-80 FREEZER USE & MAINTENANCE GUIDELINE

PURPOSE
Ultra Low Temperature (ULT) Freezers are one of the biggest energy consumers in laboratories. It is important that freezer space is well utilised and that the units run efficiently.

RESOURCES
- Risk Management - Reducing the Incidence of Freezer Spoilage

TRAINING
- -80 freezer use protocol shall be detailed in user the laboratory induction process
- Biannual facility information sessions should incorporate this guideline and -80 Freezer Risk Assessment.

PREPARING THE LOCATION
Location considerations: access, ventilation, humidity, heat loading, power requirements, refrigeration backup (e.g. gas bottle storage and access), foot traffic and slip hazards

Alarm System
Automated temperature alarm systems enable detection of loss of refrigeration capacity. Temperature sensors detect and provide instantaneous warning when -80 compartment conditions exceed set tolerances.

- These systems require regular testing and maintenance.

Griffith University use a Building Alarm Management Paging System (BAMPS).

- Pre-determined temperature range tolerances are set for each freezer / fridge unit; if tolerances are exceeded an alarm is triggered and email and SMS is sent to Security and the primary freezer/fridge contact.
- Reference: SOP – General BAMPS Protocol
- It is the responsibility of management of each facility to maintain currency of the BAMPS contact list, including update of details and activation / deactivation of new / old units.

Backup Cooling System
-80 Freezers are usually manufactured with options for cryogenic cooling (Liq. CO2 or N2). It is highly recommended to incorporate cryogenic backup optional accessories where feasible.

PURCHASING -80 FREEZERS
Considerations
1. Avoid purchasing an additional freezer if possible.
   - Can you clean out space in your existing unit to accommodate new samples, or share freezer space with a neighbouring lab? This is a great way to save your lab money, and minimize environmental impact.
2. Purchase energy efficient models:
   - Seek energy consumption information in the product's technical specifications, and with vendors.

TSH Health Group Equipment Purchase Checklist
-80 FREEZER USE & MAINTENANCE GUIDELINE

Funding sources:
- Research money
- Grant money
- Health Group Equipment Replacement Reserve (ERR) request
- School funds

-80 Freezer requests are considered a high risk equipment purchase and must be channelled via the special approver process prior to financial approval being sought.

STORING ITEMS IN FREEZERS
Organising your freezer will make it easier to find needed samples, and eliminating old materials will free up space for new samples, minimizing the need for a new freezer.

It is the user’s responsibility to keep a current inventory of what stock is stored in the freezer. Areas shall audit the contents of all of their freezers annually. There are many inventory templates to choose from or a specific inventory can be created. Ensure the following details are provided in your inventory:
- Name of Principle Researcher
- Building and Room number
- Freezer Number
- Alarm (BAMPS) identifier
- Freezer Asset number
- Shelf, rack and box number
- Organism name, strain, risk group
- OGTR Licence number – if applicable
- Date inventory checked

Estimate the monetary value of the contents you are storing. To arrive at a value for chilled items which are not purchased, consideration should include:
- If it were destroyed, would it need to be replaced?
- What activity and associated costs would be required to obtain replacements?
- Would this involve the re-running of research projects?

Assess and adjust optimal temperature levels for your samples.
- e.g: raising the temperature above -80 will considerably reduce the energy consumption used.

Label stored items and remove unneeded materials. Dispose of unneeded items using the correct disposal protocol.

If users store genetically modified organisms (GMO’s) a ‘GMO stored in here/Biohazard’ sign shall be displayed on the outside of the freezer. This can be found here.

-80 FREEZER MAINTENANCE PROGRAM
All units shall be subject to both a regular operational check and routine maintenance schedule. This applies to the refrigeration unit, alarm and associated monitoring and backup systems. These should be regularly tested to ensure they remain fully functional and capable of delivering the service anticipated. By clearing frost build-up you will reduce energy consumption, improve ease of access, and ensure the longevity of your freezer.

In house maintenance (de-ice process)
- Gather cleaning and safety items – anti slip mats, gloves, safety glasses, ice scrapers.
- Lay the anti-slip mats on the floor to collect ice and water.
- Check freezer door seals. Remove ice on and around doors, then inside shelves.
- Implement a cleaning and defrost roster
- Campus Life must conduct BAMPS alarm testing
Compressors
Compressor efficiency / age can contribute to energy use. Some freezers have the ability to monitor the temperature / life of individual compressors which can be alarmed. This can also be used to predict freezer failure.

External maintenance
- Annual servicing of -80 freezers should be arranged by the Group / Institute.
- A report shall be provided after each unit is serviced.

Electrical test and tag schedule
- Testing and tagging of laboratory items must be undertaken annually in order to comply with the requirements of the Queensland Electrical Safety Act and the University’s Electrical Safety Policy for teaching, research, clinic and office areas.
- Regular inspection and testing of electrical appliances is required to ensure all persons are free from electrical risk.
- Testing and tagging is arranged by the Group / Institute.
- A Electrical "New to Service" tag shall be provided at commissioning.

STORAGE CONTINGENCY
Identify appropriate alternate storage facilities, including transit/transfer protocol, for swift relocation of goods in the event of equipment fault or other reason requiring transfer.

Consider separating or splitting stock - don’t put all your samples in one freezer.
- Have two master boxes with pure samples / strains stored in different freezers in different buildings so that a reserve is available in the event of a freezer failure.

Share space with neighbouring labs.
- Implement and maintain a spreadsheet outlining available space in neighbouring labs should a failure or incident occur.
- Reserve some free space if feasible.

INCIDENTS
- Users shall report all incidents of item loss or non-compliance in handling and storage protocol (Strict requirement for regulated items) to their supervisor and lodge a report for investigation on GSafe.

INSURANCE
Please note: the lack of a maintenance program, a working alarm, or backup system significantly decreases an insurance claim payout.

In the event stock / samples within a -80 freezer are damaged or destroyed, an insurance claim should be lodged. Contact the Insurance Office for assistance.
- Insurance@griffith.edu.au
- (07) 3735 7971

DISPOSAL OF -80 FREEZER
Reference SOP – Laboratory Equipment Disposal

RISK ASSESSMENT
Risk Assessment completed – tick box ☒ Date completed: 21/12/2017

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