STANDARD OPERATING PROCEDURE
Sheffield Clinical Research Facility

Safe Handling of Dry Ice

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None

Approved by
Theresa Ledger
Standard Operating Procedure: Sheffield Clinical Research Facility
Safe Handling of Dry Ice

This SOP has been written to give general guidance to study personnel on how to handle dry ice.

Background
It is important that all staff working in the Clinical Research Facility use the same procedure when handling dry ice. This will ensure that there is continuity and consistency when handling dry ice. When handled properly, dry ice is safe and easy to use.

Definition
Dry ice is solidified carbon dioxide. It is extremely cold -109°F (-79°C) and unlike water ice dry ice does not melt, instead it goes directly from a solid to a gas releasing carbon dioxide vapour.

Procedure
The investigator or delegated person should follow protocol specific guidelines for handling dry ice or follow the procedure outlined below.

1. The investigator is responsible for ensuring that dry ice is handled according to the study protocol. This duty can be delegated to other appropriately qualified members of the research team as recorded on the project delegation log.

2. The investigator or delegated person must only obtain dry ice in the form and size in which it will be used. The investigator or delegated person must request dry ice from the appropriate courier company as specified in the study protocol. The investigator or delegated person must inform the Clinical Research Facility receptionist of the request and this will be recorded in the courier request log that is held in reception.

3. The investigator or delegated person must ensure that protective clothing is worn when handling dry ice this includes wearing thick gloves to handle the ice. If touched briefly dry ice is harmless but if prolonged contact with the skin is made, the cells will freeze and cause injury similar to that of a burn. Gloves can be found in the laboratory in the Clinical Research Facility.

4. The investigator or delegated person must store dry ice in an insulated container. Failure to do so will result in the dry ice evaporating. An insulated container will be supplied from the courier company with the dry ice in it. Dry ice must not be decanted from the container.

5. The investigator or delegated person must not store dry ice in a completely airtight container. The sublimation of dry ice to carbon dioxide gas will cause any airtight container to expand or possibly explode.

6. The investigator or delegated person must ensure that there is adequate ventilation where dry ice is stored. In poorly ventilated rooms carbon dioxide gas can sink to low areas and replace oxygenated air. This can be
dangerous and could cause suffocation if breathed exclusively. Dry Ice in the Clinical Research Facility can be stored in the laboratory for a short period when the ice is in use for the dispatch of specimens to central labs transfer.

7. The investigator or delegated person must not leave dry ice on the workbench in the laboratory as the extreme cold temperature could crack it. The dry ice can be left on the floor in the sealed container that it was delivered in.

8. The investigator or delegated person must ensure that if dry ice has been stored in a courier van or room for more than 10 minutes that there is adequate ventilation. The Clinical Research Facility laboratory has adequate ventilation due to the air conditioning and hatch opening to the dirty utility.

9. If at any point when in an area containing dry ice the investigator or delegated person begins to feel unwell, have rapid breathing or cyanosis they must leave the area immediately and seek help from a member of the Clinical Research Facility team. This could be an indication that too much carbon dioxide has been breathed in and not enough oxygen.

10. The investigator or delegated person must ensure that dry ice is not stored in a refrigerator freezer in the Clinical Research Facility. Dry ice can cause damage to the thermostat due to the very cold temperature of it.

11. The investigator or delegated person must try to have the dry ice collected by the designated courier company as close to the time that it is needed as dry ice sublimates at 10% or 5-10 pounds every 24 hours. Dry ice for collection by the courier company can be placed on reception in the Clinical Research Facility. The investigator or delegated person should inform the Clinical Research Facility receptionist who will complete the courier request log.

12. If at any point the investigator or delegated person sustains a burn or blister as a result of handling dry ice they must inform a member of the Clinical Research Facility an incident form must be completed and medical advice should be sought.

13. If there is an excess of dry ice the investigator or delegated person is responsible for its disposal. The dry ice should be unwrapped and left at room temperature in a well-ventilated area. In the Clinical Research Facility this will be the laboratory. The ice in time will sublimate from a solid to a gas. Dry ice must not be placed into a sink. The cold temperature may harm sink disposal and pipes.

14. The investigator or delegated person should wash their hands after handling dry ice according to STH Hand Hygiene Policy.

### Related Documentation

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1 Where a referenced document is unavailable electronically a hard copy may be requested from the document’s author or by contacting Sheffield Clinical Research Facility, O Floor, Royal Hallamshire Hospital, Glossop Road, Sheffield, S10 2JF, Tel: 0114 2713339.