

Laboratory Safety Policy

Civil, Environmental & Architectural Engineering Department The University of Kansas

This protocol covers the general safety guidelines that must be observed by those working in any of the Civil, Environmental and Architectural Engineering (CEAE) laboratories. Before using any CEAE laboratory, each user must sign the compliance form found in Appendix A at the end of this document. Every person who is to work in any of the CEAE laboratories must observe the following guidelines:

1. ENVIRONMENT, HEALTH, AND SAFETY POLICY

This policy provides the strategy and framework for achieving positive environment, health, and safety performance at The University of Kansas. It applies to all faculty, staff, students, and the public on the Lawrence Campus and its reporting units.

The full policy is found at <http://policy.ku.edu/EHS/environment-health-safety>.

2. EDUCATION, TRAINING, AND EXAMS

2.1 The Department of Environment, Health & Safety (EHS) at The University of Kansas provides education, training, and examinations via online short courses. For the nature of the work to be performed in the majority of the CEAE laboratories, take the KU-EHS Online Laboratory Safety Course under "EHS Safety Training Courses" (Course ID: EHS000-001) found on Blackboard. (More specific training is available for those who will work with heavy machinery in the Structural Laboratories, see Appendix A.)

To enroll in the EHS Safety Training Course, follow the following steps:

- i. Log into Blackboard
- ii. Locate the "Course Search" module on the "My Blackboard" page
- iii. Enter "EHS" in the dialog box
- iv. Click "Go"
- v. Select EHS000-001
- vi. Click the drop down arrow next to EHS000-001
- vii. Select "Enroll"
- viii. Click "Submit"
- ix. Click "Go"

You will now be enrolled in the EHS Safety Training Course, EHS000-001. This course will show up in "My Courses" box.

3. APPROPRIATE ATTIRE AND PERSONAL PROTECTIVE EQUIPMENT

3.1. All users of the laboratories must be dressed appropriately for the nature of the work to be performed. This includes wearing the following:

- a. Long pants.
- b. Sleeved shirt.
- c. Closed-toe shoes.

In addition to the above, the following must be observed when working around testing equipment and machinery in general:

- d. Do not wear loose fitting clothing.
- e. Long hair must be tied back.
- f. Neckties, scarves, and any other pieces of loose fabric worn around the neck, near the head, or around the waist must be removed prior to working in the laboratory.
- g. Similarly, jewelry, bracelets, chains and similar items must be removed prior to working in the laboratory.

3.2. All users of the laboratories must wear personal protective equipment at all times. This includes the following:

- a. Eye safety glasses that meet ANSI Z87 Standards. Safety glasses must also be worn over prescription eyeglasses if the latter are required. In some laboratories, safety glasses are not required in all areas. Those areas where safety glasses must be worn are clearly marked out.

3.3. All users of the laboratories must also wear the following personal protective equipment as required by specific tasks:

- a. Hard hats when working in areas where there is a potential for head injuries, either from falling object, unguarded protruding or exposed ends (e.g., steel bars), or when working near exposed electrical conductors.
- b. Face shield and protective clothing when working with metal grinders.
- c. Appropriate gloves when handling hot objects, sharp-edged stock, concrete, chemicals, and scrap metal or wood. However, gloves must not be worn while operating rotating machinery as gloves can easily be caught in the machinery.
- d. Fall protection equipment as indicated by laboratory personnel.

3.4. Safety is of extreme importance within the laboratories. While in the lab, you will engage in considerable amounts of movement and will work in tight quarters. With this in mind, it is recommended that guns are not brought into the laboratories. KU's concealed carry policy will be strictly enforced, and any visible weapon or gun will be immediately reported to the KU Public Safety Office and/or 911. For additional information on KU's Concealed Carry policy and procedures, please visit www.concealedcarry.ku.edu.

4. BEHAVIOR

4.1. While in the laboratory, all users must observe the following rules:

- a. Know and understand any hazards associated with the required work.
- b. Be aware of the physical environment of the laboratory including, but not limited to, location of equipment, means of egress, physical obstructions, fire extinguishers, chemicals, etc.

- c. Be familiar with all posted signage, including but not limited to, hazard warning placards and labels, laboratory contact information, and important emergency telephone numbers.
 - d. Do not perform any experiments that you have not discussed with laboratory personnel or faculty advisors.
 - e. Become fully educated on the proper use and operation of the equipment and tools to be used as part of the required work.
 - f. Inform laboratory personnel before using any machine, power and hand tools, or equipment.
 - g. Always use the proper tools for the task.
 - h. Avoid working when exhausted or emotionally upset.
 - i. Never work alone or unsupervised.
(In the Environmental Laboratories, you may work alone or unsupervised if you have become familiar with the precautions necessary to perform the experiment or analysis and have been trained on any equipment or instrumentation used.)
 - j. Be alert and aware of activities being performed by others.
 - k. Listen carefully to emergency instructions and abide by the safety advice and warnings given by laboratory personnel.
 - l. Never leave any equipment running that must be turned off at the end of the laboratory or work session.
 - m. Do not engage in horseplay or rough-housing.
 - n. Do not bring any food or drink into the laboratories.
 - o. Refrain from texting, chatting, video streaming, etc. as well as using electronic gadgets (e.g., portable media players). Similarly, the use of headphones, earphones, ear buds, and the like, are prohibited in the laboratories.
 - p. Exit the laboratory if a cell phone call must be made or accepted.
 - q. Working under the influence of alcohol or illegal drugs is prohibited.
- 4.2. Failure to abide by the safety rules provided on this document and/or in any other safety training course or session will result in a warning. Any warning may lead to being banned from the laboratory.
- 4.3. Immediately report to laboratory personnel any perceived defective tools or equipment, unsafe working conditions (e.g., gas or water leaks, improperly guarded equipment), and unsafe work practices.

5. HOUSEKEEPING

- 5.1. All users are required to maintain good housekeeping standards. These include, but are not limited to the following:
- a. Keep the work areas clean, uncluttered, and free of slipping and tripping hazards.
 - b. Do not leave exposed sharp or pointy surfaces (e.g., razor blades, needles) unattended.
 - c. All machinery, tools, and laboratory work areas must be cleaned up after use.

- d. Pick up and return tools to the proper storage location after use. Under no circumstances should a tool be left on the laboratory floor.
- e. Book bags, coats, and similar items must be stored out of the working areas. Also make sure that these do not obstruct any means of egress.
- f. When consumables are unpacked, empty boxes must be disposed of properly and immediately.
- g. Do not use compressed air to remove dust and/or other particulates from clothing.

6. HAZARDOUS MATERIALS, CHEMICALS, AND SAFETY DATA SHEETS (SDS)

- 6.1. When working with a material or a substance for the first time, look up the safety data sheets (SDS) to find out proper handling instructions.
- 6.2. Follow all safety precautions when working with paints, adhesives, epoxies, solvents, and similar products.
- 6.3. Follow all safety precautions when working with fiber-containing or particulate materials (e.g., fiberglass, carbon fibers).
- 6.4. Heavy sanding and grinding should be done in a well-ventilated area.
- 6.5. Additional notes and precautions apply for the use of Environmental Laboratories:
 - 6.5.1. Wear appropriate gloves as a protection from chemicals, heat, cold, or other hazards.
 - 6.5.2. Do not leave liquids or solutions in any container without a label. The label should contain the chemical contents, date, and student's initials.
 - 6.5.3. Hazardous waste containers must have an EHS label completed and taped to the container when waste disposal begins. Do not date this label until waste pick-up has been requested. Forms for waste labels and pick-up requests are available at <http://ehs.ku.edu/ehs-forms>.
 - 6.5.4. Do not store solutions in volumetric flasks. Transfer to a bottle for storage.
 - 6.5.5. Wipe down the balance table after every use. It is a safety hazard to leave unknown powders and chemicals on the bench.
 - 6.5.6. When spills occur on a bench or bench liner, clean up the spill immediately, dispose of the contaminated bench liner, and place new bench liner down. If unsure of the proper way to deal with a spill, immediately consult your advisor or lab supervisor.
 - 6.5.7. Do not leave glassware in an acid bath for more than 24 hours, plastic ware for more than 2-4 hours. Take care that acid does not drip on the bench or floor when using the acid bath; clean up any drips immediately.
 - 6.5.8. After working in a fume hood, leave the sash in the down position. When the sash is open, much more energy is used.
 - 6.5.9. Discard consumed materials in a proper and timely manner. This especially applies to filters containing suspended solids left in the oven.
 - 6.5.10. When completing work in the cold room, ensure that the door closes, and that the light is turned off.

- 6.5.11. If a piece of equipment is broken or does not work properly, notify Dr. Peltier or Dr. Sturm immediately, even if you find a way to “work around” the problem or use alternative equipment.
- 6.5.12. Store chemicals alphabetically in either the “organic” or “non-organic” cabinet, or appropriate flammable or acid cabinet. Never store them in students’ drawers.
- 6.5.13. Always work with solvents and concentrated acids in a fume hood. When making a dilution from a concentrated acid, always add acid to water with adequate stirring to disperse heat. If you are unsure as to how to work with any of these materials, consult your advisor or lab supervisor.

7. ACCIDENTS

- 7.1. Accidents must be reported to a supervisor (e.g., faculty) and to laboratory personnel within 24 hours and no later than the next business day.
- 7.2. If injured on the job and the injury is serious and/or life threatening, call 911 or go directly to the Lawrence Memorial Hospital (LMH) Emergency Room located at 325 Maine St. in Lawrence. Indicate that your injury was work related, if this is the case. Be sure to provide laboratory personnel with medical information given by LMH.
- 7.3. If injured on the job and non-emergency medical attention is needed, go to Watkins Health Center (WHC). WHC walk-in hours are from 8:00 AM to 5:00 PM Monday through Friday and 12:00 noon through 3:00 PM on Saturday. The Lawrence Memorial Hospital (LMH) Business Health Center may also be contacted by calling 785-505-3114 to schedule an appointment. Indicate that your injury was work related, if this is the case. Be sure to provide laboratory personnel with medical information given by WHC or LMH.

**Laboratory Safety Policy
Compliance Form**

**Civil, Environmental & Architectural Engineering Department
The University of Kansas**

I have read and understand the guidelines and rules outlined in the Laboratory Safety Policy that governs conduct in the laboratories of the Civil, Environmental & Architectural Engineering Department at the University of Kansas. I will comply with such guidelines and rules and agree to take full responsibility for my actions while working in the above-mentioned laboratories.

Signature: _____ Date: _____

Name (Print): _____

Appendix A

Structural Laboratory Safety Policy

Civil, Environmental & Architectural Engineering Department
The University of Kansas

1. GENERAL

Because of the nature of the work conducted in the Structural Laboratories (e.g., use of special equipment for fabricating, moving, testing heavy structural members), the following additional guidelines must be observed:

- 1.1 Use ANSI/OSHA-compliant hard hats in the designated areas. Specifications for wearing hard hats indicate that the suspension of the hat must fit properly on the nape of the neck and that the brow of the cap must fit snugly on the forehead.
- 1.2 The operation of fork lifts, scissor lifts, overhead cranes, MTS actuators, and power tools, is strictly restricted. Only those who have been trained in their use are authorized to use them.
- 1.3 In laboratories equipped with overhead cranes, the following must be observed by all laboratory users:
 - a. Always be aware if a crane is in operation.
 - b. Never stand directly under the load being moved by a crane.
 - c. Do not use a crane as a loading device (e.g., to apply an upward force to free or wedge objects).
 - d. Never travel a loaded or unloaded crane hook over a person.
- 1.4 In laboratories equipped with MTS hydraulic actuators, the following must be observed by all laboratory users:
 - a. Ask and become familiar with the location of all crush points (i.e., location where two objects move toward each other or when a moving object approaches a stationary one) around the actuators and keep away from these areas.
 - b. Do not disconnect any hydraulic hoses or fittings attached to MTS equipment.
 - c. Alert laboratory personnel of any hydraulic fluid leaks or spills from hydraulic equipment.
 - d. Only trained laboratory personnel and qualified technicians are allowed to stop leaks in hydraulic hoses and other hydraulic equipment.
 - e. Some equipment housed in these laboratories requires specialized training before anyone is allowed to operate it. This equipment includes: fork lifts, scissors lifts, overhead cranes, MTS actuators, and power tools

2. SPECIALIZED TRAINING

Only authorized students are allowed to use fork lifts, scissors lifts, overhead cranes, MTS actuators, and power tools. Before using any of these items, students must have had the appropriate training by one of the Civil, Environmental & Architectural Engineering laboratory technicians.

3. AFTER-HOURS POLICY

The following is a supplement to the general Laboratory Safety Policy that governs conduct in the laboratories of the Civil, Environmental & Architectural Engineering (CEAE) Department. These requirements apply to work conducted after regular business hours, which may include evenings or weekends. The requirements are in addition to, not in place of, those contained in the general Laboratory Safety Policy.

Before being permitted to work in the Structural Laboratories after regular business hours, you must read, understand, and sign to signify your acceptance of the following policies:

3.1. GENERAL

- a. Graduate students may be assigned a key to access a laboratory if their work requires it and such access has been approved by their supervisor (e.g., faculty) and laboratory personnel.
- b. A minimum of two individuals that have been trained to work in the laboratory must be present in the laboratory at all times.
- c. Undergraduate students that have been trained during normal business hours may be permitted to work in the laboratory after-hours, but only if the graduate student with key access is present and actively participating in the work at all times. Merely being present in the laboratory, but working in a different part of the space, is not sufficient.
- d. Individuals that have not been trained to work in the laboratory, including friends and family, are not permitted to work in the laboratory.
- e. Plans for after-hours work should be discussed with laboratory personnel during normal business hours before conducting the work.

3.2. ACTIVITIES THAT ARE PERMITTED

- a. Work that can be safely conducted on the ground with basic hand tools, including screw guns, is permitted. These activities may include formwork assembly, rebar tying, and instrumentation.

3.3. ACTIVITIES THAT ARE NOT PERMITTED

- a. Access to the tool room is not permitted after-hours. As such, use of power tools, including saws and chipping hammers, is not permitted.
- b. Use of the crane is not permitted.
- c. Use of vehicles, including lifts and lifting equipment, is not permitted.
- d. Use of hydraulic actuators, hand-pumped jacks, and other testing equipment is not permitted after hours unless approval has been granted by the supervisor (e.g., faculty) and laboratory personnel, and a clear safety plan has been discussed.

3.4. HOUSEKEEPING

- a. Normal housekeeping policies apply after-hours. The work space must be kept clean and uncluttered during and after working.

3.5. ACCIDENTS

- a. Accidents must be reported to a supervisor (e.g., faculty) and to laboratory personnel within 24 hours and no later than the next business day.
- b. If injured on the job and the injury is serious and/or life threatening call 911 or go directly to the Lawrence Memorial Hospital (LMH) Emergency Room located at 325 Maine St. in Lawrence. Indicate that your injury was work related, if this is the case. Be sure to provide laboratory personnel with medical information given by LMH.
- c. If injured on the job and non-emergency medical attention is needed, go to Watkins Health Center (WHC). WHC walk-in hours are from 8:00 AM to 5:00 PM Mondays through Fridays and 12:00 noon through 3:00 PM on Saturdays. The Lawrence Memorial Hospital (LMH) Business Health Center may also be contacted by calling 785-505-3114 to schedule an appointment. Indicate that your injury was work related, if this is the case. Be sure to provide laboratory personnel with medical information given by LMH.

Structural Laboratory Safety Policy Compliance Form

**Civil, Environmental & Architectural Engineering Department
The University of Kansas**

I have read and understand the guidelines and rules outlined in the Structural Laboratory Safety Policy that governs conduct in the Structural Laboratories of the Civil, Environmental & Architectural Engineering Department at The University of Kansas. I understand that these policies apply in addition to the general Laboratory Safety Policy. I will comply with such guidelines and rules and agree to take full responsibility for my actions while working in the above-mentioned laboratories.

Signature: _____ Date: _____

Name (Print): _____