Faculty Safety Handbook

A PI/Supervisor Guide to Managing Health and Safety in Laboratories, Classrooms, and Research Groups.

The University of Texas at Austin
Environmental Health & Safety

Dear Faculty Member…

UT Austin has committed to achieve excellence in the interrelated areas of education, research, and public service and contributes to the advancement of society through research, creative activity, scholarly inquiry and the development and dissemination of new knowledge. A safe and healthy environment contributes to the success of these commitments and contributions. Safety and health are not singular or separate initiatives from research; rather they are best integrated as a part of research.

This Faculty Handbook was created to help you navigate this critical area. This document is intended to identify responsibilities and requirements specific to your research. This document is a gateway or high level summary that provides direction to other more detailed guidance such as the laboratory safety manual, radiation safety manual, or hazardous waste guidance.

This document only has value if the user finds it helpful. If you have questions or suggestions on this document, please let us know. We welcome any direction or suggestion on how we can best assist your research.

Sincerely,

John M. Salsman

John Salsman,
Director of EHS

Safety Expectations for PIs at UT Austin

As a Principal Investigator (PI), you are responsible for the overall culture of your laboratory. You set the tone, create the expectations, determine the standards, and build an environment where your students, postdoctoral scholars, and research staff can reach their full potential.

UT Austin is committed to providing a safe research environment for our PIs, postdocs, students, and staff. During the course of establishing their research group, many PIs successfully build a culture of excellence surrounding research and scholarship but can fall short when it comes to health and safety. At UT, we strive for excellence in both research and research safety.

The single most important element for developing a strong, proactive safety culture is the commitment of the principal investigator to safety. You, as the PI, are expected to cultivate a positive culture of safety in your lab. Safe environments are developed through your demonstrated commitment to safety on a daily basis in all aspects of research.

As the leader of your research group, you are expected to incorporate safety into your scientific process rather than treat it as merely an administrative task. You are accountable for safety in your lab. It is also your responsibility to instill ownership of safety among your researchers by empowering them to take initiative and holding them accountable for actions that create positive results for themselves and the University. Safety should be a proactive rather than reactive endeavor. Your commitment to safety will translate to your researchers. The health and safety practices they learn under your mentorship will form part of their educational foundation, prepare them for future careers as skilled scientists, and advance laboratory safety culture for future generations of researchers.

UT Austin is committed to continued advancement of an institutional safety culture with strong programs of personal safety, accident and injury prevention, wellness promotion, and compliance with applicable environmental and health and safety laws and regulations.

Handbook of Operating Procedures
Environmental Health and Safety Policy

Principal Investigators are the single most important element for developing and sustaining a strong, proactive laboratory safety culture. A strong laboratory group safety culture should be developed and actively supported by the PI.

Putting Safety into Action:

How to Develop a Positive Safety Culture

Demonstrate a Commitment to Safety

Take ownership of safety in your research group and advocate for your researchers to do the same. Lead by example. Adhere to the health and safety rules that you, your department, school, and the University establish, and speak up if you see unsafe practices. Put safety on the agenda and incorporate it into the way your group works and thinks.

Promote Continuous Learning

Research is not a static endeavor. Managing safety requires ongoing feedback, reassessment, and reinforcement. Encourage researchers to report concerns to you for both safety and teaching opportunities. Involve all lab members when identifying and reviewing lessons learned after incidents and near-misses.

Assess and Plan for Hazards and Risks

Take the time to systematically assess risks and plan for the hazards identified. Conduct risk assessments, incorporating safety into all experiments. Teach your researchers to think about risk by discussing with them the safety implications of their experiments.

Implement Controls

Take action to control risks in your laboratory. Make sure that you and your researchers are using the correct protective equipment, appropriate engineering controls are working correctly, and researchers are trained to safely perform their duties. Don’t take shortcuts and unnecessary risks.

PI Responsibilities

As a Principal Investigator, you are responsible for protecting the health and safety of employees, students, and visitors working under your supervision.

Hazard Identification and Control

You must evaluate the hazards in your lab, communicate the associated risks, and train personnel on proper procedures and controls for working with those hazards.

- Ensure that laboratory hazards are identified and controlled.
- Develop written protocols for high-hazard materials and operations, repeat operations, and equipment use.
- Determine, provide, and train on the required personal protective equipment (PPE) for laboratory operations.
- Correct unsafe or unhealthy work conditions or procedures as soon as they are discovered. This may require stopping procedures until appropriate control measures can be put in place.
- Conduct required self-inspections.
- Respond to and take corrective actions related to external, internal, and self-inspections.

Approvals

Certain higher-hazard activities or agents are carefully regulated and require institutional review prior to starting work.

- Obtain required institutional approvals.
- Ensure that high-risk operations are conducted only with PI/Lab Supervisor approval.

Communication

Two-way communication is essential. Talk to your researchers and visitors about how to work safely and encourage them to bring any concerns to you.

- Encourage researchers to bring safety concerns to you without fear of reprisal.
- Ensure that newly identified safety issues are communicated to lab personnel in a timely manner.
- Inform non-lab personnel of potential lab-related hazards when they are in your lab.

Training

Train researchers so that they understand the hazards of their work and how to work safely.

- Ensure all research personnel receives appropriate general safety training and laboratory-specific safety training.
- Provide additional training to workers whose safety performance is inadequate.

Promoting Safe Practices

Enforce the safety rules of your lab and follow them yourself.

- Ensure that personnel follow all safety policies and procedures.
- Include lab personnel's health and safety practices when evaluating performance.
- Model correct lab practices by wearing your PPE and following all safety rules.

Minors in the Laboratory

Minors require more oversight due to their limited laboratory experience and protected legal status.

- If minors (< 18 years old) will be visiting or working in your lab, comply with additional requirements in the Laboratory Safety Manual.

Institutional authorizations are needed for activities involving:

- Biosafety Level 1, 2, 3, or 4 agents
- Non-exempt recombinant DNA or synthetic nucleic acid molecules
- Prions and prion-like proteins
- Live or dead vertebrate animals
- Human subjects research
- Select agents and toxins
- Controlled substances and precursor chemicals
- Toxic gases and other restricted chemicals
- Class 3b or Class 4 lasers and laser systems
- Sealed or unsealed radioactive material
- Ionizing radiation-generating devices including x-rays and accelerators

I work with...

Biological Agents

EHS provides guidance for working with biological materials and conducts annual visits to ensure safety and regulatory compliance.

The Institutional Biosafety Committee (IBC) reviews, approves and oversees the use of recombinant or synthetic nucleic acid molecules, biohazardous agents, materials and toxins in all research or teaching activities conducted at or sponsored by the University.

Protocols must be approved prior to starting work and can be submitted utilizing the eProtocol system.

Training is available online for: OH 207 Biosafety and OH 218 Blood borne Pathogens

Additional Resources are also available online through the EHS website including:

IBC

The Biosafety Manual

Biosafety Cabinets (BSCs)

Questions can be emailed to: askbiosafety@austin.utexas.edu

Radioactive Materials

Radioactive materials are strictly regulated by federal and state law, including Medical/ Clinical applications. An Authorized User permit issued by EHS is required before working with radioactive materials. EHS Radiation Safety oversees ordering, shipping, and delivery of radioactive materials; disposal of radioactive waste; calibrating radiation detectors; and managing personal dosimetry. EHS provides radiation safety training for persons working with or around sealed and unsealed radioactive materials.

Additional Resources:

Radiation Safety website

Radiation Safety Forms and SOPs

Animals

It is our policy to assure the care and use of animals for research, teaching, and testing is done in accordance with applicable federal and state laws or regulations. The Institutional Animal Care and Use Committee (IACUC) is a federally mandated committee that oversees its institution's animal program, facilities and procedures. It provides a framework for compliance with federal policies, guidelines and principles related to the use of animals in research, teaching and testing. Protocols can be submitted utilizing the eProtocol system.

Resources are available for animal work including:

- Training
- Documents
- Animal Research
- Health Point Questionnaire for working with animals

Other hazards

EHS can assist with any hazards encountered in your work. EHS can provide information on equipment, projects, or other hazards. Examples:

Unmanned Aerial Vehicles
Indoor Air Quality
Control of Hazardous Energy
Loud Noises/Hearing Protection
Shop Equipment and Tools
Mobile Cranes
Ladders
Pressure Vessels

Additional Resources:
https://ehs.utexas.edu/

Chemicals

High hazard chemicals require PI-approved Standard Operating Procedures (SOPs) and/or EHS review before purchase. EHS is available for consultation on SOPs/procedures. EHS also has a template for SOPs available.

Risk assessments should be performed before any new procedures or experiments are run.

All chemicals must be stored and labeled properly.

Chemical inventories of hazardous chemicals must be kept on UT HERD and should be marked as reviewed every 6 months. A self-evaluation must also be performed every Fall and Spring semester and submitted to EHS.

Chemical Waste must be properly tagged and a Request for Disposal (RFD) submitted to EHS.

EHS provides multiple options for chemical and biological waste disposal containers.

Additional Resources
Laboratory Safety Manual
Hazard Communication Program

For more information on chemical segregation and labeling, refer to the University Safety Manual.

UT HERD: PDF tutorials are available on this webpage. Contact EHS Lab Safety with questions.

Lab Safety Self Evaluation Information

Lasers

State regulations require Class 3b (IIIb) and 4 (IV) laser registration with EHS, as well as SOPs for operation and alignment. Submit completed forms to ehs-laserstaff@austin.utexas.edu. Laser users and locations must be authorized by EHS, including Clinical/Medical applications. Laser Safety training is required for all laser users.

Additional resources:

Laser Safety Website

Controlled Substances, Precursor

Each PI who purchases or works with DEA Controlled Substances must obtain a DEA registration and annually provide EHS with copies of their current registration certificate. Registrants are required to complete and submit a Controlled Substances Self-Evaluation to EHS annually. Expired/unused Controlled Substances must be disposed of via an approved pharmaceutical return company.

Controlled Items, including chemical precursors and certain laboratory apparatus, do not require a DEA registration, but must be kept secure to prevent unauthorized use. Chemical precursors are disposed of through the University's hazardous waste disposal program.

For questions, contact EHS Lab Safety (ehs-labstaff@austin.utexas.edu).

Human Subjects

Research involving human subjects or at time human sample material requires review and approval by the Institutional Review Board (IRB). Protocols can be submitted utilizing the IRBaccess system

Human Subject information can be found at:

https://research.utexas.edu/ors/human-subjects/

Radiation-Producing Machines (X-rays)

Radiation-producing machines (e.g., X-ray, CT, cell irradiators) are regulated by state law and require registration with the EHS Radiation Safety Officer, including Clinical/Medical applications. Facilities housing these machines must also be evaluated. Radiation Safety training is required for any electronic device that emits ionizing radiation.

Additional Resources:

X-ray Safety

I Need...

...to assess hazards and risks in my lab.

Lab Safety Self Evaluations are due each Fall and Spring semester. These self-evaluations are designed to reflect the safety items we look for during our in-person lab safety evaluations.

If you are working with Controlled Substances and/or Select Toxins, a respective self-evaluation is due annually.

...information on conducting self-inspections.

EHS is responsible for the safety oversight of the over 1,800 labs at The University of Texas at Austin. Principal Investigators are responsible for safety in their laboratory. The Laboratory Self-Evaluation was designed to assist PIs in identifying safety issues in their laboratory. Each PI is required to submit a laboratory safety self-evaluation every semester (Fall and Spring).

If your lab uses DEA controlled substances (PDF) or Select Agent Toxins (PDF) complete these self-evaluation forms and submit annually to EHS.

...PPE and safety equipment.

PIs are required to provide personal protective equipment (PPE) that is appropriate to the hazards in the lab. Most labs on campus are required to provide at least lab coats, gloves, and eye protection for all individuals working in the lab, including visitors. Here is link to the PPE policy.

Lab coats should be regularly laundered.

Spill kits that are specific to the hazards in your lab (e.g. chemical, biological, hydrofluoric, etc.) must be provided and kept in the lab.

Please note that certain PPE requires EHS consultation prior to use. Contact EHS if you believe your lab personnel will need respirators or hearing protection.

Additional Resources

Selecting gloves

Fire extinguishers

Fume hoods

...to set-up/move my lab.

Setting up, moving, or closing a lab requires special considerations. EHS can provide guidance and some services as you go through the process.

Additional Resources

Lab Close-Out

New PI Checklist

Request for Disposal of Chemicals

Biological Waste and Sharps Disposal

...a work-related medical consultation/visit.

Some research requires vaccinations, medical surveillance, or medical consultations. The Occupational Health Program (HealthPoint) can provide:

- Health risk assessments for research animal work, lab safety programs, and higher risk work and activities. Health risk counseling for issues that may impact your job functions.
- Medical clearance and fit testing for job required respiratory protection
- Job specific TB screening, drug testing, vaccinations* and titers
- Treatment, management, and follow-up of work-related injuries and illnesses
- Fitness for duty consultations

...to address an injury/incident in my lab.

Injuries and incidents (e.g., spills, near-misses) are important learning opportunities. They should be reported to Supervisors and EHS and discussed to prevent future incidents.

Submit all incidents and near misses to EHS:

Incident Notification Form

For EHS emergencies call: (512) 471-3511

Additional Resources:

For employees - Health screening, immunizations, and minor injuries contact the Occupational Health Program.

For students - Health screening, immunizations, and minor injuries contact University Health Services.

EHS Lab Incidents – Lessons Learned webpage.

...to dispose of something hazardous.

The University of Texas at Austin generates a variety of waste streams though research, teaching, clinics, maintenance, construction projects and other operations that are subject to specific handling, recycling, and disposal requirements by various agencies such as Texas Commission on Environmental Quality (TCEQ) and the U.S. Environmental Protection Agency (EPA). The University is a registered generator of hazardous chemical waste with both the TCEQ and EPA.

All hazardous waste generated by University research, teaching, clinics, maintenance, construction projects or other operations must be managed through EHS.

Additional Resources

Waste Management

I Want Additional Info on...

...training.

Before beginning work in a lab, UT and EHS require basic safety courses that all lab personnel must attend (Some human sample labs that do not process any fluids have different safety training requirements. Contact EHS for more information.)

This is a mixture of online training, in-person training provided by the personnel's supervisor, and an in-person fire extinguisher class.

Additional Resources:

Additional online courses are required depending on the hazards specific to your lab.

EHS Training Requirements

Instructions on accessing and links to Safety Training courses

...lessons learned from incidents.

Lessons Learned are safety communication tools used to provide notification and information about safety related incidents that happen on campus or at other universities. Please review the Lessons Learned page for information to communicate with staff to raise awareness about similar safety situations or conditions or for help when performing a risk assessment. Lessons Learned are a great way to identify and control hazards with the intent of preventing future occurrences.

...ergonomics.

The goal of ergonomics is to provide an efficient and safe work environment for all employees. The University ADA Coordinators encourage employees to follow sound ergonomic practices and to become educated in ergonomic principles in order to ensure a healthy and productive work environment. The Office for Inclusion and Equity offers guidance for individuals with and without disabilities who are interested in creating or improving the ergonomics of their worksite.

Additional resources
Computer Workstation Self-Evaluation

Stretch & Flex Poster

...emergency preparedness.

Emergency Preparedness means being ready. You are your own best first responder, it takes an effort by all of us to create and sustain an effective emergency preparedness system. In addition to your life safety, protecting your laboratory research from damage is essential to prevent setbacks.

Preparedness on campus and at home is important An Emergency Preparedness Pocket Guide is available on the Emergency Preparedness website. Every lab is equipped with a Classroom Emergency Guide, next to one of the exit doors, to help provide actions to take during different types of emergencies. In-person training for CPR, First Aid, and AED can be requested through UT Learn.

Additional Resources can be accessed by e-mailing Emergencypreparedness@austin.utexas.edu or visiting www.Preparedness.utexas.edu

...field research/travel.

Fieldwork is an important part of teaching and research at The University of Texas at Austin. Since fieldwork activities take you off campus, the Safety Guidelines for Field Researchers document is intended to help you plan and prepare for health and safety problems you might encounter in the field.

Additional Resources
First Aid Kits

Global Risk & Safety

...working with minors.

All University of Texas employees, students, volunteers, and affiliates who work with minors are required to comply with UT's minor in labs policy.

The Minors in Labs policy is addressed in the University Lab Safety Manual.

...waste.

Nearly all research activities generate hazardous waste, which must be handled and labeled properly to protect both researchers and the environment. Waste is regulated by federal, state, and local laws.

Additional Resources

- Chemical
- Biological
- Radioactive
- Non-Hazardous Laboratory Waste
- Used Lamps

...writing an SOP.

A standard operating procedure (SOP) is a set of step-by-step instructions compiled to help workers carry out routine operations. SOPs aim to achieve efficiency, quality output and uniformity of performance, while reducing miscommunication and failure to comply with industry regulations.

Additional resources
SOPs for Hazardous Chemicals

...what to do if my space has been impacted by a flood.

The first call that must be made is to Facilities Services – Service Center at 512-471-2020. Report the building, room numbers of wet rooms, and (if known) source of the water. They will respond with a plumber and water extraction. If the flooded areas is large, Facilities Services will coordinate contract water remediation services.

Preventing Injuries & Accidents

With careful planning, sufficient training, proper controls, and continuous learning, nearly all injuries and accidents in the laboratory are preventable.

When it comes to preventing incidents and injuries in your research group, your approach should be to strive for perfection and settle for excellence.

Keep in mind that over time, any work environment can be subject to the laws of entropy: without continuous input of energy, the system reverts to a more haphazard state. A lab can start off in good shape, but through complacency, turnover, overconfidence, shortcuts, lack/ loss of attention, poor housekeeping, and/ or neglect, can slowly migrate to a state of higher risk.

Additionally, as a research program grows and develops, new avenues of pursuit can shift the risk level in the lab. By regularly reviewing procedural plans, training needs, and controls, you can preserve a well-thought-out safety program. Deliberate risk assessment is a valuable method to analyze a plan, identify hazards, review training needs, familiarize yourself with controls, and realize continuous learning.

Laboratory Risk Assessment Methodology

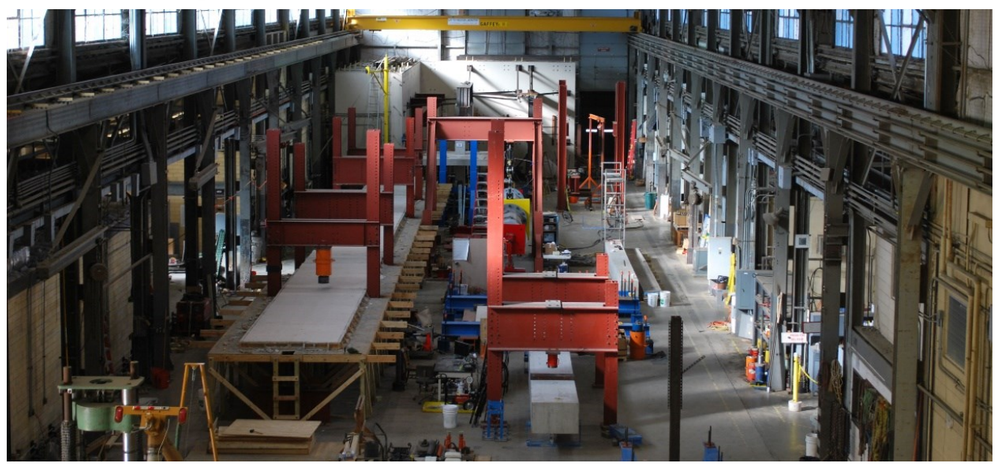
The methodology of a risk assessment is to establish a framework that maps onto the scientific method. The process researchers already use to answer scientific questions can be used to implement essential information for enhancing safety practices, establishing proper procedures, and ensuring all lab members are properly trained. Risk assessments use a four-part framework that can be used for an experiment, analytical process, or series of tasks:

1. Explore | Think broadly to determine the scope of your work, beginning with your research objective.

2. Plan | Outline your procedure/tasks by taking a deeper dive into specific topics in the literature. Determine hazards associated with each step/task and the control measures for reducing risk. This step helps identify necessary training and controls.

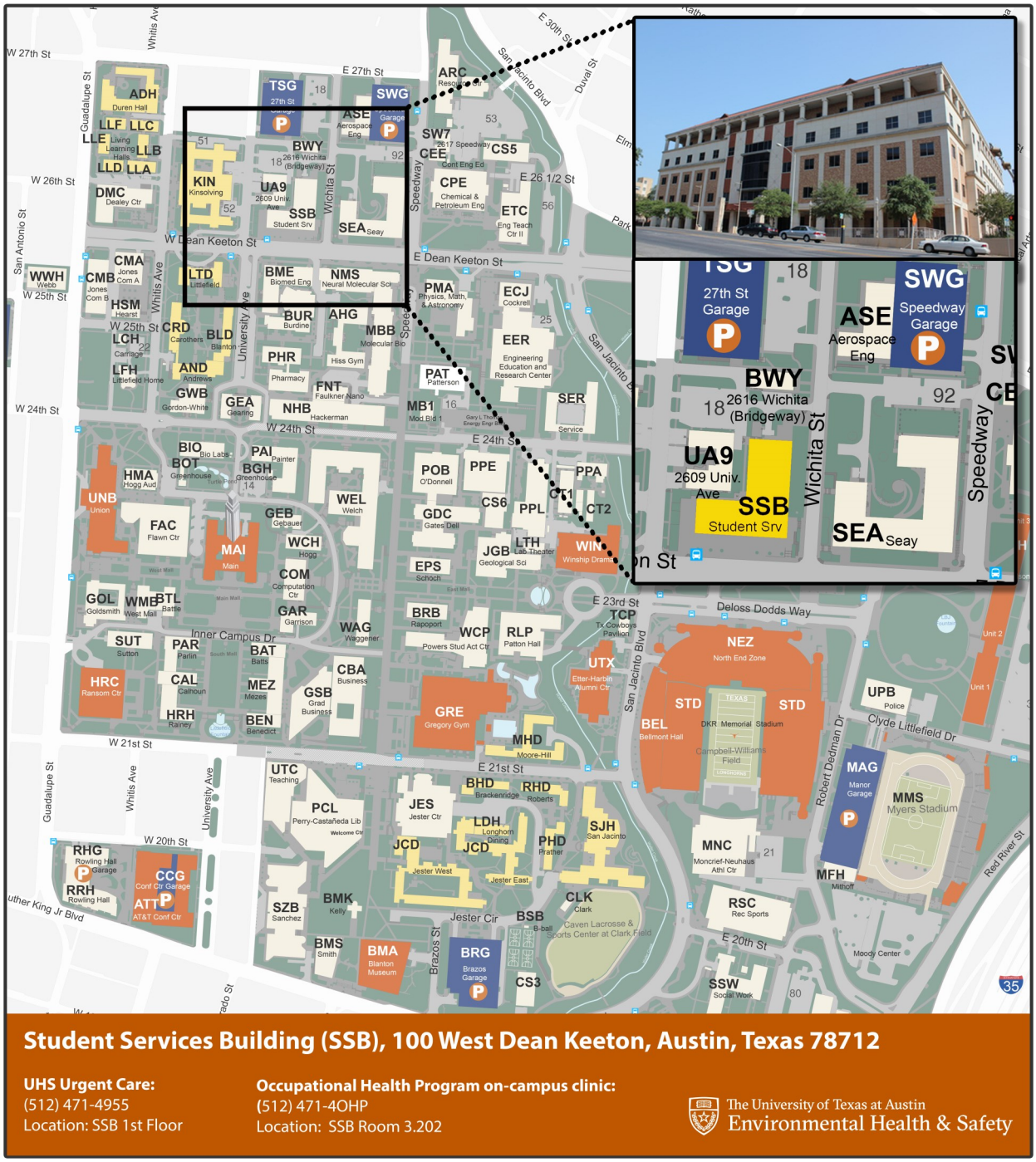
3. Challenge | Question your assumptions and ask yourself, “What could go wrong?” Seek advice from others to challenge your thinking.

4. Assess | Implement a model, prototype, or trial run. Run your experiment and monitor how your controls perform. Learn from mistakes both in research and in safety. Use this step to promote continuous learning.



Accidents & injury Types, Causes, and Preventative Measures

Injury / Accident	Cause	Preventative and Risk Reduction Measures
Needlestick	Recapping needles Unrestrained animals Placement of uncapped needle on a bench Incorrect needle choice	Never recap needles Properly restrain animals Use safety sharps Use blunt sharps for most chemistry applications
Cuts	Razor blades Broken glass Microtomes Scalpels	Clean broken glass with forceps/broom and pan Wear cut-resistant gloves Cover microtome rotary blades when not in use Use safety blades
Chemical Spills & Chemical Exposures	Lack of proper PPE Inadequate understanding of chemical properties Poor housekeeping/ improper chemical storage	Wear correct PPE at all times in the lab Select the correct chemically-resistant glove for the chemical(s) used Work in a chemical fume hood Keep storage spaces and benches clean and tidy Store chemicals upright in secondary containers
Animal Bites & Scratches	Unrestrained animals	Properly restrain animals Practice experimental procedures using non-infected animals
Slip, Trips, & Falls	Water on floor (frequently from freezers and sinks) Uneven ground	Install non-slip mats Wear appropriate footwear
Musculoskeletal Injuries	Repetitive use Awkward postures	Purchase and use ergonomically-designed equipment Take microbreaks Correct workstation setup
Vehicle Accidents	Lack of attention/ fatigue Poor road conditions	Slow down Carry safety equipment (e.g. spare tire, tire chains, flares)
Field Work Injuries (Strains and Sprains)	Strenuous physical activity	Take breaks, get help lifting/carrying heavy equipment
Laser (Skin or Eye Exposure)	Misaligned lasers	Align lasers with lower power laser Wear correct laser eyewear
Fires	Improper handling of flammable/ pyrophoric chemicals Use of open flame near flammable chemicals Exposed wiring	Carefully review chemical incompatibilities Keep open flames away from flammable materials Avoid crushing and severe bending of electrical cords



Student Services Building (SSB), 100 West Dean Keeton, Austin, Texas 78712

UHS Urgent Care:
(512) 471-4955
Location: SSB 1st Floor

Occupational Health Program on-campus clinic:
(512) 471-4OHP
Location: SSB Room 3.202

The University of Texas at Austin
Environmental Health & Safety

Notify Us!

Near Misses and Incidents

tinyurl.com/utincident

SCAN ME

UT HERD