

<p>Carnegie Mellon University Environmental Health & Safety FIRE LAB WORK</p> 	<p>Environmental Health and Safety Working Alone in Research Laboratory, shop, studio and Work Area - Guideline</p>
<p>Date of Update: July 2019</p>	
<p>Revision Number: 2</p>	<p>Prepared by: EH&S</p>

1. Purpose

This guideline provides safety requirements for working alone in the research laboratory, shop, studio or other work area where hazardous materials, equipment, or conditions are present. Working alone, especially after hours, can be unsafe and should be avoided whenever possible. When it cannot be avoided, use other available means to protect lab workers in the event of an emergency situation. Schools, Departments, or Principle Investigators can set a higher standard for working alone in their area(s).

2. Scope:

This guideline applies to all work with hazardous materials (chemical, biological or radiological material), hazardous equipment, conditions in research laboratories, shops, studios or other work areas at Carnegie Mellon University.

3. Program:

Minors: Persons under the age of 18 are never permitted to work alone in a research lab, shop, studios and other work area, even with non-hazardous materials. They must always have a mentor/ supervisor present. The mentor / supervisor must be an employee of Carnegie Mellon University. This person must have received all applicable safety training pertinent to the work that the supervised students will be performing. The faculty member / Supervisor must understand the hazards and risks involved in the activity and have reviewed the written SOP/safety protocol. Review “Minors in Research Laboratory, Research, Teaching and Other Program – Guideline” for additional information, including the requirements for the Supervisor, available at CMU EH&S webpage.

Undergraduate Students: Undergraduate students must avoid working alone with hazardous materials or equipment, as defined in this document. The PI/supervisor, researcher, or graduate student with safety training should be in/adjacent to the work area, and be able to check on their safety. When the School, Department or Principal Investigator allows Undergraduate Students to work with chemicals that are not defined in this guideline as hazardous materials or equipment, then they must complete the appropriate training and have this form approved by the Principal Investigator. They should consider using the “buddy system” when working in the laboratory during the night and over the weekend.

Graduate Students, Postdoctoral Fellows, Research Scientists, Technicians and Principal Investigators: These are considered full time laboratory workers, and

laboratory training is integral to their professional training. They have completed all applicable safety training related to their laboratory work. They are permitted to work alone in a research laboratory after approval by the PI and following the lab's safety protocol for working alone. They should consider using the "buddy system" when working in the laboratory during the night and over the weekend.

4. Responsibilities:

Principal Investigator (PI) or Supervisor: approve laboratory staff or students to conduct work with hazardous materials alone in the research laboratory or work area. PI or Supervisor is responsible to determine what level of hazards are permissible for working alone in their group. PI also needs to ensure that proper engineering, administrative and PPE controls are in place to conduct that work.

Students, Researchers, or Workers: Obtain PI approval before working alone in the research laboratory or work area, complete proper safety trainings and follow the proper procedure outlined in this guideline.

5. Definitions:

Buddy System: A "buddy system" establishes regular, routine checks on personnel working alone, such as every 15 – 30 minutes, to ensure no accidents have occurred. This could be accomplished by physically walking to the room where the lab worker is located. A system of visual checks ensures there are no problems and/or determines if help is needed.

Working Alone: A worker is considered as "working alone" if the individual is working by his/herself such that assistance is not readily available should some injury, illness, or emergency arise. Alone is interpreted as being out of visual/ear shot with another person. It includes working in physical isolation, or where no other person is in the vicinity. It is possible for a worker to be on the same floor of a building or even in the same general area as others, yet be working alone. It can occur during normal working hours, but especially is in the evening, at night or during weekends.

Hazardous Materials and Equipment: Hazardous materials include, but are not limited to, chemicals that are pyrophoric, water reactive, potentially explosive, large volumes of highly flammable materials, acutely toxic, peroxide forming, strong corrosives, strong oxidizing agents, strong reducing agents and regulated carcinogens; biological material that is listed as a "select agent"; and radiological material. Hazardous equipment includes, any electrically, pneumatically, or hydraulically powered pieces of machine equipment (i.e. drill press, lathe, grinder, band saw, etc.) and high pressure/vacuum equipment.

6. Procedures:

Working Alone:

- 1) Working alone, especially after hours, should be avoided whenever possible.

- 2) Conduct a Hazard Assessment of the work being performed and the risks and emergency requirements for working alone or after hours.
- 3) Prepare a written standard operating procedure (SOP) and safety protocol identifying the hazards, risks and the methods for controlling the risks.
- 4) Working alone and working after normal building hours requires supervisor/PI approval.
- 5) PI approval for working alone or after normal building hours must consider:
 - Tasks and hazards involved in the work.
 - Consequences resulting from a worst case scenario.
 - The possibility of an accident or incident that would prevent the laboratory personnel from calling for help.
 - The laboratory personnel's training and experience.
 - Time the work is to be conducted (during normal business hours versus at night or on weekends/holidays). See Appendix for *Permission to Work Alone Form*.
- 6) Have a cell phone on person with University Police Department phone number programmed in (412-268-2323). If no cell phone is available or there is no cell service, know where the campus phone is located and have the emergency number posted within the lab.
- 7) Each lab must develop a safety protocol for working alone (or use the recommended form in this policy). This protocol must clearly state what hazardous materials (chemical, biological and/or radiological), equipment, and/or procedures must not be performed when working alone. Example requirements are:

This guideline has the following requirements for special materials/equipment:

The following chemicals should not be used while working alone:

- Pyrophoric Chemicals
- Water Reactive Chemicals
- Potentially Explosive Chemicals or Compounds
- Explosive Salts
- Acutely Toxic Chemicals or Gases
- Changing highly flammable or toxic gas cylinders
- Other chemicals or substances deemed highly hazardous by PI, Lab Manager or EH&S

The following biological material will not be used while working alone:

- Select Agents (ex. Botulinum neurotoxins, Tetrodotoxin, Yersinia pestis)

The following procedures will not be conducted while working alone:

- Use of machine shop equipment or lathes.
- Procedures involving high-pressure equipment.
- Transferring large quantities [>10 liters] of hazardous materials
- Handling animals that could cause serious injury

Situations where working alone may occur include:

- Periodic attendance to check laboratory equipment/experiments
 - Cleaning and maintenance activities in laboratories
 - Working with analytical equipment
 - Working in storage areas and temperature-controlled rooms
 - Working in offices, libraries and at computer workstations
- 8) A copy of [Emergency Response Guide for Laboratories](#), must be posted near the phone, or exit. The names and phone numbers for the lab and contacts must be up to date and posted on the door sign.

7. Related attachments, forms or documents:

Instructions on Completing the Permission to Work Alone Form

Section I:

SHORT DESCRIPTION OF WORK TO BE DONE:

Please describe the specific type of work to be done (such as synthesis of X compounds, preparation of X samples, running of X equipment, conducting X type of experiment).

HAZARDS ASSOCIATED WITH THE WORK:

Please indicate the hazards associated with your materials, procedures or equipment. If “other” is checked, please indicate the specific hazard(s).

Section II:

DURATION OF PERMISSION:

Please indicate the duration of the permission. This can be for a specified duration (such as a semester or a year if a known endpoint has been established), or indefinitely (such as the duration of studies, duration of employment or duration of the project, etc.).

PROCEDURES IMPLEMENTED TO MITIGATE THE RISKS FROM THE HAZARDS ABOVE:

Please specify the measures in place that will protect the person working alone. These can be engineering controls (such as fume hoods), personal protective equipment (gloves, lab coat, safety glasses, goggles, etc.) or administrative controls (such as PHS protocols, procedures). The safeguards should match the level of risk associated with the hazard of working alone, and cover possible scenarios. Please specify what measures will be taken beyond what would normally be done if someone else was in the room. If necessary, additional sheets can be attached.

PLAN IF WORKER CANNOT SUMMON HELP:

Please indicate the strategies you will use to address how an outside person will know that the worker needs help should they become incapacitated and cannot call for help themselves. It may mean letting someone else know when they will be working alone (day and duration) and having a check in within that period, whether

an in-person physical check, a remote mobile check, or using an app that requires the worker to respond periodically. If a check in is missed, the outside person knows to call for help. Physical checks are preferred, but the other means are acceptable.

For additional questions or concerns please contact EH&S: safety@andrew.cmu.edu

PERMISSION TO WORK ALONE FORM

The PI must sign the Section II of this approval form.

SECTION I: Applicant

POSITION: UNDER GRAD. GRAD. STUDENT POST DOC STAFF

OTHER _____

NAME: _____ ANDREW ID: _____ PHONE: _____

PRINCIPAL INVESTIGATOR: _____

SHORT DESCRIPTION OF WORK TO BE DONE:

CHEMICAL HAZARDS:

Flammable Liquids Peroxide Forming Chemicals Strong Corrosives

Strong Oxidizing Agents Strong Reducing Agents Other _____

Not Listed as Hazardous Materials in this Guidelines (applicable to Undergraduate Students)

BIOLOGICAL HAZARDS:

Select Agents Other _____

PROCESS HAZARDS:

Machine shop equipment High-pressure Equipment Large quantity of material

Handling animals High voltage Other _____

I have completed all applicable Environmental Health & Safety training at Carnegie Mellon University. In addition, I have received training in the proper experimental and emergency procedures from my principal investigator and understand those procedures for the work I am authorized to do.

APPLICANT SIGNATURE: _____ DATE: _____

SECTION II: PRINCIPAL INVESTIGATOR APPROVAL

The applicant has been trained in the proper experimental, training & emergency procedures for the work to be performed, and understands those procedures. This lab worker has permission to work alone on this procedure.

BUILDING AND LAB NUMBER(S): _____

HOURS ALLOWED ACCESS TO LAB: _____ DURATION OF PERMISSION: _____

PROCEDURES IMPLEMENTED TO MITIGATE THE RISKS FROM THE HAZARDS ABOVE:

PLAN IF WORKER CANNOT SUMMON HELP:

Can the person rescue themselves in an emergency(Y/N)?

Physical check by _____ Remote check by _____

N/A – Work not likely to incapacitate Identify the “Buddy”, if needed: _____

PI's SIGNATURE: _____ DATE: _____ PHONE: _____