hazard labels and chemical names.
  - \* Glass 2.5 litre 'Winchesters' can be recycled back to the company if they were sourced from VWR or Fisher Scientific; the company will collect them.
  - \* **Note:** borosilicate glass cannot be recycled. Pyrex and Schott glassware is borosilicate as are many of the disposable glass tubes purchased by the department.
  - \* Do not place any glassware for recycling if it could possibly be mistaken for contaminated items.
  - \* If in doubt ask the DSO for advice.

### 3.vi Plastic

- Pipette tips and serological pipettes must be disposed of as outlined in section 3.iv.
- Empty, small reagent bottles that have contained hazardous chemicals can be placed into sharps or burn bins for incineration.
- All empty plastic containers that have contained substances classed as toxic, carcinogenic, teratogenic or mutagenic **must** be disposed of in sharps bins or burn bins marked for incineration.
- **Recycling:**
  - \* Pipette tips boxes can nearly all be recycled as long as they are not contaminated:
    - Tip boxes from Anachem, Starlab and Kinesis can be recycled back to the company; contact the relevant company for details.
    - Any tip boxes that cannot be recycled back to the company can be placed in the general recycling bins in the lab.
  - \* Empty reagent bottles for disposal that have contained non-hazardous chemicals must be rinsed thoroughly to remove any residues and can be recycled. Remove or obliterate all labels on chemical bottles
  - \* Empty reagent bottles for disposal that have contained hazardous chemicals (but not toxic, carcinogenic, teratogenic or mutagenic) that do not cause environmental harm, **must** be washed thoroughly with detergent to remove any residues and can be recycled. The MSDS must be consulted if there is any doubt as to whether the residue can be washed down the sink. Remove or completely obliterate all hazard labels and chemical names.
  - \* If in doubt ask the DSO for advice.

### 3.vii Electrophoresis Gels

- Gels can be disposed of by placing in black bags unless there is a biological or radiological hazard; please wrap them in cling film, a plastic bag or foil before disposing of them. Gels containing ethidium bromide can be disposed of in the same manner, but they must be double wrapped before disposal.

### 3.viii Phenol waste

- All phenol waste must be segregated from other waste, please note that phenol is often a hidden ingredient in many kits for DNA and RNA extraction.
- Any tubes, pipette tips or other consumables that have been in contact with phenol, even if empty, are classed as phenol waste.
- Phenol waste must be further segregated into 'hazardous' and 'non-hazardous' waste if possible.
- \* **Non-hazardous phenol waste**
  - Any consumables that have contained phenol, but are now empty, for example pipette tips, tubes where the contents have been removed for further extraction/analysis, or anything that contains less than 1% w/w of phenol is classed as non-hazardous waste. This **must** be segregated from other phenol waste into rigid containers, preferably into old reagent bottles or Dispo Safe jars (which must have any biohazard label removed) and collected for disposal by the Safety Office.
- \* **Hazardous phenol waste**
  - All phenol waste containing 1% or more of phenol is classed as hazardous.
  - **Consumables contaminated with phenol:** - any tube, bottle or container etc that still contains greater than or equal to 1% w/w of phenol **must** be segregated from non-hazardous phenol waste. The phenol **must not** be emptied from the container; the liquid must be disposed of in its container. This should be collected directly into a UN approved container for liquids. If in doubt that there is less than 1% w/w phenol remaining in a tube dispose of it via this route.
  - **Liquid** phenol waste must be collected directly into either a UN approved container for liquids or into a Winchester bottle.
  - **Solid** phenol crystals must be disposed of in the original container.
- All containers must be clearly marked with their contents.
- The only approved route for disposal of phenol waste is via the Safety Office.
- Read the OCDEM risk assessment (OCDEM RA6) 'Working with phenol' for information on purchasing suitable waste containers for the disposal of phenol.

### 3.ix Drugs

- Unwanted or expired drugs can be taken back to Pharmacy for disposal.
- Small quantities of drugs can be placed in a sharps bin with a yellow lid for incineration.

- Vials of opened drugs and discharged sharps that have contained drugs must be placed in a sharps bin for incineration.
- Large quantities of medicines that are no longer required must be placed in burn bins and 'Pharmaceutical Waste' tape must be stuck across the lid.
- Glucose and saline bags for disposal which are not empty must be placed in burn bins, but the bin does not need to be incinerated. Preferably the contents should be discharged and the empty bags placed in orange bags for disposal. Glass containers would need to be placed in burn or sharps bins.

### 3.x Radioactive waste

- The handling of radioactive waste is dealt with very specifically under separate arrangements, see 'OCDEM Local Rules for Laboratory Work with Radioactive Materials' and the Senior Radiation Protection Supervisor will familiarise you of these special arrangements during a full training programme, if the need to use radioactive substances arises.

### 3.xi GM waste

- There are very specific arrangements for the handling of GM waste. Further information is available from the Biological Safety Officer.

### 3.xii Solvents

- Small volumes (<500 ml) of some water miscible, non-chlorinated organic solvents, such as ethanol or methanol, may be disposed of down laboratory sinks and flushed with copious amounts of water; **check in the MSDS data sheets for disposal information**, (n-Hexane and Heptane are two examples that **cannot** be flushed down the sink).
- Waste organic solvents can be evaporated in the fume cupboards as long as the volume does not exceed 500ml per week and they are not highly flammable.
- Chlorinated solvents, scintillation fluid (as long as it is not radioactive) and larger volumes of organic waste must be disposed of by the hazardous chemical disposal route. The DSO must be consulted.
- Consult the DSO for further advice on disposal.

### 3.xiii Chemicals

- All hazardous chemicals must be disposed of via the Safety Office. The DSO or Divisional Safety Officer must be consulted if there is any doubt about the correct route for chemical disposal. Disposal is arranged by the DSO.
- All chemicals for disposal should be clearly labelled with their content.

### 3.xiv Mercury - Containing Equipment

- This includes thermometers, manometers, mercury lamps and some printed circuit boards. This list is not exhaustive. Items should be packed in robust containers. The DSO will arrange disposal via the Safety Office.

### 3.xv Photographic and Imaging Waste

- Photographic waste must not be discharged to drains.

- The developer unit in the OCDEM dark room has a silver trap. All the waste chemicals from the developer unit pass through this trap, which has to be replaced annually or when its trapping capability has been exhausted, whichever is the sooner.
- The silver trap either has to be removed by the company fitting the new trap, or disposed of via the Safety Office. If the trap is removed and not replaced immediately all photographic waste must be collected and arrangements made with the Safety Office for disposal.

### **3.xvi Oils**

- Waste oils may come from a variety of processes or from various items of equipment when they are serviced or repaired, for example vacuum pumps, compressors on high speed centrifuges, fridges and freezers.
- Waste oils must be collected and stored (with any specialist oils being kept separate e.g. chlorinated oils) for collection and disposal as hazardous waste via the Safety Office.

## **4 Hazardous Waste, all areas**

- All other hazardous waste is disposed of via the Safety Office. See the DSO for more information. The following categories are all hazardous waste.

### **4.i Batteries**

- All batteries, including small domestic batteries must be disposed of via the Safety Office.
- Batteries come in three main types: rechargeable and disposable (e.g. alkaline, lithium, Ni-Cd, NiMH); lead acid non-spillable (e.g. UPS batteries) and lead acid wet (the type used in cars and leisure vehicles). There are different hazards associated with each type.
- Lead acid batteries can cause fire if disposed of in domestic waste. These are collected separately by a licensed contractor as part of the hazardous waste system, organised by the Safety Office.
- Rechargeable batteries and small domestic batteries can be deposited in a 'battery disposal' container; one container is just inside the door of the admin office in phase 1 (room S36), the other container is located on the 'Safety Station' within Lab F40. These are then disposed of via the Safety Office.

### **4.ii Computer monitors**

- The University's policy on computer disposal can be found on the OUCS website at <http://www.it.ox.ac.uk/policies-and-guidelines/computer-disposal>. Computer equipment falls within the scope of the WEEE Regulations.
- All computer monitors and any equipment containing cathode ray tubes (e.g. televisions, lab equipment with inbuilt monitors, ultrasound equipment) must be disposed of as hazardous waste.
- Inform the DSO of the number of monitors you have for disposal; the type of monitor and the size of the screen. If the monitor is within a piece of equipment the dimensions and weight plus a brief description of the equipment is required.

#### 4.iii Aerosol cans

- It is University policy to collect aerosol cans and dispose of these by the hazardous waste route, co-ordinated by the DSO and the Safety Office.
- Some aerosol sprays can be recycled, others are classed as hazardous. Contact the DSO for advice,
- Aerosol spray cans and empty butane/propane cylinders which have a self sealing valve (eg Coleman, Primus), often used with bunsen burners, must be disposed of by the hazardous waste route.
- 'Camping gaz' type cylinders that are pierced rather than connected via a valve (there will be a hole left in the top of the cylinder when it has been disconnected from an appliance) can be recycled as metal waste; they are no longer under pressure and will contain no residual gas.
- If in doubt contact the DSO.

#### 4.iv Refrigerated equipment

- Fridges, freezers and any equipment containing a refrigeration unit must be disposed of via the Safety Office. The DSO will liaise with the Safety Office to arrange collection.

#### 4.v Lamps and Light Bulbs

- Some types of lamp (known as Gas Discharge Lamps, GDLs) must be disposed of as hazardous waste (hazardous WEEE). They must not be placed in waste skips and care should be taken not to break them. Ordinary tungsten and halogen light bulbs do not require any special disposal – they are neither hazardous nor do they fall under the WEEE Regulations.
- **Fluorescent tubes (all types) and compact fluorescent lamps (CFLs)** – The OUH NHS Trust Estates department will remove all fluorescent lamps that they replace in the department.
- **High intensity gas discharge lamps** - These include high and low pressure noble gas filled, and mercury and sodium discharge lamps. Lamps should be packed so as to prevent breakage. Inform the DSO who will arrange disposal via the Safety Office.

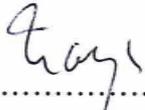
### 5 Waste Electronic and Electrical Equipment

- See University Policy Statement S6/10 Appendix 1 for an overview of WEEE disposal, this can be found at <https://www1.admin.ox.ac.uk/safety/oxonly/upss511/>; click the link for Appendix 5.
- WEEE can fall into either hazardous or non-hazardous categories.
- The majority of non-hazardous WEEE **cannot** be disposed of through either the OUH NHS Trust or the Safety Office.
- The OUH NHS Trust will dispose of small items of WEEE, eg kettles, toasters. These must be placed in the waste room on the ground floor.
- The Safety Office will dispose of WEEE containing hazardous materials, eg refrigerant gases, oil, asbestos.
- All other WEEE has to be disposed of via a specialist contractor. This is arranged periodically by the DSO and the OCDEM administration office.
- Wherever possible, when the product is a replacement, ask the vendor to remove the old product on delivery; for the majority of larger items

vendors will provide this service and have an obligation to do so in many circumstances.

- Computers and laptops can be collected by companies who will recycle them.
- If in doubt about disposal contact the DSO.

Document approved and accepted by OCDEM Safety Advisory Committee



.....  
Prof Fredrik Karpe, OCDEM Head of Safety

Date: 30/6 2015 .....

I have read and understood this SOP and agree to abide by the instructions and regulations therein.

Signed: (Staff Member) Date:

Please copy the signed form and return to your supervisor who will ensure it is placed in the OCDEM training records.

## Review History

| Version | Date         | Reason for update  | Updated/reviewed by:   | Date review due |
|---------|--------------|--|--|-----------------|
| 1       | 1/10/03      | New Document   | Written by SMH, accepted by OCDEM Safety Advisory Committee (OSAC) | Oct 2004        |
| 1       | Sep 2004     | No changes   | SMH  | Oct 2005        |
| 1       | Oct 2005     | No changes   | SMH  | Oct 2006        |
| 2       | 6/9/2006     | Rotation of Chair of Academic Committee and BSO, changes in segregation of waste   | SMH, accepted by OSAC on 18/10/2006                                | Oct 2007        |
| 2       | April 2008   | No Changes   | SMH  | April 2009      |
| 3       | May 2010     | Major rewrite  | SMH, accepted by OSAC  | May 2011        |
| 3       | May 2013     | Review – no changes  | SMH  | May 2015        |
| 3.1     | 30 June 2015 | Updated links, info on recycling pipette tip boxes updated, minor changes to text. | SMH  | June 2017       |
|         |              |  |  |                 |
|         |              |  |  |                 |