**LAB-SPECIFIC INFORMATION**

**for the Chemical Hygiene Plan and Lab Safety Manual**

**of Tad Dallasin CLS 511**

The University of South Carolina EH&S developed a general [Chemical Hygiene Plan and Lab Safety Manual](https://sc.edu/about/offices_and_divisions/ehs/research_and_laboratory_safety/chemical_and_lab_safety/chemical_hygiene_plan/index.php) (CHSP-LSM) that is online accessible. The OSHA Laboratory Standard, however, requires that every laboratory develop a lab-specific Chemical Hygiene Plan. To satisfy this requirement, various lab-specific information must be provided using available templates within this document. Include information and details specific to your laboratory facility and laboratory operations. This information must be printed, kept in a binder, and made accessible to all lab personnel. All lab personnel must review and understand the content of both the general CHP-LSM and the Lab-Specific Information for the CHP-LSM.

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| --- | --- |
| **Section** | **Description (*Click hyperlinks to navigate to each section)*** |
| **1** | Contacts for [emergencies and other incidents](#_1._PHONE_NUMBERS) |
| **2** | [Laboratory Emergency Procedures](#_2.__Specific) in case of a fire, chemical spills, chemical exposure, and personal injury |
| **3** | [Hazard and Controls Inventory](#_3.__Laboratory) – list of chemical, biological, radioactive, physical and other hazards, and major controls identified and implemented |
| **4** | [Safety Equipment Inventory and Maintenance Log](#_4.__Safety) – list of safety equipment present and maintained in the laboratory |
| **5** | [Chemical Inventory](#_5._Chemical_Inventory) – list of all chemicals (including gases and cryogens) stored and/or used in the laboratory, with all highly hazardous substances highlighted on the list |
| **6** | [Standard Operating Procedures (SOPs)](#_6.__Standard) for highly hazardous chemicals, equipment, processes, and other tasks |
| **7** | [Safety Data Sheets](#_7._Safety_Data) – location of printed SDS of highly hazardous substances and the primary and backup access SDS of all other chemicals in the laboratory |
| **8** | [Safety Manuals](#_8.__Additional), Brochures, others - operation manuals, information packets, booklets or brochures from manufacturers of equipment, chemicals, PPE and others |
| **9** | [Building Emergency Evacuation and Reentry Plan](#_9.__Building) – procedures for evacuation (and re-entry) in the event of emergencies that require building evacuation |
| **10** | [Laboratory shutdown and re-start checklist](#_10.__Laboratory) – list of items to be completed when shutting down the laboratory for an extended period, and a list of items to complete when resuming laboratory operations after a shutdown |
| **11** | [Laboratory Safety Manual and Chemical Hygiene Plan clearance form](#_10.__Chemical) – signed by all laboratory personnel after reviewing the content of the general CHP-LSM and the Lab-specific Information for the CHP-LSM |
| **12** | [Training Documentation](#_11._Training_Documentation) – certificates of completed trainings for all laboratory personnel including chemical and laboratory safety, hazardous waste, lab-specific training and other trainings required based on hazardous materials handled |
| **13** | [Laboratory Self-Inspections](#_12.__Laboratory) – record of lab safety self-inspections conducted |
| **14** | [Incident/Accident Reports](#_13.__Incident) – record of all accidents, incidents and near misses that occurred in the laboratory |
| **15** | [Safety Posters, Signage, Labels, Checklists, others](#_14.__SAFETY) |
| **16** | [Other Lab Safety Policies](#_16.__Other) on PPE, minors in laboratories, laboratory and equipment decommissioning, waste disposal, field research safety |
| **17** | [Resources](#_7.__Resources) – references on lab safety standards, regulations and guidelines |

### 1. PHONE NUMBERS FOR EMERGENCIES AND OTHER INCIDENTS

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| --- | --- | --- | --- |
| **Agency/Department/ Personnel** | | **Phone Number** | **Type of Emergency** |
| **Emergency Dispatch**  **U of SC Police Department** | 911 from any phone  (803) 777-4215 | | Medical and other life-threatening emergencies such as fire, major spill, injury, others |
| **Environmental Health & Safety (EH&S)** | (803) 777-5269  8:00 AM - 4:30 PM | | Non-emergency (non-life threatening and does not require immediate attention) chemical spill, chemical exposure, unsafe conditions |
| **Department of Facilities** | (803) 777-9675  24-hour phone number | | Emergency and non-emergency facility repair requests |
| **Student Health Services**  **Center for Health and Well-Being**  1401 Devine St.  Columbia, SC 29208 | (803) 777-3175  *Fall and Spring Semesters* Monday – Friday: 8 AM - 5 PM Sunday: 2PM – 8 PM  *Summer Hours* Mon – Fri: 8:30 AM - 4:30 PM  *Closed on University holidays* | | Medical treatment for U of SC Columbia students and employees during normal work hours |
| **Prisma Health Richland Hospital Emergency Room**  5 Medical Park Rd,  Columbia, SC 29203 | [(803) 434-7000](javascript:void(0)) | | Emergency medical treatment for U of SC Columbia students and employees after normal office hours |
| **Prisma Health Occupational Health Services**  1301 Taylor St, Suite 2H  Columbia, SC 29201 | 803-296-3500  Monday–Friday, 7:30 a.m.–4:30 p.m. (closed Thursday noon–1 p.m.) | | For lab workers working with animals - medical treatment for animal-related injuries during normal office hours |
| **CompEndium Services** | 877-709-2667  24/7 | | To schedule treatment for all work-related injuries of U of SC employees |
| *Your Department Safety Coordinator name* | *Your Department Safety Coordinator’s emergency phone number* | | All incidents that occur in laboratories within the Department |
| **Tad Dallas** | **225-239-0410** | | All incidents that occur in your laboratory |
| **Tad Dallas** | **225-239-0410** | | All incidents that occur in your laboratory |

### 1-A. EMERGENCIES AND BUILDING EVACUATION

**When calling 911, provide the following information**

* Your name and phone#
* Incident location: Coker Life Science room 511
* Injured person, *if any*, specific injury and location; request ambulance *if needed*
* Hazardous materials involved, *if known*
* What happened; describe activities that caused the incident and your initial response
* Other relevant information that may help responders evaluate and stabilize the incident
* Other information asked

**When you need to evacuate the building**

Fire and other emergencies will require you to leave the building. In case of a fire, always use the stairs, not the elevator!

* Pull the nearest fire alarm is in hallway
* The building evacuation route is posted in
* If this primary route is not safe, the other way out stairway 50m down hall to the right.
* All lab staff are to meet at **reflecting pond in front of library** after exiting the building.
* Designated Coordinator, **Tad Dallas**, will take attendance to ensure that everyone had safely evacuated.
* If you can provide information about the incident, proceed to the Incident Command on site. Look for an SUV with green strobe light flashing.
* Do not re-enter the building until the Incident Commander has declared that it is safe to return!

### 2. Specific Laboratory Emergency Procedures

*Download a* [*template for developing laboratory-specific emergency procedures*](https://sc.edu/about/offices_and_divisions/ehs/research_and_laboratory_safety/chemical_and_lab_safety/emergency_equipment_and_procedures/index.php)*. Describe in detail what to do in the event that an emergency such as fire, chemical release, chemical exposure, and others occur in the laboratory. Insert your lab emergency procedures in this section.*

See https://github.com/dallasLab/labLogistics/tree/master/SAFETY/

### 3. Laboratory Hazards and Controls Inventory

* *Identifying hazards and hazard awareness is the first critical step in developing an effective safety plan. Every personnel working in a laboratory must be made aware of all hazards present and/or perceived in the laboratory.*
* *To create a Laboratory Hazards and Controls Inventory, The Principal Investigator and the Group Safety Officer collect all available information from experimental protocols, lab walk-through, and inventories to identify all hazards present in the laboratory. Once the hazards are identified, all controls to mitigate risks of the identified hazards must be identified and implemented. All major controls identified and implemented are to be listed in this inventory. Other details must be referred to in the written SOPs.*
* *Complete hazards and controls inventory for each lab room using the template below.*

**LOCATION: \_\_CLS 511**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Hazardous Material** | **Engineering Control** | **PPE** (in addition to disposable gloves, safety glasses, lab coat) | **SOP/ Work practice/ Special precautions/Safety equipment** |
| **CHEMICAL *(List all highly hazardous substances; if list is extensive, refer to Chemical Inventory)*** | ***Ethanol*** |  | *Gloves* | *Do not drink it* |
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| **BIOLOGICAL (BSL-2 and above Agents)** |  |  |  |  |
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| **RADIOLOGICAL (Isotopes, Laser, X-ray)** |  |  |  |  |
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| **EQUIPMENT posing physical hazards (cuts, pinches, crushes, exposed moving parts, etc.)** | ***Dremel*** |  | *Safety glasses* | *Be careful* |
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| **CONDITION/ACTIVITY posing other hazards (generate heat, pressure, fire, potential explosion, etc.)** |  |  |  |  |
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| **OTHER HAZARD (Hazards that are not classified into above categories)** |  |  |  |  |
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### 4. Safety Equipment Inventory AND MAINTENANCE LOGS

*Identify the location of safety equipment in the lab. Print* [*maintenance logs*](http://www.sc.edu/ehs/factsheets.htm) *for emergency eyewash and safety shower to keep track of maintenance checks performed. Post current logs in the vicinity of the equipment. Keep old logs in this section.*

|  |  |  |  |
| --- | --- | --- | --- |
| Equipment | | Location (Room number and specific location such as SW corner, white cabinet, etc.) | Maintenance checks schedule |
| First-aid kit | | CLS 511 above first sink on right | Quarterly |
| Chemical spill kit | | CLS 511 under sink on right | Quarterly |
| Fire Extinguisher | | CLS 511 next to sink on right | Monthly |
| Eyewash | | CLS 511 to left of entrance | Weekly flushing |
| Safety Shower | | CLS 511 to left of entrance | Weekly activation |
| Chemical fume hood | | CLS 511 to right of entrance | Annual |
| PCR hood | | CLS 511 to right of entrance | Annual |
| Biological spill kit | | CLS 511 under sink on right | Quarterly |
| Other stuff | Autoclave glove | CLS 511 |  |
| Safety goggles | EWS 601 |  |

### 5. Chemical Inventory

*Download the* [*template*](https://sc.edu/about/offices_and_divisions/ehs/research_and_laboratory_safety/chemical_and_lab_safety/chemical_inventory_and_sds/index.php) *and instructions on how to develop a laboratory chemical inventory. Identify and highlight all highly hazardous substances. After developing the chemical inventory,* *send a copy of the Excel file to* [*jlocke@mailbox.sc.edu*](mailto:jlocke@mailbox.sc.edu)*. Maintain and update chemical inventory as new chemicals are purchased and used up. Send updated chemical inventory to* [*jlocke@mailbox.sc.edu*](mailto:jlocke@mailbox.sc.edu)*.*

See https://github.com/dallasLab/labLogistics/tree/master/SAFETY/chemicals

*for chemical inventory*

### 6. Standard Operating Procedures (SOPs)

*The following is a summary guideline on when and how to write safety SOPs.  Write the SOPs as specific as possible to your laboratory and process so that your lab personnel and anyone who is not a member of your lab group (i.e. new lab personnel, emergency responder, EH&S) can use it effectively for process-specific safety training and emergency response.  An SOP should clearly identify the procedure, hazards, controls, emergency plan and the personnel authorized to handle/perform the procedures.*

* *If you use chemicals with GHS (Globally Harmonized System) hazard category rating of 1 and 2 or an NFPA hazard category rating of 3 and 4 for toxicity, flammability or reactivity, write a substance-based SOP.*
* *If an equipment poses particular hazards (cuts, crushes, has exposed rotating parts, generates hazardous substances (chemicals, dust, etc.), uses high voltage, high magnetic field, laser, etc.) an equipment-based SOP must be developed.*
* *If an experimental procedure, although not using any particularly hazardous substances or equipment can potentially develop physical hazards (pressure, high heat, glass shards, etc.), a process-based SOP must be developed.*
* *If an experimental procedure uses several different hazardous substances and/or equipment, you may decide to write one process-based SOP that addresses all the hazards involved.*
* *If an experimental procedure has complicated steps where special work practices and precautions must be observed, the written SOP must include the step-by-step experimental procedures.*
* *If an experimental procedure is conducted inside a confined space where a person goes inside while setting up, a written SOP for the confined space use must be developed.*
* *Each section of the SOP must contain brief statements but must also contain relevant details.  For example, it is not adequate to say “seek follow-up medical care”.  The SOP must say “proceed to Thompson Student Health Center at (address) for follow-up medical care”.  Another example, on the Circumstances of use section, it is not adequate to say “nitric acid will be used in digestion”.  SOP must say something similar to “50 ml concentrated nitric acid will be used to digest leaf samples at 200 deg. F.*
* *Use the* [*SOP template available here*](https://sc.edu/about/offices_and_divisions/ehs/research_and_laboratory_safety/chemical_and_lab_safety/standard_operating_procedures/index.php)*.*
* *Print SOPs and insert in this section.*

**General lab guidelines:**

* Wear closed-toe shoes and long pants
* Long hair must be tied back
* Wear lab coats to prevent contamination of personal clothing
* Wash your hands after wearing gloves and before leaving the lab

### 7. Safety Data Sheets

*Two ways of accessing Safety Data Sheets (SDSs) must be established in the laboratory. This is to ensure that a back-up source is available in case the primary access becomes unavailable. In general, on-line and digital access to SDSs is acceptable if all lab personnel have access to a computer with internet when working in the laboratory. However, printed safety data sheets of highly hazardous chemicals are required for emergency use. Visit the website of the supplier where the chemical was purchased from and print the SDS for the chemical. Safety Data Sheets that are over two years old must be discarded and replaced with the current version. In cases where a particular manufacturer’s SDS is lacking in GHS-required information, locate an SDS using another reputable manufacturer website.*

*Specify primary access and back up access to safety data sheets here.*

*For example:*

***https://github.com/dallasLab/labLogistics/tree/master/SAFETY/chemicals***

**Copies are available on the lab NAS (called `data`) which everyone has access to.**

### 8. Safety Manuals, BROCHURES, OTHERS

*List in this section the physical and on-line location of safety and operation manuals, brochures and information packets for laboratory equipment, processes, PPE and other items used in the laboratory.*

*https://github.com/dallasLab/labLogistics/tree/master/SAFETY/*

### 9. Building Emergency Evacuation and Re-entry Plan

*Step by step procedure to follow when an emergency requires evacuation of the building. This plan describes evacuation procedures as well as procedures for re-entry once the building is cleared. Indicate in this section the location of a University or Departmental plan, if any.*

**Leave the building calmly and quickly.**

**Meet at reflecting pond in front of library.**

### 10. Laboratory SHUTDOWN and RE-START CHECKLIST

*Create a checklist to refer to when the lab needs to shutdown for extended periods due to a hazardous material incident, natural disaster, holidays, etc. Create a separate checklist to refer to when restarting the lab after a shutdown. For more information, visit* [*lab preparedness*](https://sc.edu/about/offices_and_divisions/ehs/research_and_laboratory_safety/chemical_and_lab_safety/laboratory_preparedness/index.php)*.*

**Are beetles alright? Make sure that stock maintenance is not delayed, and that lights are off when you leave.**

### 11. Chemical Hygiene PLAN AND Lab Safety Manual Clearance Form

Laboratory Name: Tad Dallas lab

Building and Room/s: CLS 511

Principal Investigator: Tad Dallas

Research Group Safety Officer: Tad Dallas

**Acknowledgement**

The undersigned agree to the following statements:

*“The contents of the Chemical Hygiene Plan and Laboratory Safety Manual and Lab-specific Information have been discussed with the personnel listed below. We certify that they are made aware of ALL hazards present in our laboratory, the controls that need to be implemented, the response procedures should an emergency occur in the laboratory, and all other safety information required to work safely in this laboratory”.*

Title Printed Name Signature and Date

Principal Investigator: \_Tad Dallas\_ \_Tad Dallas

Group Safety Officer: \_Tad Dallas\_ \_Tad Dallas

*“I* *have read and understand the contents of the Chemical Hygiene Plan and Laboratory Safety Manual and Lab-specific Information. I am aware of ALL the hazards present in our laboratory, the controls that need to be implemented, the response procedures should an emergency occur in the laboratory, and all other safety information required to work safely in this laboratory. I hereby acknowledge that I will comply with all the requirements, policies and work practices described in this plan”.*

Printed Name Position Signature and Date

1. Cleber Ten Caten graduate researcher

2. Lauren Holian graduate researcher

3.  Grant Foster graduate researcher

4. Anthony Pignatelli graduate researcher

5. \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Insert additional copies of this page as needed.*

### 12. Training Documentation

*Keep copies of all training certificates to document completion of required training for all laboratory personnel.*

*Include the following as applicable:*

1. *Chemical and Laboratory Safety – required once prior to starting work in the laboratory and after every 4 years*
2. *Hazardous Waste – required prior to starting work in the laboratory and annually thereafter*
3. *Biological Safety Level 2 - required prior to starting work in the laboratory and annually thereafter for personnel working in BSL-2 laboratories; keep certificates in the Biosafety binder*
4. *Bloodborne Pathogens - required prior to starting work in the laboratory and annually thereafter for personnel working with human blood and other bodily fluids; keep certificates in the Biosafety binder*
5. *Radiation Safety - required prior to starting work in the laboratory for personnel working with radioisotopes, lasers and x-rays; keep certificates in the Radiation Safety binder*
6. *Standard Operating Procedure - last section of written SOP serves as SOP training documentation); there is no need to duplicate in this section*
7. *Chemical Hygiene Plan- Section 11 (Chemical Hygiene Plan and Laboratory Safety Manual clearance form serves as the CHP training documentation*
8. *Laboratory-specific trainings - see Section 12-A for required topics and documentation.*

### 12-A. Training STATUS OF LAB MEMBERS

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Name and Position** | **Date joined** | **Date left** | | **Training Date** | | | | | | | |
|  | | |  | |  | Chem and Lab Safety | Hazardous Waste | Lab-specific Training |  |  |  |
| Cleber Ten Caten | | | 01/22 | |  |  |  |  |  |  |  |
| Lauren Holian | | | 01/22 | |  |  |  |  |  |  |  |
| Grant Foster | | | 01/22 | |  |  |  |  |  |  |  |
| Tad Dallas | | | 01/22 | |  |  |  |  |  |  |  |
| Anthony Pignatelli | | | 07/23 | |  |  |  |  |  |  |  |
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### 12-B. LAB-SPECIFIC TRAINING DOCUMENTIon

**HOW TO DEVELOP LAB-SPECIFIC TRAINING**

**Summary**

UofSC’s Chemical Hygiene Plan requires that all lab personnel be trained on the specific hazards that exist in their lab and the procedures, safety equipment, and resources available for working safely with hazardous materials.

Lab-specific training must be: (1) documented and (2) provided to all lab personnel at the time of initial assignment and every time a new hazard is introduced in the lab.

**How to Use this Template**

Guidance text provided in **gray** should be modified and adapted to reflect information specific to your laboratory. The template below may be used to develop a lab-specific training curriculum and for documenting the training. After reviewing the training goals in the left-hand column, describe in the right-hand column how your lab fulfills these goals. As topic discussions are completed, trainer must initial corresponding column and include any comments. *Once signed, attached this form to the Chemical Hygiene Plan as Lab Specific training documentation.*

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Training Goal** | **How Lab Fulfills Training Goal** | **Trainer initial once completed and any comments** |
| **Training** | Ensure completion of all required safety trainings before beginning lab work. The Principal Investigator may allow lab personnel who were provided Lab-specific training to start working in lab while waiting to attend the next available EH&S Chemical and Lab Safety training. | completion of: Chemical and Lab Safety, Hazardous Waste, Lab-Specific Training. |  |
| **Safety Roles** | Know the health and safety responsibilities of the principal investigator, lab safety coordinator, and all group members. | *Describe the process for addressing health and safety concerns in the lab. Include information on expectations for all lab members.*  *Identify additional key personnel for the building and/or department such as the facilities manager, Safety Chair, EH&S, Human Resources, etc.* |  |
| **Safety Info** | Know the content of the Chemical Hygiene Plan (CHP) and sign the clearance form. Know where to find safety data sheets (SDS), standard operating procedures (SOP), user manuals for equipment, journals, textbooks, etc. | *See https://github.com/dallasLab/labLogistics/blob/master/SAFETY/EHSinfo.docx* |  |
| **Lab-Specific Hazards** | Know the specific hazards that exist in the lab and which hazards are covered by existing SOPs. | *https://github.com/dallasLab/labLogistics/blob/master/SAFETY/EHSinfo.docx* |  |
| **Lab Operations** | Know the Chemical Hygiene Plan SOP requirements and the lab’s process for developing and reviewing new SOPs. | *https://github.com/dallasLab/labLogistics/tree/master/SAFETY/chemicals* |  |
| Know the lab’s chemical ordering, usage, and disposal procedures. | *https://github.com/dallasLab/labLogistics/tree/master/SAFETY/chemicals* |  |
| Know what is required personal protective equipment (PPE) for working in the lab, including where lab-provided PPE is stored such as safety glasses/goggles, cryogenic gloves, etc. | *See the USC Personal Protective Equipment policy at http://www.sc.edu/ehs/factsheets.htm.* |  |
| Know the rules for being trained on and authorized to use the lab’s specialized equipment, e.g., centrifuge, rotary evaporator, glove box, etc. | *https://github.com/dallasLab/labLogistics/tree/master/SAFETY* |  |
| Know the lab’s list of prudent practices or “Do’s and Don’ts”. | *https://github.com/dallasLab/labLogistics/tree/master/SAFETY* |  |
| **Emergency Equipment & Procedures** | Know where to find safety equipment and how to activate and use them. | *See above for locations of safety equipment* |  |
| Know the procedures for chemical, fire, and other emergencies. | See above for locations of safety equipment |  |
| Know the incident and injury reporting procedures. | *Incident form available from   https://github.com/dallasLab/labLogistics/tree/master/SAFETY* |  |

**LAB-SPECIFIC TRAINING OF LAB MEMBERS**

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| --- | --- | --- | --- | --- |
| Name and Position | VIP # | Training date | Name and signature of trainer | Initial by PI |
| Cleber Ten Caten |  |  | Tad Dallas | TD |
| Lauren Holian |  |  | Tad Dallas | TD |
| Grant Foster |  |  | Tad Dallas | TD |
| Tad Dallas |  |  | Tad Dallas | TD |
| Anthony Pignatelli |  |  | Tad Dallas | TD |
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*Add pages as necessary.*

### 13. Laboratory Self-Inspections

*Principal Investigators and Group Safety Officers are strongly encouraged to conduct periodic lab safety self-inspections. Keep copies in this section, of reports of* [*lab safety self-inspection*](https://sc.edu/about/offices_and_divisions/ehs/research_and_laboratory_safety/chemical_and_lab_safety/lab_safety_inspections/index.php) *conducted.*

### 14. Incident and Accident Reports

*All accidents, incidents and near misses must be reported to EH&S. EH&S conducts an investigation to determine the root cause, then assist lab personnel in identifying and implementing corrective actions to prevent future incidents. Keep copies in this section, of written* [*incident report*](https://sc.edu/about/offices_and_divisions/ehs/research_and_laboratory_safety/incident_and_near_miss_reporting/index.php) *for all incidents/accidents that occurred in the laboratory.*

### 15. SAFETY POSTERS, SIGNAGES, Labels, Checklists, Others

*List in this section, the physical and on-line location of posters, signages, labels, and checklists used in the laboratory. These may include Hazard Information Notice, hazardous waste labels, HF safety sign, biohazard label, appliance label (No food or drink, no flammable),” for lab use only” label and others.*

### 16. Other Lab Safety Policies

*List all lab-specific safety policies and guidelines not addressed elsewhere in this document.*

16-1. Lab-specific safety policies and guidelines

1. Unauthorized personnel may not be allowed to enter this laboratory

16-2. General University of South Carolina safety policies

1. [PPE](https://sc.edu/about/offices_and_divisions/ehs/research_and_laboratory_safety/chemical_and_lab_safety/personal_protective_equipment/index.php)
2. [Minors in Laboratories](https://sc.edu/about/offices_and_divisions/ehs/research_and_laboratory_safety/chemical_and_lab_safety/volunteers_and_minors/index.php)
3. [Laboratory and Equipment Decommissioning](https://sc.edu/about/offices_and_divisions/ehs/research_and_laboratory_safety/chemical_and_lab_safety/laboratory_and_equipment_decommissioning/index.php)
4. [Waste Disposal](https://sc.edu/about/offices_and_divisions/ehs/research_and_laboratory_safety/chemical_and_lab_safety/waste_disposal/index.php)
5. [Field Research Safety](https://sc.edu/about/offices_and_divisions/ehs/research_and_laboratory_safety/chemical_and_lab_safety/field_research_safety.php)

### 7. Resources

*List all references that may be used to get additional information on lab safety standards, regulations and guidelines.*

Regulations and Standards

* [Chemical Facility Anti-Terrorism Standards (CFATS) for Universities](https://www.dhs.gov/sites/default/files/publications/FS Colleges and Universities.pdf)
* [OSHA’s Occupational Exposure to Hazardous Chemicals in Laboratories](https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=10106&p_table=STANDARDS)
* [Globally Harmonized System of Classification and Labeling of Chemicals (GHS) [pdf]](https://sc.edu/about/offices_and_divisions/ehs/documents/ghsguideoct05.pdf)
* [NFPA 45](http://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=45)
* [NFPA 55](http://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=55)
* [DEA Controlled Substances](https://www.scdhec.gov/health-regulation/drug-control-register-verify)
* International Fire Code
* ANSI Standard for Emergency Showers and Eyewash
* ANSI Standard for First-Aid Kit
* ASHRAE 110

Guidelines

* [Prudent Practices in the Laboratory](https://www.ncbi.nlm.nih.gov/books/NBK55878/)
* [OSHA Laboratory Safety Guidance [pdf]](https://www.osha.gov/Publications/laboratory/OSHA3404laboratory-safety-guidance.pdf)
* [NIOSH Pocket Guide to Chemical Hazards](https://www.cdc.gov/niosh/npg/default.html)
* [NIOSH School Chemistry Laboratory Safety Guide](https://www.cdc.gov/niosh/docs/2007-107/pdfs/2007-107.pdf)
* [ACS Guidelines for Chemical Laboratory Safety in Academic Institutions [pdf]](https://www.acs.org/content/dam/acsorg/about/governance/committees/chemicalsafety/publications/acs-safety-guidelines-academic.pdf?logActivity=true)
* [ACS Creating Safety Cultures in Academic Institutions [pdf]](https://www.acs.org/content/dam/acsorg/about/governance/committees/chemicalsafety/academic-safety-culture-report.pdf?_ga=2.265980429.324388954.1529078284-1084598133.1529078284)
* [ACS Identifying and Evaluating Hazards in Research Laboratories [pdf]](https://www.acs.org/content/dam/acsorg/about/governance/committees/chemicalsafety/publications/identifying-and-evaluating-hazards-in-research-laboratories.pdf)
* [ACS Hazard Assessment in Research Laboratories](https://www.acs.org/content/acs/en/about/governance/committees/chemicalsafety/hazard-assessment.html)
* [OSHA Fact Sheet: The Importance of Root Cause Analysis During Incident Investigation [pdf]](https://www.osha.gov/Publications/OSHA3895.pdf)
* [CDC Managing Health and Safety Concerns Associated with Engineered Nanomaterials](https://www.cdc.gov/niosh/docs/2009-125/)