Risk assessment RA11

https://sportsciencesafety.stir.ac.uk

Faculty / Service Area	Faculty of Health Sciences and Sport	Location	Sport Science laboratories, other
Description of work task / equipment /area being assessed			
Use of Dry Ice (Carbon Dioxide - solid)			
Change log	17 Jan 2013 GD 25 Oct 2016 GD Version 1.1 29 Aug 2022 New format Version 1.2 25 Aug 2023 Added safety regulations links, clarified dry ice delivery procedure		
Head of faculty	Prof Jayne Donaldson	Safety officer	Dr Nidia Rodriguez Sanchez
Completed by	Gillian Dreczkowski	Date	1st Sept 2011
Reviewed by	Kerry Bartie Chris Grigson Dr Nidia Rodriguez Sanchez	Date	25th Aug 2023
		Date of next review	25th Aug 2024
Equipment used	Polystyrene containers -80 Freezers		
Categories of people involved	Staff, UG, PG, Visitors		
Duration of activity	Handling of dry ice in preparation for transport normally less than 1 h	Frequency of activity	Dry ice cooled consignments normally sent less than once a week

Legal compliance to standards and regulations required	Health and Safety at Work act 1974 (HASAWA) https://www.hse.gov.uk/legislation/hswa.htm Management of Health and Safety at Work Regulations 1999 (MHSWR) https://www.legislation.gov.uk/uksi/1999/3242/contents/made Provision of Work Equipment Regulations 1998 (PUWER) https://www.hse.gov.uk/work-equipment-machinery/puwer.htm The Control of Substances Hazardous to Health Regulations 2004 (COSHH) https://www.hse.gov.uk/coshh/

COSHH Hazards

Anything in category F.6 (Chemical and biological hazards) should go here

*Details under relevant heading in appendix

Manufacturers COSHH data sheets are required for all chemical hazards and should be attached

The Substance **What are the hazards and *classification?** ***Route of exposure**	***WEL** **mg/m³**	**Who might be harmed and how?**	**What are you already doing to control the risks?**	***Risk rating**	**What additional controls (if any) are required to reduce the risks?**	***Risk rating**	**Action by who?**	**Action by when?**	**Date of completion**	**Health monitoring**
	9150mg/m³	All Cryogenic burns	SOP	Low	Supplier delivers to BES stores					No

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Carbon dioxide pellets (Solid)	5000ppm	Dry ice contact with skin may cause cold burns or frost bite.	Suitable, sealed containers must be used Dry ice transported according to UN1845 Laboratory coat and cryoprotective gloves and safety glasses should be warn when handling exposed pellets **In the event of a cryogenic burn:** All cold burns should be checked by a first-aider or, in extreme circumstances, by a medical expert to confirm the extent of damage.		(designated place for safe storage) Reception staff should not accept deliveries from supplier Dry ice package removed to ventilated area immediately after delivery with appropriate PE Dry ice purchasing procedure has been updated					

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			First Aid Advice: Flush affected area(s) of skin or eyes with copious quantities of tepid water but do not apply any form of direct heat.							
		All Asphyxiation In high concentrations sublimed vapour may cause asphyxiation. Low concentrations of CO_2 may cause increased respiration and headache.	SOP Adequate ventilation reduces build up of Asphyxiant CO2	Low						No

Append supplier safety data sheets for all substances here:

co2DryIceSDS.pdf

Standard operating procedure

Procedure:

Dry ice is used as a cooling agent when transporting samples (e.g. muscle tissue, whole blood cells etc.) which are required to be kept frozen.

Quantity used, depending on sample numbers, is normally up to 10 Kg of dry ice in pellet form which can be stored for up to one month in a -80^{o}C freezer in a suitable polystyrene container with lid.

Transportation of dry ice must be carried out using a suitable transport container (i.e. polystyrene box) which should be labelled accordingly with a UN 1845, Dry Ice (or Carbon dioxide, solid) label. The net weight of dry ice in kilograms must also be written on the package label.

Supplier is to deliver to BES stores (designated place for safe storage). Reception staff have been informed never to accept deliveries from supplier. Dry ice package should be removed to ventilated area immediately after arrival with appropriate PE and insulated container for transport.

Dry ice should be handled in a well ventilated area to prevent the possibility of asphyxiation. Protective clothing i.e. laboratory coat, cryoprotective gloves (and safety goggles, if necessary) should be worn to prevent cold burn injuries.

Dry Ice Disposal – At normal temperature, dry ice sublimes into carbon dioxide gas.
Discharge to atmosphere in quantities of 1 Kg or less.