**Fact Sheet: Cold Rooms**

# What is a cold room?

Cold rooms are walk-in spaces shared by researchers to conduct experimental/analytical procedures and incubation at low temperatures. In most cases, the air in these rooms is 100% recirculated. As such, old air is not exhausted, and no new air is introduced unless the door is opened. Due to this, cold rooms present unique hazards, and the following guidelines need to be followed to ensure safety.

# Restricted activities:

Researchers must remain cognizant of the potential hazards represented by the materials they are introducing into a room where there is no or limited ventilation. The following materials must not be stored/used in a cold room:

* Cryogens (e.g., Liquid nitrogen tanks and Dewars)
* Dry ice
* Compressed gases

Note: The storage of the above materials in a cold room can lead to environments with depleted oxygen levels. Be aware of oxygen deficiency symptoms, including lightheadedness, confusion, and lethargy.

The following materials must not be stored in a cold room. Efforts must be made to minimize the quantity/concentration of the material being worked with when performing cold room-based procedures with these chemicals:

* Flammable materials (e.g., ethanol, methanol, acetone, etc. Containers of these materials can leak, resulting in a buildup of an ignitable vapor.)
* Volatile toxic chemicals (e.g., formalin, chloroform)
* Acids (can damage cold room or compressor)

Food and beverages are also prohibited from being stored in cold rooms due to the potential for chemical and biological contamination.

# What can I do to prevent safety issues?

In addition to prohibiting the storage of the materials listed above, research personnel can reduce potential risks associated with performing research in cold rooms by:

* Posting appropriate hazard warning signs or restricted materials signs on cold room doors.
* Identifying items stored in the cold room with the name of the researcher, principal investigator’s name, and date.
* Inventorying cold room supplies/materials at least annually and removing items that are no longer needed or have expired.
* Limiting the amount of time users spend inside the cold room. Take breaks and dress appropriately.
* Alerting others that you are working in the cold room.
* Checking all electrical equipment for integrity/insulation of the wiring before bringing it into the cold room.
* Removing equipment from the cold room when it is no longer needed.

# Mold in cold rooms:

High humidity, poor ventilation, insulation failure and improper maintenance of cold rooms promotes the growth of mold. As such, implementation of a periodic cleaning and maintenance plan is required of all cold room users. To prevent mold growth, a plan should include the following:

## **On-going maintenance:**

* Limit paper products, wood, Styrofoam, agars, and media that can be used as a resource for mold growth
	+ Dispose of trash (e.g., paper towels, tubes, etc.) outside of the cold room
	+ If paper products are required to be stored in the cold room place them in closed plastic containers
* Remove and dispose of contaminated materials (or decontaminate as described below)
* Use stainless steel or plastic shelving/storage
* Do not store materials on the floor
* Remove/dry excess water
* Clean-up spills when they occur
* Keep it clean/organized
* Monitor room temperature
	+ Keep the door closed when possible, to reduce temperature fluctuations and reduce condensation.
* Look for signs of high humidity (Note: Relative humidity above 60% contributes to mold growth):
	+ Ice deposits on door and fixtures
	+ Beading/condensation on surfaces
	+ Puddles forming on surfaces
	+ Mist in the air
	+ Stored goods become noticeably wet

## **Periodic cleaning: Frequency based on need (estimated every 1 to 3 months)**

* Using diluted dish detergent
* Wipe all surfaces with a cloth towel – ensure surfaces are dry
* Use appropriate PPE for cleaning (goggles, lab coat, gloves)
* Spot clean small areas of mold growth with a dilute bleach solution (1:16 fresh dilution of standard household bleach) with a contact time of 10 minutes.
* Use appropriate PPE for cleaning (i.e., goggles, lab coat, gloves)
* Wipe surfaces with a damp cloth to remove bleach and then dry to remove water
* Check door seals for cracks, general wear, and tear
* Do not dry sweep when cleaning, it may disturb and distribute mold spores within the space

## **Document the cleaning and report any issues to the relevant parties:**

* Shared users: e.g., Cleanliness, organization, improper use, identification of hazardous conditions that need to be resolved.
* Facilities Planning and Management (FP&M): water leaks, mechanical issues, cracked or damaged door seals:
	+ Notify your building manager
	+ Work orders: <https://facilities.wayne.edu/>
	+ Emergencies: Call the FP&M service center: (313) 577 4315
* OEHS: Safety concerns, recurring or excessive mold growth, air quality concerns:
	+ Call: (313) 577-1200
	+ E-mail: OEHS@wayne.edu

# Additional Resources:

* U.S. Center for Disease Control and Prevention (CDC): <https://www.cdc.gov/mold-health/about/index.html>
* U.S. Environmental Protection Agency (EPA): <https://www.epa.gov/mold>
* American Industrial Hygiene Association (AIHA): Mold Resource Center: <https://www.aiha.org/public-resources/consumer-resources/disaster-response-resource-center/mold-resource-center>