

SECTION 9

Seismic Safety

SECTION 9: SEISMIC SAFETY

Overview

This section provides information to prepare your shop for an earthquake and what to do in the event of an earthquake. Education and advance preparation are key to earthquake preparedness and safety. Each office area/shop/lab is responsible for developing an Emergency Action Plan (EAP), which outlines emergency procedures for that specific area. The Office of Emergency Management should be contacted for assistance in preparing a Departmental Emergency Action Plan.

Prepare the Shop for an Earthquake

Hazardous materials and heavy items are of great concern to shops during an earthquake. Bolting, restraining, and proper storage are vital to keeping these items secure during an earthquake.

Compressed Gas Cylinders

Store compressed gas cylinders in a frame casing or by double-chaining them to a cylinder rack or wall. Racks must be bolted to a secure structure, such as a wall. The chains must be located one-third from the top and one-third from the bottom of the cylinder (see Figure 9.1). When a gas cylinder is not in use, remove the valve and replace it with a safety cap. Refer to Section 14 on Compressed Gas Cylinders for more detailed information about storage requirements.

Figure 9.1—Gas Cylinders Stored Correctly



Heavy Equipment

Bolt large equipment, such as a drill press or a table saw, to the floor. Heavy equipment stored on a worktable or bench must be bolted to the supporting structure.

Ladders

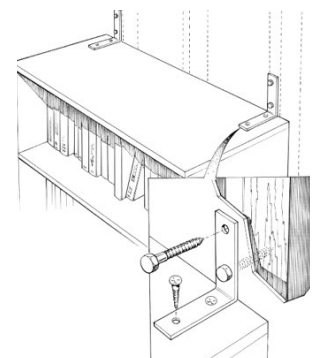
The safest way to store ladders is to hang them horizontally using wall brackets or on flat racks. If this is not possible, ladders may be stored vertically and secured to a wall using a chain or wall bracket. The restraint should be placed around the upper section of the ladder. Never hang a ladder vertically from one of its rungs.

Cabinets and Shelving

Furniture over five feet tall should be secured to the floor or to a wall. When that is not possible, rows of cabinets or shelving should be secured to one another.

Cabinets should latch shut. Shelving above five feet should have internal restraints to prevent items from falling (never store unrestrained items above five feet). Restraints include lips, bars, netting, and bungee cords.

Do not place heavy items on top of a cabinet or shelf. Large pieces of wood or metal stock should be secured and stored horizontally on a lower shelf, instead of vertically.



Facilities carpenters can determine the best method to secure equipment and furniture. Contact them directly for an evaluation and assistance in bolting and restraining items in your shop.

Hazardous Materials

Hazardous materials must be securely stored to prevent spillage. If these materials are placed in a cabinet or on a shelf, ensure that they are restrained by a cabinet door that latches shut or by a lip, bar, bungee cord, or netting on shelves. They must be segregated according to hazard class, be tightly sealed, and be placed in secondary containment that is compatible with the chemicals they are holding. Flammable materials must be stored in a separate flammable storage cabinet. Refer to Section 7 on Chemical Safety for additional detailed information on chemical storage.

Exits and Walkways

Post all exit signs and do not store or place heavy items around exits as they could block egress if an earthquake occurs. Maintain a minimum of three feet of clearance in all walkways.

Prepare An Earthquake Plan

Advance preparation and practice will help you to remain calm and safe during an actual emergency. Prepare for an earthquake by conducting earthquake drills, knowing evacuation routes, and being familiar with your area's Emergency Action Plan.



Practice Drop, Cover, and Hold On

Practice taking cover so that it becomes second nature to you in the event of an earthquake. Always take cover quickly during an earthquake, because you face the greatest risk of injury from loose items falling.

Locate Fire Extinguishers

Know where the fire extinguishers are located in your shop and how to properly use them. Refer to Section 5 on Fire Safety for more information. Contact EH&S to schedule fire extinguisher training.

Know Your Exit Routes

Evacuation is the last resort during or after an earthquake. However, in the event of a gas leak or fire, it may be required. Refer to the building evacuation plan to identify exit routes for your building and to the campus evacuation map to see where your shop should go during a catastrophic event.

Locate Utility Shut-off Valves

Shutting off utilities will generally be the responsibility of the building coordinator or Facilities Management, but it is a good practice to know their location should you need to direct someone to where they are located.



What To Do When An Earthquake Hits

If you are indoors when the shaking starts:

- Drop, cover, and hold on. Get under a strong desk or table, if one is nearby. If you are not near a strong table or desk, drop to the floor against an interior wall and cover your head and neck with your arms.
- Avoid windows, hanging objects, mirrors, tall furniture (filing cabinets and bookshelves), large appliances and cabinets filled with heavy objects.
- If you are on campus, it is safer to remain inside a building after an earthquake unless there is a fire or gas leak.

- Glass from high-rise buildings does not always fall straight down; it can catch a wind current and travel great distances.
- Do not try to run out of your building during strong shaking—you can be killed or injured by falling debris (glass, roof tiles, concrete, etc.).
- Do not use elevators.
- If you use a wheelchair, lock the wheels and cover your head.
- If you are outdoors when shaking starts:
 - Move to a clear area if you can safely walk. There are no overhead power lines on the campus, but you should avoid buildings and trees.
 - If you're driving, pull to the side of the road and stop. Avoid stopping under overhead hazards or near buildings.

Once the earthquake shaking stops:

- Be prepared for aftershocks—they may be frequent and could exceed the first quake in severity.
- Check the people around you for injuries; provide first aid. Do not move seriously injured persons unless they are in immediate danger of a gas leak, hazardous material spill, fire or falling debris.
- Check around you for dangerous conditions such as fires, downed power lines and structure damage.
- If you have fire extinguishers and are trained to use them, put out small fires immediately.
- Check your phones to be sure they have not shaken off the hook and are tying up a line.
- Inspect your residence and work areas for damage.
- If you are trapped in debris:
 - Move as little as possible so that you don't kick up dust. Cover your nose and mouth with a handkerchief or clothing.
 - Tap on a pipe or wall so that rescuers can hear where you are. Use a whistle if one is available. Shout only as a last resort. Keep a whistle in your emergency kit.