

CCEE Research and Instructional Laboratories and Field Work Safety Policies and Guidelines

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All persons working in CCEE Department laboratory spaces and/or conducting CCEE field work are required to adhere to the CCEE Safety and Health Committee laboratory and field work policies and safety guidelines presented in this document and to report unsafe work practices or conditions observed in the labs or the field. Direct uncertainties, concerns or questions about safe work practices to the appropriate CCEE laboratory manager or coordinator or the CCEE Safety and Health Committee for clarification. The CCEE Safety and Health Committee developed this document, and the committee is responsible for its ongoing maintenance.

CCEE laboratory managers and principal investigators are expected to promote and facilitate compliance with CCEE laboratory policies and guidelines within the laboratory spaces and/or for field work activities they manage. Individuals who consistently exhibit conduct and behaviors exceeding or not compliant with the CCEE laboratory policies and guidelines document, will be referred to the CCEE Safety and Health Committee for commendation or to initiate corrective action, respectively.

1.0 Preparing to Work in CCEE Labs and in the Field

- 1.1 Access to CCEE laboratory spaces is granted only to individuals (students, postdoctoral associates, staff, visiting scientists, faculty, and others) once they have met the access-specific, [EH&S core training needs](#) described in the CCEE Safety and Health Committee reference document. Continued access to laboratory space is contingent upon adherence to all CCEE laboratory policies and guidelines.
 - 1.1.1 Researchers not affiliated with CCEE requesting access to CCEE laboratories will need to seek access approval with the CCEE Department Chair.
 - 1.1.2 CCEE guests (e.g., friends, families, visitors) seeking access to a given CCEE lab space for a tour or to visit with an individual working in the space must first receive approval from the lab manger or lab coordinator and must be accompanied at all times by an individual trained to work in the lab. All applicable laboratory safety policies and guidelines also apply to CCEE guests.
 - 1.1.3 The CCEE Safety and Health Committee will help coordinate access requests for ADA-defined service animals in accordance with ISU policy.
 - 1.1.4 These requirements also extend to individuals involved in CCEE field work.

- 1.1.5 Students using instructional lab spaces for course credit are expected to adhere to the access-specific training needs defined for them by their course instructor. Course instructors shall coordinate instructional lab, access-specific, training needs for students in their course with the CCEE Safety and Health Committee.
- 1.1.6 Parents *and* sponsors (e.g., faculty) of a non-student child (a person under the age of 18 who is not enrolled in classes at ISU) seeking CCEE lab access and/or involvement in CCEE field work shall adhere to all applicable ISU policies, guidelines and procedures, which include the ISU Children in the Workplace policy, and require consultation with ISU EH&S and Office of Risk Management.
- 1.2 **Before** purchase or transport of laboratory equipment, materials and supplies into CCEE labs, **approval is necessary.**
 - 1.2.1 Discuss this with the lab manager or lab coordinator for smaller equipment items and small volumes of materials and supplies.
 - 1.2.2 Notify the CCEE Department Chair for equipment, materials and supplies that will require laboratory space modifications in order to accommodate them. The Chair and designees will then begin the process of determining whether an appropriate space is available within CCEE labs to accommodate the request.
- 1.3 Request CCEE allocation of and access to space per department policy before attempting to bring any new project work into CCEE laboratory spaces. As required, provide a summary description of the planned work, an indication of potentially suitable spaces, if known, along with other detailed requirements for the work needed to justify the request (e.g., square footage space needs, scheduling requirements, hazards mitigation, PPE requirements, environmental control requirements, etc.).
- 1.4 Develop or use existing standard operating procedures (SOPs) for any laboratory or field work operation. SOPs must identify hazards, hazard control measures, waste disposal procedures and procedural details. Individuals who will use equipment, facilities, or procedures documented in a given SOP must be trained on the SOP and the training/refresher training must be documented. EH&S provides document templates and guidance for SOP development.
- 1.5 Prior to working in a CCEE lab or in the field, each employee must complete the EH&S online Hazard Inventory Form at <https://hazard-inventory.ehs.iastate.edu/create>. If job position, workplace responsibilities and/or workplace hazards change, complete a new form to notify EH&S.

- 1.6 Individuals working in labs shall review the Emergency Action Plan (EAP) for the lab(s) within which they will work and know their responsibilities when faced with emergencies described in the EAP. Laboratory EAPs shall be updated on an annual basis.
- 1.7 Individuals working in labs shall review the location of PPE, spill control kit(s), first-aid kit(s), safety shower(s), eye wash(es), fire extinguisher(s), and any required environmental control(s) within each of the labs they work.
- 1.8 Ethical behavior is expected during the conduct of work in CCEE labs and in the field. For example, do not use discarded specimens or materials and supplies in the lab unless approval of the owning PI or other person with approving authority has been granted.
 - 1.8.1 ISU takes responsible conduct of research seriously, which encompasses a number of topical areas, and all CCEE researchers shall take responsible conduct of research (RCR) CITI online training accessible through the ISU [Office for Responsible Research](#).
- 1.9 As necessary, CCEE lab and field research projects shall receive appropriate committee approvals; e.g., Institutional Biosafety Committee (IBC), Institutional Review Board (IRB), Radiation Safety Committee (RSC), etc., **prior to** initiation of project work. Individuals working in labs shall assist with regulatory compliance efforts.
- 1.10 All individuals entering any CCEE lab shall assume that intellectual property exists in the lab and will be bound by [ISU Research Foundation \(ISURF\) policies](#).
- 1.11 Individuals working in labs shall review the recordkeeping practices specified by their research group(s), keep accurate records of their work in the laboratory, and know where to store their lab notebook(s), research documents and computer data files generated from their work.

2.0 Expected Behavior and Work Practices in CCEE Labs and in the Field

- 2.1 Contact the lab manager/coordinator **before** beginning any work in CCEE lab spaces and or the field. Complete appropriate safety training and receive approval before using the labs and/or conducting field work. Individuals working in labs shall maintain current safety training as specified by ISU and CCEE policy in order to maintain access to lab spaces.
- 2.2 Individuals working in labs shall coordinate with personnel in the lab to ensure that their activities will not infringe on the activities of others. Should conflicts arise related to the use of space, equipment or workflow, try to make arrangements that will work for all parties involved. Contact the laboratory manager or coordinator to assist with coordinating arrangements.

- 2.3 Wear the appropriate personal protective equipment while working in the labs and/or in the field.
- 2.3.1 At a minimum, safety glasses or equivalent eye protection are required in CCEE lab spaces at all times.
 - 2.3.2 Follow the PPE guidelines established in CCEE SOP documents. If no SOP exists for the task to be undertaken, complete a [hazard assessment](#) and begin SOP development.
 - 2.3.3 Employers are required to supply required PPE. In most instances, CCEE Principal Investigators are responsible for purchasing and maintaining PPE for the students and researchers they manage. For CCEE lab managers and for course use of labs, CCEE typically covers the purchase and maintenance of required PPE.
- 2.4 Wear fully enclosed shoes in the labs at all times. Shorts and/or short skirts are prohibited in the lab. Avoid wearing loose-fitting clothing and/or jewelry that could get caught in equipment. Manage long hair so that it does not impede vision and does not get caught in equipment.
- 2.5 In wet labs and laboratory areas that store hazardous materials, keep food, beverages and drinking water bottles out of these laboratory spaces at all times to prevent contamination in accordance with [university policy](#). Do not chew gum, apply cosmetics or handle contact lenses in these laboratory spaces. In all CCEE labs, do not store food or drink in any laboratory refrigerator or freezer nor use lab microwaves for heating food.
- 2.6 Store personal items such as coats and backpacks in cabinets or other areas provided for that purpose to avoid cross-contamination.
- 2.7 Do not conduct work involving significant hazards when alone or after normal business hours (typically, 7:30 am – 5:30 pm, M-F) without prior approval from the appropriate laboratory manager, lab coordinator or the CCEE Safety and Health Committee. If circumstances require an individual to work alone in the lab, arrangements shall be made to check-in with a PI, colleague, or supervisor at designated times to check on the individual's status.
- 2.8 Handle chemicals, biological materials, and radiological materials in accordance with EH&S guidelines as outlined in EH&S safety courses.
- 2.9 Properly segregate, store, manage and dispose of laboratory- and field-generated wastes in accordance with CCEE policies and [EH&S Waste and Recycling Guidelines](#).

- 2.9.1 Sinks are to be used to wash your hands and lab ware only! No chemicals, paints, solvents, adhesives or tools used with concrete, masonry mortars, or plaster can be poured or washed into laboratory sinks.
- 2.9.2 Asphalt, concrete, masonry, glass, wood, soils, aggregates, metal scrap materials and sharps are not to be disposed of in laboratory wastebaskets. These items must be segregated for disposal in accordance with CCEE and EH&S waste disposal guidelines.
- 2.9.3 Cardboard shall be broken down and placed in the designated bin on the CCEE loading dock. **CARDBOARD ONLY SHOULD BE PLACED IN THE BIN.**
- 2.9.4 Chemical, biological and radiological material wastes are to be disposed of in accordance with University policies. Individuals generating these materials shall receive initial training and refresher training as required by CCEE and EH&S.
- 2.9.5 Metal and plastic sharps, broken and intact glass, and empty chemical bottles must be handled according to [EH&S sharps safety guidelines](#).
- 2.10 Label specimens/mock-ups in a manner consistent with CCEE and EH&S guidelines. Ask the lab manager before storing or planning to locate anything in any department space. Anything stored should have the individual's name on it and be placed in a designated storage area for their use. Replace old, outdated, or damaged labels.
- 2.11 If a chemical or oil spill occurs that you do not know how to handle, ask the laboratory manager, their assistant or the lab coordinator for assistance. If they are not available, contact EH&S at 515-294-5359 or, after hours, Department of Public Safety (DPS) at 515-294-4428.
- 2.12 Use equipment safety features (e.g., guards) when operating laboratory apparatus, power tools, and shop equipment.
 - 2.12.1 Report any damage to laboratory apparatus, hand, power and shop tools to the laboratory manager/coordinator when the damage occurs.
 - 2.12.2 Do not use tools for any tasks beyond their design capacity or intent. For example, do not use screwdrivers as chisels or wrenches as hammers.
 - 2.12.3 Eliminate daisy chaining of extension cords and multiple-plug outlets. Use [EH&S approved configurations](#) only, and do not operate equipment or laboratory apparatus with exposed electrical wiring.

- 2.13 Keep work areas organized.
 - 2.13.1 Put away all laboratory apparatus, hand tools, power tools, excess hardware and materials that are stored when not in use prior to leaving the lab.
- 2.14 Keep lanes open to allow safe movement of people and materials.
 - 2.14.1 Laboratory exits, power service panels and emergency equipment (e.g., fire alarm, fire extinguisher, gas shut-off, safety shower, eye wash) shall be accessible at all times.
 - 2.14.2 Where possible, use a cord cover for temporary extension cords, wiring, and hosing routed along the laboratory floor to permit safe passage.
- 2.15 Do not leave open flames or experiments involving rapid heating or reaction unattended.
- 2.16 Immediately (or as soon as possible), report all laboratory or field work near misses, injuries, accidents, exposures to a supervisor, lab manager/coordinator or emergency contact. The supervisor or injured employee must submit an Incident Report within 24 hours using the online reporting portal at <http://www.riskmanagement.iastate.edu/Report>. Student injuries must also be reported at this site.
- 2.17 Maintain lab security at all times.
 - 2.17.1 Do not prop open laboratory doors unless temporarily required to facilitate movement of equipment, materials and supplies into and out of a laboratory space.
 - 2.17.2 Close and lock ALL doors when leaving the laboratory or communicate with others in the lab to ensure that they will do so.
 - 2.17.3 Do not loan cabinet and door keys or access cards to anyone else. Those needing access must discuss with lab manager/coordinator.
 - 2.17.4 Report suspicious behavior and unauthorized access to the lab manager or lab coordinator.
- 2.18 Individuals working in labs shall thoroughly clean all areas in which they work prior to leaving the lab each day.
 - 2.18.1 This includes wiping down and/or sweeping any surfaces such as workbenches, laboratory equipment, lab floors, etc.

- 2.18.2 Clean all hand tools and power tools prior to putting them away. Clean and vacuum around any shop tools.
- 2.18.3 Custodians are only required to empty lab trash once per month. Individuals working in labs are responsible for emptying the trash when it becomes full.
- 2.19 Turn off all unneeded lights and equipment prior to leaving the lab for the day. The lab manager/coordinator will help individuals determine end-of-laboratory work shift procedures.

3.0 Preparing to Leave the University

- 3.1 When an individual has finished their program of work within CCEE labs, they must complete a checkout procedure and gain approval of the lab manager/coordinator. EH&S maintains a Laboratory Check-Out form to guide this process. The following must be completed.
 - 3.1.1 Properly dispose of all chemical, biological, and radiological waste materials, old samples/specimens, and materials and supplies that are not needed.
 - 3.1.2 Properly store, label, and inventory all research products to be kept by the research group.
 - 3.1.3 Clean personal work space.
 - 3.1.4 Ensure that lab notebooks are complete and stored as designated by PI.
 - 3.1.5 Complete inspection with PI/supervisor and/or lab manager.
 - 3.1.6 Sign-off on the CCEE Safety Training and Tracking Platform by the individual's lab manager or lab supervisor is required once tasks in 3.1.1-3.1.5 are completed.

4.0 Terminology

- 4.1 Definitions of terms specific to this document:
 - 4.1.1 *Lab coordinator*, an individual assigned by CCEE as the caretaker of an allocated CCEE space in the absence of a lab manager.
 - 4.1.2 *Researcher*, any individual who conducts experimental research in a CCEE lab or in the field. This includes faculty, staff, students, postdoctoral scholars, visiting scientists, and others.

Laboratory and Field Work Safety Checklist FOR TRAINEE

Note: The trainee is required to complete this checklist online at Learn@ISU.

Prior to working in the laboratory, you must read and electronically sign the following checklist on the CCEE Learn@ISU Training and Tracking Platform. Your electronically signed copy of this form, also acknowledged by the lab manager/coordinator for each space within which you will work, must be in your online training file before you will be granted key/swipe card access to CCEE laboratory spaces and/or allowed to conduct field work involving CCEE.

- ___ I read and agree to adhere to the CCEE Research and Instructional Laboratories and Field Work Safety Policies and Guidelines. My continued access to CCEE lab spaces and conduct of field work involving CCEE depends on my adherence to these policies and guidelines.

- ___ I completed the CCEE Safety and Health Committee recommended core safety training courses offered by EH&S, and I will complete the refresher training and any additional assigned training at the required interval for as long as I am working in the labs or the field. This list of courses includes: (1) EH&S Laboratory Safety: Core Concepts; (2) EH&S Laboratory Safety: Chemical Storage; (3) EH&S Laboratory Safety: Spill Procedures; (4) EH&S Emergency Response; (5) EH&S Fire Safety and Extinguisher Training; and (6) EH&S Shop Safety Fundamentals—Basic Procedures and Policies.

- ___ If I am a CCEE researcher, I completed responsible conduct of research training.

- ___ I completed the EH&S hazard inventory form (for graduate students and employees only).

- ___ I am aware of the laboratory- and/or field work-specific training plans required for the project work that I will undertake, and I will train to existing lab- or field work-specific Standard Operating Procedures (SOPs) and/or develop new SOPs as required for my project work. I know that if no SOP exists or if I am unfamiliar or unsure of how to perform any lab operation, I must first discuss my work with the laboratory manager or coordinator and cognizant PI(s).

- ___ I evaluated my PPE requirements with the lab manager(s)/coordinator(s) overseeing my laboratory and/or field work. Before carrying out any operations in the lab or in the field, I will first assess what PPE is required through a review of applicable SOPs, and I will wear the PPE that is appropriate for any operations I undertake. I will always wear eye protection and fully-enclosed shoes and any other minimally required PPE in any location in the lab.

- ___ I discussed the general precautions applicable to my work when handling and storing hazardous chemicals, including how to avoid contact with and inhalation of hazardous substances, and how to contain these substances in the event of a spill with the lab manager(s)/coordinator(s) overseeing my laboratory and/or field work. I will assist the lab manager(s)/coordinator(s) overseeing my laboratory and/or field work with updating

inventories to include any new chemical, biological, or radiological materials acquired for my work.

_____ The lab manager(s)/coordinator(s) overseeing my laboratory and/or field work showed me how to access SDSs (safety data sheets) for the lab(s) within which I will work and field work operations with which I am involved. I will provide SDSs for all of the chemicals that will be used in the course of my lab/field work to the lab manager(s)/coordinator(s) overseeing my laboratory and/or field work, and I will refer to these for guidance when planning my laboratory and/or field work.

_____ I know the recordkeeping practices specified by my research group. I will keep accurate records of my work in the laboratory and in the field, and I will know where to store my lab notebook(s), research documents and computer data files generated from my work.

_____ I understand that I cannot work with hazardous substances, high hazard equipment, procedures or processes alone in the laboratory or in the field without approval.

_____ For each of the labs within which I will work, the cognizant lab manager/coordinator showed me the locations of the spill control kit(s), first-aid kit(s), safety shower(s), eye wash(es), fire extinguisher(s) and any required environmental control(s). I understand how to clean up spills involving hazardous substances, and I trained to use a fire extinguisher. In the event of a flood, tornado, fire, electrical, injury or any other emergency, I know how to respond.

_____ I will maintain a clean work environment, and the cognizant lab manager/coordinator showed me how to store, manage and label my laboratory and/or field materials, supplies, specimens, mock-ups and any generated waste or recyclable materials within each of the labs I will work.

_____ I discussed with the lab manager/coordinator and/or my supervisor all of the identified additional EH&S offered safety training needed to conduct my research.

_____ I will consult with the laboratory manager or coordinator, my supervisor, the CCEE Safety and Health Committee and/or EH&S on any issue that poses a potential hazard. If I observe a co-worker conducting hazardous operations unsafely, I will call my co-worker's attention to the issue(s), and I will report any unsafe practices to the laboratory manager or coordinator and/or the CCEE Safety and Health Committee if the problem persists without resolution.

*My electronic signature affirms that I agree to all of the above-listed statements pertaining to safe practices in the laboratory and the field. **I understand that without my electronic signature I cannot gain access to or work in any CCEE laboratory and/or conduct work associated with CCEE in the field.***

Laboratory and Field Work Safety Checklist FOR LAB MANAGER/COORDINATOR

Note: The lab manager/coordinator is required to complete this checklist online at Learn@ISU.

Prior to allowing an individual to work in the lab(s) and/or on field work you manage or oversee, you or your approved designee must read and electronically sign the following checklist on the Learn@ISU CCEE Training and Tracking Platform. You or your approved designee's electronic signature to this form must be included in the trainee's online training file before they will be granted key/swipe card access to CCEE laboratory spaces or allowed to conduct field work involving CCEE.

- ___ I verified that the CCEE Safety and Health Committee recommended core safety training courses offered by EH&S are completed. This list of courses includes: (1) EH&S Laboratory Safety: Core Concepts; (2) EH&S Laboratory Safety: Chemical Storage; (3) EH&S Laboratory Safety: Spill Procedures; (4) EH&S Emergency Response; (5) EH&S Fire Safety and Extinguisher Training; and (6) EH&S Shop Safety Fundamentals—Basic Procedures and Policies.
- ___ If the individual is a CCEE researcher, I verified that their responsible conduct of research training is completed.
- ___ I verified that they completed a hazard inventory form (for graduate students and employees only).
- ___ I discussed the laboratory- and/or field work-specific training plans that will be required for their project work, and I have discussed existing lab- or field work-specific Standard Operating Procedures (SOPs) and/or assigned the development of new SOPs as required for their project work.
- ___ I evaluated the PPE, hazards and environmental control requirements for their work.
- ___ I discussed the general precautions applicable to their work when handling and storing hazardous chemicals, including how to avoid contact with and inhalation of hazardous substances, and how to contain these substances in the event of a spill.
- ___ I discussed how they can assist with updating inventories to include any new chemical, biological, or radiological materials acquired for their work.
- ___ I demonstrated how to access SDSs (safety data sheets) for each lab under my supervision/oversight within which they will work and requested that they provide me with SDSs for all of the chemicals that will be used in the course of their lab/field work.
- ___ I discussed the recordkeeping practices specified by their research group including where to store their lab notebook(s), research documents and computer data files generated from their work.
- ___ For each lab for which I am approving their access, I showed them the locations of the spill control kit(s), first-aid kit(s), safety shower(s), eye wash(es), fire alarm(s), fire

extinguisher(s) and any required environmental control(s)[e.g., fume hoods]. I also reviewed the Emergency Action Plan and accident reporting with them for each space under my management within which they will work.

_____ I made expectations clear about general housekeeping requirements for each of the spaces under my management within which they will work. I showed them how to store and label their laboratory and/or field materials and supplies, specimens, mock-ups and any generated wastes, including hazardous wastes and recyclables, within each of the labs under my management within which they will work.

_____ I identified all the additional EH&S offered safety training needed to conduct their research in the labs I manage.

My electronic signature affirms that I agree to all of the above-listed statements pertaining to the orientation I provided for the above-stated individual relevant to the laboratory and/or field spaces and activities under my management/oversight.