

OCDEM, Churchill Hospital, Oxford OX3 7LE

SOP number: OCDEM RA 15

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Risks associated with the failure of freezers

Introduction

The Groups within OCDEM own a considerable number of freezers, many of which are for storage at -80°C. This risk assessment is for the risks associated with the samples contained within the freezers if any of them were to fail. Several of the freezers contain 'Relevant Material' as defined by the Human Tissue Authority.

Persons at Risk

- Laboratory Staff, students and visitors
- Domestic staff
- Maintenance engineers

Potential Hazards

- Health hazards
- Manual handling
- Temperature
- Wet floors

Risks to Samples

- Thawing of samples
- Loss of samples during relocation.

Health Hazards

All samples within OCDEM are from a healthy population with no known infectious diseases, therefore the risk of samples containing a pathogen is very low; all samples should still be treated as if they contain infectious agents.

Samples should not pose a health problem as long as [SOP S1 Laboratory Rules for the safe handling of Blood, Body Fluids and other Human Tissues: Containment Level 2](#) is adhered to. If the samples have been thawed then there is a risk of splashes if any of the tubes are broken and a risk of cuts from the broken tubes.

In the event of a sample spillage [OCDEM SOP S4: Disinfection in Containment Level 2 Areas](#) must be followed during the clean-up process

Both the above SOPs can be found on the OCDEM website (OCDEM.ox.ac.uk) on the staff tab in the Health and Safety folder under 'Lab Safety'.

Manual Handling

If a freezer failure cannot be rectified within a few hours then the material within may need to be transferred to another freezer with the potential of manual handling issues. Consideration must be given to the weight of moving samples within their storage racks; in most cases it would be prudent to remove the samples from the racks and move the boxes. The use of a trolley would be recommended to prevent multiple journeys between freezers.

Temperature

There is a risk of cold burns, especially from the samples in a -80°C freezer. Appropriate gloves for the temperature must be made available and be worn.

Wet Floors

If a freezer has thawed there is the possibility there might be a considerable amount of water on the floor; care must be taken to avoid slips and the water cleared up before attention can be given to the samples in the freezer.

Thawing of samples

The majority of -80°C freezers will hold their temperature for several hours as long as the doors are not opened; typically the rise from -80 to -20 will take about 12 - 16 hours, depending on how full the freezer is, longer for a chest freezer. Many samples will remain stable at -20°C but some samples types, in particular small biopsies, will need to be maintained at a maximum of -50°C. These samples will need to be relocated into a working -80°C freezer as soon as possible.

Relocation of samples

If the problem with the freezer can be rectified within a few hours (for example, during a power cut) the samples can remain in the freezer; but if the freezer has a fault and has failed samples will need to be relocated as soon as possible. In this situation there is a possibility that the samples can be temporarily lost as their whereabouts have not been recorded. It is essential that when samples are relocated a record is kept of the temporary location, and when they are returned to a permanent storage location.

Control Measures

- OCDEM [SOP S1: Laboratory Rules for the safe handling of Blood, Body Fluids and other Human Tissues: Containment Level 2](#) must be adhered to at all times.
- If at all possible samples should be stored in plastic tubes rather than glass; if samples are stored at -80°C the tubes must be capable of withstanding that temperature.
- Tubes should be stored in a secondary container and not left loose on shelves.
- A trolley must be available for use.
- Cryo-gloves must be available for use.
- There must be a bucket and mop available for use and a 'Wet Floor' sign, (a sign can be found in the areas the domestic staff keep their equipment).
- If possible spare freezer space should be kept available for such failures.
- Domestic staff and maintenance engineers must attend an induction to the hazards associated with working in a Containment Level 2 laboratory.

Relevant Material

If any relevant material has been subject to a freezer failure and has been compromised in any way, (for example: thawing, loss during relocation) then records must be kept. An Adverse

Event/Incident (AE/I) form must be completed and action taken for each event; the Adverse Event/Incident log must also be completed. See [OCDEM SOPs I 10: Adverse Event and Incident Reporting relating to Human Tissue for Research](#) for detailed information. The AE/I form and SOP can be found on the OCDEM website on the 'Staff Pages' in the 'Human Tissue Authority' folder.

Update history

| Version | Date | Reason for update | Updated/reviewed by : | Date next review due |
|----------------|-------------|--|------------------------------|-----------------------------|
| 1 | Jan 2012 | New Risk assessment | SMH | Jan 2014 |
| 1.1 | 12/01/2014 | New department header added. | SMH | Jan 2016 |
| 2.0 | 19/01/2016 | Head of Department added, changes to text: Section added about risks to samples. Links to files added. | SMH | Feb 2018 |
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