Emergency Procedures for Freezer and Refrigerator Failure

Category:	**QUALITY MANAGEMENT**		
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1.0 PURPOSE

Nourah's Tissue Biobank is intended to store and manage Human Biological Materials (HBMs) in their custody. Appropriate storage is a core requirement for the operation of the 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 ROLES AND RESPONSIBILITIES

Explaining the responsibilities of each personnel and defining their roles in accordance with the SOP.

Biobank Personnel	Responsibility
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

4.0 MATERIALS, EQUIPMENT, AND FORMS

Listing of the materials, equipment, and forms being used to achieve the goals of the SOP, this list will mainly contain necessary materials and, or recommendations that may be substituted by alternative or equivalent materials more suitable at the time of testing.

Material to be used	Site
Back-up storage capacity, freezers and refrigerators	
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	

5.0 POTENTIAL HAZARDS

In this part of the SOP, we explain the potential hazards from chemicals and methodologies used in this procedure. It will also contain information on how to handle these chemicals and the level of biosafety

Material	Safety and handling

6.0 PROCEDURES

The storage facility (and storage equipment) is a key element in the operation of Nourah's Tissue 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.

6.1 BACK-UP CAPACITY

6.1.1 Both the -80 Freezers and liquid nitrogen freezers have at least one back-up freezer that is labeled.
6.1.2 The extra capacity of both freezers are equal to the capacity of the largest storage unit.
6.1.3 The back-up freezers are constantly monitored the same as other freezers to assure its reliability.

6.2 TRANSFER INITIATION AND SAMPLE TRANSFER

6.2.1 Have trained personnel determine that equipment failure has occurred and that samples must be transferred.
6.2.2 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.
6.2.3 Train personnel in processes ensuring rapid transfer of HBMs to back-up units when the need arises.
6.2.4 Alert assigned personnel that a sample transfer has to be performed.
6.2.5 Avoid opening the failed freezer too often to avoid large temperature fluctuation to occur before transfer.
6.2.6 If back-up equipment is not situated close by, assemble carts or trolleys to aid in the transfer.
6.2.7 Fill insulated containers with dry ice or ice and place them on the carts.
6.2.8 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.
6.2.9 Rapidly move samples to the back-up equipment.
6.2.10 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.
6.2.11 Record details of back-up storage pattern.
6.2.12 Document sample transfer to back-up unit, and track samples to ensure return to correct location when corrective action has been taken.

6.2.13 Ensure that alarm systems are operational and monitored on back-up equipment as well.
6.2.14 Document reasons for equipment failure and corrective action, **(Appendix A).**

7.0 REFERENCES

Providing References to the SOP to guarantee the best results and a great credibility to our work.

8.0 REVISION HISTORY

SOP No.	Date Revised	Author	Summary

9.0 APPENDICES

Appendix A Corrective Action Report