

Molecular Foundry

Working Alone and Two-Person Policy

A. General Policy Statement

The Molecular Foundry is committed to providing a safe working experience for all staff, students and users. Due to the presence of significant potential hazards in many Foundry laboratories, some operations are not permitted when “working alone” in laboratories outside of normal business hours or under unusual circumstances.

This policy details the process for providing safeguards and authorization under which low hazard and moderate hazard work can be performed while working alone outside of normal business hours, or under unusual circumstances when the area is not fully occupied and the Facility Director determines that additional safety precautions are warranted.

Working alone can only be authorized for low hazard and moderate hazard work where there is no foreseeable risk of injury or exposure to an individual that may render him/her unable to take appropriate emergency actions. High hazard work can never be performed while alone. This policy details a process for providing oversight and control under which high hazard work can be performed under a two-person rule.

- This policy does not pertain to work in offices and meeting rooms.
- The use of personal music players, Bluetooth phones or any other personal device that may interfere with hearing is not permitted in Foundry laboratories

B. Definitions

Normal Business Hours: 8 am to 6 pm Monday to Friday except on designated holidays.

Working Alone - Means that there is nobody within sight or earshot that can assist in the event of an emergency.

Two Person Rule - In order to not be considered as “working alone” the person working must satisfy the following conditions:

- There is a second person within eyesight or earshot;
- The second person is appropriately trained to respond to likely emergencies;
- The second person agrees to serve in this capacity, and;
- If the second person has to leave the area, the activity is considered to be working alone, and must terminate. Short breaks of no more than 2-3 minutes would not require work to stop.

C. Work Hazard Levels

Work in the Molecular Foundry falls into three hazard categories:

Low Hazard Work Activities: those activities where the risks are not significantly increased beyond those created by everyday living situations. Examples of low hazard activities include deskwork, observing through a microscope, computer operations and handling non-hazardous buffers in labs where low and high hazard work is not concurrently performed. Working alone for these tasks can be approved by a blanket review, as described below.

Moderate Hazard Work Activities: those activities which, in an off-normal event, could present the potential for significant, although not life-threatening or incapacitating injury or illness. Moderate hazard activities include work with chemicals inside of inert glove boxes, working with Class 3B or 4 lasers, electrical testing of circuits < 50 volts/5 mA, changing non-toxic/inert gas cylinders and work with chemicals outside of glove boxes that do not fall into any of the categories listed in section E.

High Hazard Work Activities: those activities, which, in an off-normal event, could present the potential for immediate danger to life or incapacitating injury or illness. Highly hazardous activities include work on exposed electrical work at 50 volts/5mA or greater, work with exposure to chemicals such as those listed in section E of this document. Also work involving moving parts in open tools and working while safety interlocks/devices are defeated. In specific cases some types of work listed above may be classified as “moderate hazard”, where the potential for exposure is low. For example, use of a base bath, which is corrosive, is usually much less hazardous than making up a base bath. The former could be classified as moderate hazard after review by the governing supervisor, but the latter would always be considered “high hazard”. Working alone for highly hazardous tasks can never be authorized.

D. Authorization of Work

Working alone in the Molecular Foundry can only be authorized under limited circumstances by one of the processes described below:

Low Hazard Activities: Each Facility Director, in consultation with the MSD EH&S Manager, will develop a list of work and labs that fall into this category. The MSD EH&S Manager will review these lists to determine if they meet the details and intent of this policy. When approved by the EH&S Manager, staff, students and users may be authorized by their work lead to perform this work without further EH&S review. Each Facility Manager will keep a record of these determinations.

“Working alone” will only be permitted once the person has completed the required on-line, classroom and on-the-job training for working in the Facility.

Moderate Hazard Activities: Work leads must meet with the individual proposing to perform moderate hazard work while alone and review the work plan. The work lead will evaluate the hazards posed by the work, the hazards posed by collocated work and the skill level and reliability of the requester.

“Working alone” will only be permitted once the person has demonstrated his/her competence in the lab under supervision. She/he must have previously successfully and safely performed the specific tasks under direct observation of a Foundry staff person. The work lead will consult with technicians and other staff and users as appropriate to determine if an individual is truly qualified to work alone.

Each Work Lead will keep a record of work authorizations for those they supervise.

Highly Hazard Activities: An individual can only perform high hazard work tasks when she/he is constantly within sight or sound of another qualified individual. This is known as the “Two Person Rule”. This second qualified individual must be trained to react appropriately to the hazard(s) involved. (Note that adherence to the two-person rule will not generally constitute a sufficient condition for these activities, because many highly hazardous tasks require controls not covered by a working alone policy.)

E. Guidance on Classifying Work

Work having the following attributes may never be performed alone.

Work where a foreseeable injury or exposure may render an individual unable to take appropriate emergency actions. Examples include:

- Individual may be splashed with corrosive chemical that blinds him or her
- Individual may be exposed to chemical or trauma that impairs consciousness
- Individual may be set on fire
- Individual may receive severe electrical shock or arc flash injury

Some specific examples are:

- Changing toxic gas cylinders and work with chemicals, outside of glove boxes or other closed systems, that fall into any of these categories:
 - Pyrophoric (e.g. t-butyl lithium)

- Air reactive to form hazardous gas (e.g. SiCl_4 makes HCl on air contact)
- Very high transdermal toxicity (e.g. TMAH, dimethyl mercury)
- Potentially shock sensitive (e.g. dry perchlorate salts, untested ethers)
- Highly corrosive (strong mineral acids and bases)
- Requiring special first aid measures (e.g. phenol, HF)
- Extremely high acute toxicity (e.g, acrolein)
- Possible reaction leads to formation of highly flammable or toxic gas (e.g., acid with potassium cyanide, calcium carbide or iron sulfide)
- Reactions scale >500 ml of flammable liquids
- Any form of LOTO or energized electrical work > 50 V/5 mA
- Moving heavy equipment
- Significant work on ladders
- Large or dangerous spill cleanup involving toxic or corrosive materials
- Opening outer packaging of hazardous chemicals (those in the categories listed above) still as shipped
- Work with cryogenic systems including liquid helium flow systems, large (>6 L) dewars in situations where there is a risk of oxygen depletion in the absence of oxygen monitors
- Transportation and use of bottles larger than 4L unless the bottle is safety coated.
- New, unusual or not frequently performed experiments.