

## Working in the cold room

This room does NOT have ventilation. It is essentially a big fridge, air gets chilled but no fresh air is added nor stale removed.

### HAZARDS

Oxygen deficiency, Mold, Electric shock, Slips, trips and falls, Cold work environment

### PROHIBITED

- **HUMAN FOOD/BEVERAGE STORAGE.** Cold rooms are considered part of the laboratory in the interest of avoiding inadvertently ingesting hazardous materials. Consumables should not be kept with laboratory materials.
- **POROUS MATERIALS** such as cardboard, wood, styrofoam, carpet, paper and cloth should not be stored in cold rooms they are excellent at absorbing moisture from the air, causing them to have a higher relative humidity, in addition to being a carbon source making them perfect for supporting fungal mold growth. If it is necessary to store these materials in a cold room place them inside a tightly sealed plastic container.
- **COMPRESSED GASES, CRYOGENS, AND DRY ICE** should NEVER used or stored in a cold room. Storing these materials in the cold room does not decrease their rate of evaporation because their boiling points(b.p.), less than  $-50\text{ }^{\circ}\text{C}$  ( $-58\text{ }^{\circ}\text{F}$ ) are still significantly lower than the temperature in the cold room around  $0\text{ }^{\circ}\text{C}$  ( $32\text{ }^{\circ}\text{F}$ ). The evaporated gases can reduce the oxygen level and can result in asphyxiation.
- **LOCKING** a cold room door or turning out the lights without first opening the door to check for people

### LIMIT

- **VOLATILE SOLVENTS** should not be used in a cold room in quantities more than 250 ml. If the solvent has a low boiling point (b.p.  $< 100\text{ }^{\circ}\text{C}$ ), no more than 250 ml should be brought into the cold room for use. No volatile solvents should be stored in the cold room. This is to avoid inhaling vapors.
- **FREE LIQUIDS.** The humidity levels in a cold room need to be kept below 60% to prevent mold growth. This is difficult to do if there are water sources present such as spilled liquids, leaking pipes, or open containers.
- **NUMBER OF PEOPLE** and **AMOUNT OF TIME** working in a cold room. Suggested guideline is less than 3 people, with breaks every 30 min. Have a backup buddy that knows when to come looking for you.
- **DOOR OPEN TIME** It is difficult to maintain the desired temperature, and can affect the ability of the door to close tightly, if it is left open.

- ELECTRICAL EQUIPMENT THAT IS NOT WATERPROOF condensation is likely to occur consider low voltage, if possible.

**PREPARE** notify a backup, walk cautiously.

- People- wear insulating clothing and slip resistant shoes.
- The room should have a humidity gauge, and permanent wiring should be waterproof and power sockets safeguarded by earth-leakage protection. Non-slip or skid resistant tape and treads can be added for traction.

**Symptoms of oxygen deficiency- Get OUT to fresh air!**

Lightheadedness, confusion, lethargy

### **MINIMIZE MOLD GROWTH**

Mold can thrive on any organic medium, including dust. It is important to keep surfaces clean.

1. Promptly clean up any spilled materials, especially aqueous liquids and organic solids.
2. When done working in the cold room dampen a cloth with a non-ammoniated soap or detergent to wipe down shelves, bench tops and equipment. Bleach is not recommended because it can cause pitting on metal surfaces and if mixed with ammonia produces toxic gases (hydrochloric acid, chlorine gas, chloramine & hydrazine)
3. Dry surfaces to ensure moisture has been removed.

**SIGNS OF TROUBLE-** Contact Facilities 4-2900 for repairs and abatement

- Relative humidity > 70%, or the dew point is greater than 32°F in a 40 degree cooler. See a psychrometric chart <http://www.egr.msu.edu/classes/me416/PsychroChart.pdf>
- Water leaks, condensation on door gaskets and other surfaces.
- Rusting metal indicates high humidity.
- Visible mold, light colored or dark spots on surfaces with a random distribution. If a small amount of mold starts to appear remove, bag and dispose of contaminated items and wipe surfaces with a hospital approval disinfectant. In the contamination is throughout the room abatement is needed.

### **Symptoms of Mold exposure**

Exposure to mold may cause allergic reactions and worsen existing respiratory conditions, such as asthma. Commonly reported symptoms to mold exposure are: nasal and sinus congestion; cough; wheeze/breathing difficulties; sore throat skin and eye irritation; upper respiratory infections (including sinus)

### **WHEN LEAVING THE ROOM**

- Always wipe down surfaces and check for prohibited materials ( porous, gases, volatiles, open liquids, consumables)
- Carefully step out your feet may still be wet and slippery
- Notify your buddy that you're safe
- Set electrical equipment out to warm up and dry out and alert others not to use it for several hours.

### **ADMINISTRATIVE ISSUES**

Cold rooms are typically shared between groups. All users must mark their materials with their contact information and date brought into the room. A single person should "adopt the cold room" and be granted the authority to dispose of old or prohibited materials.