

## FREEZER LOSS CONTROL PROGRAM CHECK LIST-RESEARCH SPECIMENS

The following actions shall be conducted to assist with identifying the locations of your registered critical freezers and prevent potential loss of specimens through the use of the both the Freezer Registration Form and the Freezer Audit Form.

1. Create an inventory team for the purpose of information-gathering and to undertake an initiative to address issues that have already been identified.
2. Conduct a backup power assessment to determine capacity (building by building), any additional electrical outlets needed, and whether backup generators are needed per research storage location. If a generator is used at a specific location, make sure that generator works as intended as an electrical power backup. (Regular testing and maintenance of generators is recommended.) Determine the length of time that backup generators would provide and make sure that the backup duration (time) provided is sufficient for alternative plans to be made or undertaken. If the time provided is insufficient, create alternative plans.
3. Inventory freezers to identify which freezers are not connected to backup power and do not have monitoring alarm systems. Determine if there is a need to purchase extremely critical temperature monitoring systems to provide local and remote alarms, including contacting offsite personnel by e-mail, text, or cellphone. This technology can be fitted to any scientific refrigerator or freezer.
4. Inventory contents being stored in each freezer, include the description of specimens, the value of each specimen, and the overall funds used to collect the specific specimens.
5. Make sure that freezer rooms do not over load the system resulting in outages. (Review number of outlets and determine the room is below maximum load.) Post signage of maximum number of freezers allowed per outlet. Do not overload the system.
6. Perform regular cleaning and maintenance on freezers.
7. Determine if equipment, including freezers, needs to be replaced. It is recommend to monitor the age of freezers and plan for a replacement schedule based on shelf life.
8. Consider implementing a centralized monitoring system that will alarm and notify designated personnel when freezers experience a power interruption and temperature increase. Regular

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testing of monitoring systems is recommended. Ensure that backup systems are in place to provide backup to monitoring systems. If no monitoring system is used, ensure a designated individual is assigned to physically inspect and log twice daily whether the freezer(s) are operational during regular business hours, weekends, and holidays.

9. If using software monitoring systems, test monitoring systems regularly. Make sure you have planned for and tested backup systems to ensure that software monitoring systems are performing correctly. Provide for surge protectors and regular replacement of batteries when necessary.
10. Perform regular in-person inspections of freezers and freezer rooms. (Personal observation is often better than relying on technology.) Make sure that freezers are connected to outlets, freezer doors are adequately secured, and freezers are operational.
11. For high-value research specimens, if feasible, do not store all samples in one location. Spread the risk of loss or damage due to freezer failure by storing in other protected locations.
12. Develop and implement an Emergency Response Plan that identifies individuals responsible for addressing issues involving critical freezers (-80 °C) and detail actions to be taken to mitigate loss or potential loss of specimens. This may include contingency plans for alternative storage of specimens or fault in the freezer that cannot be corrected or repaired in an acceptable and timely period.
13. For high-value research projects, identify locations and determine if security measures are appropriate to keep unauthorized individuals from entering research storage area.