CTRNet Standard Operating Procedure Emergency Procedures for Freezer and Refrigerator Failure			
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Approved By:	CTRNet Management Group (CMG)	01-May-2012
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1.0 PURPOSE

Biobanks are intended to store and manage the Human Biological Materials (HBMs) in their custody. Appropriate storage is a core requirement for the operation of a successful tumour biobank. On occasion this equipment may fail. Procedures must be in place to ensure that loss and damage to the collection is avoided.

2.0 SCOPE

This standard operating procedure (SOP) outlines processes that should be in place when freezers or refrigerators fail and samples must be transferred to back-up equipment.

3.0 REFERENCE TO OTHER CTRNET SOPS OR POLICIES

Note: When adopting this SOP for local use please reference CTRNet.

3.1 *CTRNet Policy: POL 7 Material and Information Handling*

3.2 *CTRNet Standard Operating Procedures: SOP 04.006 Maintenance of Sample Storage Facility and Equipment*

4.0 ROLES AND RESPONSIBILITIES

The SOP applies to all personnel from CTRNet member biobanks that work at the biobank site and are responsible for storing biobank samples and/or transferring samples when storage equipment fails. This may include the following personnel:

Tumour Biobank Personnel	Responsibility/Role
Laboratory Technicians/Technologists	Responding to alarms, determining that equipment failure has occurred, transferring samples to back-up capacity
Biobank Director, Biobank Manager/Coordinator	Responding to alarms, overseeing or transferring material to back-up capacity, and updating lists and procedures

5.0 MATERIALS, EQUIPMENT AND FORMS

The materials, equipment and forms listed in the following list are recommendations only and may be substituted by alternative/equivalent products more suitable for the site-specific task or procedure.

Materials and Equipment	Materials and Equipment (Site Specific)
Back-up storage capacity, freezers and refrigerators	
Cryocart/trolley	
Thermometers	
Adequate Liquid Nitrogen, ice and dry ice supply	
Insulated containers to temporarily hold dry ice and samples	
Gloves and safety equipment to handle the frozen boxes and samples.	
Cryogenic safety face shield, apron and gloves.	
Alarm systems	
Alarm system contact lists	
Trolleys or carts to move samples rapidly	

6.0 DEFINITIONS

See the CTRNet Program Glossary: http://www.ctrnet.ca/glossary

7.0 PROCEDURES

The storage facility (and storage equipment) is a key element in the operation of a tumour biobank. In the case of freezer or refrigerator failure, appropriate action should be taken to transfer the samples to back-up storage capacity without damage to samples or loss of sample identity and tracking.

7.1 Back-up Capacity

7.1.1 Provide adequate back-up capacity for a minimum of 72 hours for low temperature units such as freezers and refrigerators in anticipation of equipment failure.

7.1.2 Have extra capacity, equal to at least the capacity of the largest storage unit, and equivalent to 10% (or other percentage as specified) of the total storage capacity, maintained at operating temperature at all times.

7.1.3 Identify and number back-up equipment.

7.1.4 Monitor back up equipment as other units are monitored.

7.2 Transfer Initiation and Sample Transfer

7.2.1 Have trained personnel determine that equipment failure has occurred and that samples have to be transferred.

7.2.2 Make sure that adequate number of biobank personnel are assigned to emergency response and trained to perform the transfer when required. Prominently post a 24-hour contact list for responsible personnel assigned to deal with an emergency situation (including in the evenings/nights or on weekends and holidays) on all storage units.

7.2.3 Train personnel in processes ensuring rapid transfer of HBMs to back-up units when the need arises.

7.2.4 Alert assigned personnel that a sample transfer has to be performed.

7.2.5 Avoid opening the failed freezer too often to avoid large temperature fluctuation to occur before transfer.

7.2.6 If back-up equipment is not situated close by, assemble carts or trolleys to aid in the transfer.

7.2.7 Fill insulated containers with dry ice or ice and place them on the carts.

7.2.8 Remove sample boxes from the freezers and place them on dry ice for transfer. Place sample boxes from refrigerators on ice for transfer. Essentially do not permit temperature fluctuations for extended periods of time.

7.2.9 Rapidly move samples to the back-up equipment.

7.2.10 If it is not possible to place samples in the same order as in the failed equipment make sure to maintain a logical or sequential pattern of storage.

7.2.11 Record details of back-up storage pattern.

7.2.12 Document sample transfer to back-up unit, and track samples to ensure return to correct location when corrective action has been taken.

7.2.13 Ensure that alarm systems are operational and monitored on back-up equipment as well.

7.2.14 Document reasons for equipment failure and corrective action.

8.0 APPLICABLE REFERENCES, REGULATIONS AND GUIDELINES

8.1 Tri-Council Policy Statement 2; Ethical Conduct for Research Involving Humans; Medical Research Council of Canada; Natural Sciences and Engineering Council of Canada; Social Sciences and Humanities Research Council of Canada, December 2010.
http://www.pre.ethics.gc.ca/eng/policy-politique/initiatives/tcps2-eptc2/Default/

8.2 Best Practices for Repositories I. Collection, Storage and Retrieval of Human Biological Materials for Research. International Society for Biological and Environmental Repositories (ISBER).
http://www.isber.org/Search/search.asp?zoom_query=best+practices+for+repositories

8.3 US National Biospecimen Network Blueprint
http://biospecimens.cancer.gov/resources/publications/reports/nbn.asp

9.0 APPENDICES

None

10.0 REVISION HISTORY

SOP	Date	Author	Summary of Revisions

Number	revised		
4.1.004	2007	JdSH	1st Release.
4.1.004 e1.1	July 2011	TS	• Section 5.0: Added: Cryocart and cryogenic safety equipment • Section 7.1 Step 4: Monitor back up equipment • Section 7.2: Added to Step 2: …on all storage units. Step 14: Document reasons for equipment failure and corrective action. • Section 8: Updated TCP link
4.1.004 e1.1	May 2012	CMG	• Grammatical and formatting throughout • Definitions removed • Revision - History moved to bottom • Reference links updates • Updated SOP references • Section 8.0-Deleted #2 Reference • 7.1.1: added that back-up power (transfer storage) should be in place for a minimum of 72 hours to reflect the other SOPs