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| Knoxville Campus Policy: SALS040-K –Minors in Laboratories and Shops | |
| Version 1 | Effective Date: 08/28/2018 |

Environmental Health & Safety

Minors in Laboratories and Shops

UTK Environmental Health & Safety Program LS-040

This document summarized the requirements minors performing activities in research laboratories.

Effective Date: 02/27/2015

Revision Date: 05/14/2018

Purpose

UT System-wide [Policy SA0550 \(Minors in Laboratories and Shops\)](#) requires that affected campuses shall develop a written plan and appropriate supporting and administrative documents (e.g. forms) to address minors who are involved in university-sponsored activities in laboratories or shops on campus. This document represents the plan for the University of Tennessee, Knoxville departments or coordinated programs to protect the safety and health of minors on campus who are engaged in University sponsored activities in laboratories and shops.

The system-wide policy requires that this plan address:

- **Written policy** (see system policy and this document)
- **Hazard assessment** (see guidance below)
- **Training (and Information)** for the following
 - principal investigators
 - parents
 - students (i.e. minor-participants)
- **Waiver form** (Appendix A)
- **List of prohibited activities** (Appendix C)
- **Activities Requiring Exemptions** (Appendix B)

Important Note: The system policy is related to hazards of research in labs. It is not directly connected to the system-wide policy regarding responsible conduct of [Programs for Minors \(SA 0575\)](#)

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Scope and Applicability

This plan applies to minors who are not enrolled as a University student and are on campus attending Governor’s School, STEM Academy, classes, and camps or are otherwise present in laboratories, shops, or other areas that contain hazardous substances or physical hazards.

Minors shall be permitted in labs and shops as defined in this plan only if they are engaged in university-sponsored activities.

The system-wide policy does not contemplate or authorize a minor who is not enrolled in the University as a student to be hired as a University employee. Approval of the appropriate department head is required to hire a non-University student under the age of eighteen (18) as a University employee.

Abbreviations and Definitions

Abbreviations

ACGIH: American Conference of Governmental Industrial Hygienists

CFR: Code of Federal Regulations

dB(A): Decibels, A-weighted scale

EHS: Campus Environmental Health and Safety

IDLH: Immediate Dangerous to Life and Health

NFPA: National Fire Protection Association

NIOSH: National Institute for Occupational Safety and Health

OSHA: Occupational Safety and Health Administration

PI: Principal Investigator

SCBA: Self-Contained Breathing Apparatus

SCUBA: Self-Contained Underwater Breathing Apparatus

TCA: Tennessee Code Annotated

Definitions

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Biological Hazard (Biohazard): is defined as any agent (bacterium, virus, fungus, unicellular or multicellular parasite, or prion) or molecule/cellular product (protein, lipid, nucleic acid, etc.) capable of causing disease or other negative health effects. Biological hazards may be acquired through punctures/cuts, open or broken skin (cuts, scrapes, rashes, eczema, acne, etc.), mucous membranes, ingestion, or inhalation. Acquisition of disease and disease outcomes is influenced by route of exposure, dose, and individual differences, including age, health (particularly immune status), vaccination history, and genetics.

Campus Safety Resources: includes the following groups:

- Biosafety Office
- Environmental Health and Safety, UTK
- Radiation Safety Office
- Risk Management Office
- UT Institute of Agriculture Safety Office

Chemical Hazard: is defined as any chemical which can cause a physical or health hazard. Examples of physical hazards include: explosive, flammable, oxidizing, corrosive, and gases under pressure. The health hazards can either be acute (short-term) and/or chronic (long-term). Factors that affect the hazard of the chemical depend upon the toxicity of the chemical, the route of exposure into the body, the dose, duration of exposure, reaction with other chemicals and individual differences (hereditary, smoking, etc.).

Hazardous Substance: is defined as a chemical, biological, or radiological substance capable of causing injury or harm. “Hazardous Substance” includes definitions, classifications, and criteria established by 29 C.F.R. 1910.1200 Appendix A.

Laboratory: is defined as a location where teaching, experimentation, or research occurs that involves hazardous substances or physical hazards. Examples include, but are not limited to, chemistry labs, biology labs, and chemical labs, engineering labs, or other similar places where the hazards described in this policy are present. For this policy, laboratories dealing with documents, computers, human subjects research, or other similar activities are not included. The UT System Programs for Minors (SA 0575) is a standalone policy that is still applicable for all areas on campus.

Minor: is defined as any individual under 18 years of age and not enrolled in the University as a student.

Physical hazard: includes, but is not limited to, the following:

- Exposed energized conductors operating at more than 50 volts AC
- Shear points, crush points, nip points, or run-in points that are not adequately guarded

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- Pressure vessels operating in excess of 15 pounds per square inch for compressed gases
- Flammable liquids, solids or gases as defined by NFPA 30: Flammable and Combustible Liquids Code
- Cryogenic fluids and reactive materials as defined by defined by NFPA 45: Standard on Fire Protection for Laboratories Using Chemicals
- Noise above 90 decibels, A-weighted scale, averaged over an 8-hour day

Principal investigator (PI): is the administrative head of the research laboratory or shop. The principal investigator determines research/work objectives, designs experiments, and assigns responsibilities to laboratory/shop staff and students.

Radiological hazard:

The various types of radiation can be divided in to two categories:

- Non-ionizing: examples of non-ionizing radiation include visible light, ultra-violet and infrared radiation, microwaves, radio frequency radiation, and electromagnetic fields
- Ionizing: examples of ionizing sources could include: devices which produce X-ray radiation, devices which accelerate particles, sealed radioactive sources, or loose substances (solids or liquids) which emit ionizing radiation through man-made or natural processes.

Shop: is defined as an area where wood, metal, masonry, plastic or similar products are manipulated by any means, such as cutting, drilling, boring, fastening (nails, rivets, screws, welds, etc.), sanding, grinding, heating, priming, finishing, or any similar activities.

Supervisor: is defined as the PI or other senior individual assigned by the PI or Department Head (where a PI does not have primary responsibility for the space). The supervisor is competent in and can responsibly oversee the research/work procedures being performed to include proper technique(s) and safety precautions.

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Roles and Responsibilities

The PI or Designated Supervisor shall:

- Complete the Safety Assurance form attached, Appendix A
- Ensure minors have received appropriate site-specific training
- Report accidents/injuries/exposures that occur to minors as soon as possible, following the UT Office of Risk Management reporting procedures <https://riskmanagement.tennessee.edu/>
- Conduct a hazard assessment for the minors' assignments
- Consult with campus safety resources as necessary
- Provide any necessary personal protective equipment
- Ensure minors do not undertake activities listed in Appendix C – Prohibited Activities
- Obtain exemption approval from Campus Safety Resources for certain hazardous activities – Appendix B.
- Maintain records as required under Recordkeeping section below

Campus Safety Resources shall:

- Provide guidance to departments, supervisors, and PI regarding this procedure and hazard assessments.
- Provide general lab/shop safety training
- Work with campus deans, directors, department heads, or program managers to ensure this procedure is disseminated
- Review and revise the procedure periodically
- Maintain records as required under Recordkeeping section below
- Keep the most current version of this procedure posted in the EHS safety manual and on safety office websites

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Procedures

Hazard Assessment and Safety Assurance

The PI or supervisor shall conduct a hazard assessment of the tasks likely to be conducted by the by minor(s). Note that the Campus Safety Resources are available to assist with the hazard assessment. The hazard assessment shall be documented.

No minor shall be permitted to participate in prohibited activities as listed in Appendix C: Prohibited Activities.

The PI or supervisor will prepare a descriptive form that describes the minor's tasks, to be signed by the minor and the parent/guardian. A template for this form is attached as Appendix A. This descriptive form must include, at a minimum, the following:

- A detailed description of the minor's activities so that the minor and parent/guardian can make an informed decision about all risks associated with the proposed activity.
- Hazard specific safety training that must be completed by the PI or Supervisor with the minor.
- Assurance that the minor will be supervised at all times while in the facility and never left alone.
- Assurance that the laboratory/shop will be in full compliance with all applicable University safety programs and regulations.
- Identify the PI or supervisor responsible for the minor's activity so that minors/parents/guardians know who to contact with questions or concerns about the activity.
- The date(s) of the proposed activity for the minors/parents/guardians to consider.
- Clear, unambiguous language that is understandable to a layperson.
- A release completed by each minor/parent/guardian.
- Adequate time for each minor/parent/guardian to review the descriptive form and sign the release.

Exceptions

In view of the open and diverse research environment at UT Knoxville, this plan provides for limited exceptions to these requirements based upon review and written approval by EHS. In considering whether an exception to this plan is warranted, local departments should forward their request to EHS. Relevant information to consider includes: the specific laboratory environment; the minor's previous lab course work and/or related experience; the safety training the minor will receive; the ability of the lab to

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provide close supervision; and the purpose of the proposed lab experience (See Appendix C for more information on exemptions).

Personal Protective Equipment

All minors working in labs and shops must adhere to a laboratory dress code and use personal protective equipment (PPE) when working in potentially hazardous situations or around potentially hazardous materials and/or equipment. The PI or Supervisor will provide the necessary PPE and any instruction on how to properly wear the PPE.

Training

Minors

A general safety orientation (e.g. presentations, modules, documents) shall be made available and maintained by Campus Safety Resources. The general orientation can be conducted in-person by the principle investigator/supervisor or through electronic/online resources (e.g. Canvas). For more information on training, please contact EHS at safety@utk.edu or 974-5084.

Minors shall take all applicable modules (e.g. chemical safety, biological safety, etc.) of the general, self-study safety orientation before beginning work.

The minor's primary supervisor or PI shall address site-specific safety subjects. Subjects for this training shall be developed from the hazard assessment.

Principal Investigators or Designated Supervisors

Safety training is a specialized topic that not every Principal Investigator is prepared for. Principal Investigators should contact Campus Resources for methods to ensure best practices for minors. At a minimum Principal Investigators shall ensure they are familiar with this document and understand how to implement it. If they require assistance they should consult appropriate Campus Resources.

Parents

Parents can only make informed decisions regarding their children's participation if they are properly informed of the risks. Both the PI or Supervisor and/or Campus Resources will provide educational materials to assist parents and guardians.

Record Keeping

The PI or supervisor is responsible for maintaining the lab- or shop-specific safety training doc

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General and specific training documents shall be maintained by the PI or Supervisor a minimum of (3) years. These records should be combined with the other documentation that the PIs must complete for the Programs for Minors programs.

Written hazard assessments

Written hazard assessments to cover any hazardous materials or associated procedures in the lab or shop are required (e.g. chemical hygiene plan; safety data sheets; Institutional Biosafety Committee-approved registration documents for recombinant DNA, infectious agents, or biological toxins; standard operating procedures which address risk and risk mitigation)

Safety Assurance Form and Rules for Minors in Shops and Labs Form (Appendix A)

These records shall be maintained for at least three years in accordance with safety procedure AD-015: Records Retention for Safety, Health and Environmental Protection, found in the safety manual. Records shall be kept longer in the event the minor is injured or if litigation is expected.

References

29 C.F.R. 1910.1200 Appendix A: (Hazard Communication: Health Hazard Criteria)

T.C.A. 50-5-106

SA 0550 Minors in Laboratories and Shops

SA 0575 Programs for Minors

NFPA 30: Flammable and Combustible Liquids Code

AD-015: UTK/EHS Records Retention for Safety, Health & Environmental Protection)

Disclaimer

The information provided in these guidelines is designed for educational use only and is not a substitute for specific training or experience.

The University of Tennessee Knoxville and the authors of these guidelines assume no liability for any individual's use of or reliance upon any material contained or referenced herein. The material contained in these guidelines may not be the most current.

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Appendices

[Full downloadable pdf of plan and appendices](#)

[Appendix A: Safety Assurance](#)

[Appendix B: High Hazard Activities that Require Exemption](#)

[Appendix C: Prohibited Activities](#)