

# **GeoMechanics Laboratory Safety Manual**

**Bldg. 131, Rm. 1.204**

**Bureau of Economic Geology**

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## **Laboratory Ethics**

If you open it, close it.

If you turn it on, turn it off.

If you unlock it, lock it.

If you break it, repair it.

If you can't fix it, call in someone who can.

If you borrow it, return it.

If you use it, take care of it.

If you make a mess, clean it up.

If it belongs to someone else and you want to use it, get permission.

If you don't know how to operate it, leave it alone.

If it doesn't concern you, don't mess with it.

## **To enter the laboratory work area, you must:**

Have completed the proper safety training (minimum of OH-101 and OH-102).

Be wearing pants and shoes (sandals of any kind are unacceptable).

Within the scope of the GeoMechanics lab, there are 4 major risks:

1. Handling fine sediments
2. Driving
3. Working with contents under high pressure
4. Working with power tools

By understanding the risks associated with the above tasks, you and those working around you can operate safely within the lab

## **1. Handling Fine Sediments**

Risk: Lung disease and cancer

Source: Chronic inhalation of fine silica-based sediments

Many of the experiments in this lab require you to work with silt and clay. While they seem harmless, inhalation of silica-based sediments can cause lung irritation in the short-term and silicosis, tuberculosis, and lung cancer in the long term (with chronic exposure). To minimize the risks ALWAYS:

1. Wear a half-face respirator with a minimum NIOSH N95 rating if you are in the immediate vicinity of the dust source (~1 m). If dust becomes uncontained (i.e. spreads beyond 1 m of the point source), alert everyone in the laboratory that they must either put on a mask or leave the lab until dust settles.
2. Never operate floor or ceiling fans while working with the sediment.
3. Any spills should be cleaned up with a vacuum (never swept) and disposed of in a sealed plastic bag. If a vacuum is unavailable or airborne dust is created during cleanup, use a spray bottle to wet the sediments.

## **2. Driving**

Risk: Automobile accident, injury, damage to public or private property

Source: Distracted driving

Work in the lab may require you to operate an automobile. Caution is of the utmost importance.

When on university business, please obey all traffic laws in addition to the following rules:

1. Any person who operates a university vehicle must have passed the university-mandated web-based driver education course (contact the BEG Front Desk for more information)
2. Do not use a cell phone for talking or texting if the engine is running.
3. Wear seatbelts at all times.
4. Exercise extreme caution while driving.
5. Passengers are required to comment if any rule is broken.

### **3. Working with Contents Under Pressure**

Risk: Injury due to rupture of fixtures or tubing under high pressure

Source: Improper care of components or general wear and tear

Many of the experiments either require or produce high pressures. Any time an experimental component will be used within such an environment always:

1. Re-check all fasteners, making sure screws, nuts, etc., are tight.
2. Re-check all tubing. If any tubing shows signs of wear, cracking, kinking, etc., replace it before continuing.
3. Venting tubes should be properly secured.
4. All persons working directly with pressurized lines or anything under vacuum (exceeding 30 psig or below 0 psig) must wear safety glasses.
5. Prior to undertaking a new project involving high pressure, arrange a meeting with the laboratory manager to discuss engineering measures appropriate for the project (barriers, relief valves, etc.).

### **4. Working with Power Tools**

Risk: Bodily harm, especially to your hands/fingers, eyes, and ears

Source: Carelessness and/or improper use

Power tools are an excellent resource in the lab; they make jobs easier, faster, and repeatable.

Their misuse however, can cause grave bodily harm. Please adhere to the following guidelines prior to and during use:

1. Prior to initial use you must:
  - a. read the manual.
  - b. receive operation and safety training from lab manager.
  - c. and demonstrate safe usage under lab manager observation prior to unattended use.
2. Wear proper eye and ear protection when operating power tools.
3. Never leave a power tool powered on and unattended.
4. Unplug and clean up tool after use. If you have time to use the tool than you have time to clean up.

### **Additional Laboratory Safety Procedures**

1. The lab manager—Peter Polito—is in charge of all activities in the lab and all people in the lab must follow any orders he gives.
2. Large and/or heavy items must be lifted with no fewer than two individuals.

3. When hazardous operations are conducted, arrangements should be made to have another individual present in the lab.
4. Keep work areas clean and uncluttered at all times.
5. Visitors should read safety manual before entering the lab, and should not approach areas in the lab that appear to have active experiments without approval of lab manager.
6. Know the materials you are working with (e.g. gas, chemical). Consider the toxicity of materials, the health and safety hazards of each procedure, the knowledge and experience of laboratory personnel, and the safety equipment that is available. Know the location of safety equipment (e.g. fire extinguishers), emergency procedures in your area, and MSDS' location.
7. Oxidizing chemicals may only be stored under the small laboratory sink
8. Always wear safety glasses and gloves when handling chemicals.
9. Do not attempt to repair or rewire any electrical components without explicit permission from the laboratory manager.
10. Use common sense.

## **Emergencies and Accidents**

**To request emergency assistance on campus (fire, police, or ambulance), dial 911.**

1. In all emergencies and accidents, the first consideration is your safety and the safety of those around you.
2. Evacuate the area and close the door to the laboratory facility. If flammables are spilled and your safety is assured, turn off any ignition devices.
3. In The Event of a Fire or Explosion: Notify occupants nearby; Close the door to the fire area; Activate the building fire alarm system; Dial 911 and report exact location of fire; Evacuate and stay clear of building.

## **Emergency Contacts**

- In case of a life-threatening emergency contact UTPD—(512) 471-4441 or dial 911;
- Laboratory Manager—Peter Polito—(415) 994-3301;
- Facilities questions or issues (during normal business hours)—James Donnelly—(512) 471-0402, room 1.102;
- Facilities questions or issues (outside of normal business hours)—Facilities Help Desk—(512) 471-3600; this number is monitored, if nobody answers; leave a message with contact information, building, and room number.