

UNIVERSITY OF KANSAS - LAWRENCE CAMPUS

PART I - General Laboratory Safety Plan

Section 4) Information & Training

Federal and State Regulations and "Prudent Practice" require the University to provide all employees, students and visitors with information concerning hazards (Hazardous Materials, hazardous radiations, hazardous equipment) present in their environment (area of occupancy) and sufficient training to enable them to perform their tasks safely and to protect themselves.

*4.1) Responsibilities

*4.1.1) Responsibilities of Laboratory Supervisors

Authorized Laboratory Supervisors shall:

4.1.1.1) Provide, with documentation, all users of Hazardous Materials/Radiation Generating Devices in their respective areas with the minimum required information and initial and refresher training described in this chapter and applicable referenced sections to other parts of this manual.

4.1.1.2) Provide, with documentation, all occupants of areas in which Hazardous Materials/Radiation Generating Devices are used by others with the information and initial and refresher training described in this chapter.

4.1.1.3) Provide visitors with appropriate information concerning the hazards in the laboratory and provide supervision by an authorized user while they are in the laboratory.

Reminder: Where the term "Authorized User" or "Authorized Occupant" occurs in this manual it is understood that the individual referred to has had documented training that addresses the procedures introduced by "Authorized Users or Authorized Occupants shall or should."

*4.1.2) Responsibilities of Prospective Users of Hazardous Materials (HM) or Radiation Generating Devices (RGDs)

Prospective Users of Hazardous Materials/Radiation Generating Devices shall:

4.1.2.1) Not undertake any laboratory activities without first being informed and trained as described in this chapter and referenced sections and having obtained certification of that training by the person or office designated to have that authority as specified in this chapter.

Authorized Users shall:

4.1.2.2) Participate in all required safety training at the frequency described in section 4.6 of this Chapter.

Note: A previously authorized user who has not completed documented refresher training within sixty (60) days after the expiration date of the previous training is no longer an authorized user with respect to the activities for which the training has not been completed and may no longer perform the related activities.

4.1.2.3) Familiarize themselves with the required information as identified in section 4.2 of this Chapter.

4.1.2.4) Be trained in, understand, and follow the conditions and procedures as specified in section 4.5 of this Chapter.

*4.1.3) Responsibilities of Prospective Unsupervised Occupants of Laboratories with Hazardous Materials/Radiation Generating Devices

Prospective Occupants of Laboratories with Hazardous Materials/Radiation Generating Devices shall:

4.1.3.1) Be informed of the content and location of the materials listed in 4.2 and trained (certified) as an "Authorized Occupant" as described in 4.3 before pursuing unsupervised residence in such a laboratory. Until such training has been accomplished, individuals may only be supervised visitors in such a laboratory.

NOTE: An authorized occupant who has not completed the documented refresher training before the expiration date of the previous training no longer has the privilege of unsupervised access to any laboratory with Hazardous Materials/Radiation Generating Devices.

Authorized Occupants shall:

4.1.3.2) Participate in all required safety training at the frequency described in section 4.6 of this Chapter.

*4.1.4) Responsibilities of the Unit Safety Coordinator (USC)

The Unit Safety Coordinator shall:

4.1.4.1) Coordinate general information and training sessions within his/her unit.

Note: If there are separate Unit Safety Coordinators, e.g., Departmental Radiation Safety Coordinator, Chemical Hygiene Safety Coordinator, etc., the responsibility is restricted to the requirements for that type of activity.

4.1.4.2) Monitor compliance training requirements of users and occupants as specified in this chapter and referenced sections of other parts of this manual.

4.1.5) Responsibilities of the Environment Health and Safety Department (EHS)

EHS shall: (through its respective safety officers)

4.1.5.1) Provide assistance to Unit Safety Coordinators and Laboratory Supervisors in developing and conducting required information and training of users.

*4.2) Required Information

Explanatory Note: It is expected that Authorized Users will have a solid understanding of the information relevant to their areas of authorized use as listed in this section and of where they may find copies for laboratory-specific information and/or requirements as needed. Authorized Occupants are expected to be aware of the types of information available in these documents and where they may be found. "Informed" has these two distinct meanings in this section.

4.2.1) Information for Authorized Users and Authorized Occupants in **all** labs.

All Authorized Users and Authorized Occupants in all labs shall be informed of:

4.2.1.1) The contents of the Laboratory Hazard Registration Form, and all relevant safety documents.

4.2.2) Information for Authorized Users (AU) of Hazardous Chemicals and for Authorized Occupants in Rooms with Hazardous Chemicals

As a minimum, all Authorized Users and Authorized Occupants in rooms with hazardous chemicals shall be informed of:

4.2.2.1) The contents of the OSHA Laboratory Chemical Hygiene Standard (29 CFR 1910.1450) and its appendices. See Part I-Appendix 8.1.1

Note: The Authorized Laboratory Supervisor or Unit Safety Coordinator shall make this Standard available to all users.

4.2.2.2) The location and availability of the University of Kansas Chemical Hygiene Plan (Part I + Part II of this Laboratory Safety Manual) including laboratory-specific Safety Operating Procedures and applicable Laboratory-Specific Safety Plans.

4.2.2.3) The permissible exposure limits for OSHA regulated substances (29 CFR 1910 Subpart Z) or recommended exposure limits for other hazardous chemicals that have no OSHA limits. See Part II - Section 5.4.

4.2.2.4) Signs and symptoms associated with exposures to hazardous chemicals used in the laboratory.

4.2.2.5) The location and availability of known reference material (including Safety Data Sheets) on the hazards and safety practices associated with hazardous chemicals found in the laboratory.

*4.2.3) Information for Authorized Users (AU) of Biohazards and for Authorized Occupants in Rooms with Biohazards

As a minimum, all Authorized Users and Authorized Occupants in rooms with biohazards shall be informed of:

4.2.3.1) The contents of the CDC "Biosafety in Microbiological and Biomedical Laboratories" 6th edition.

Note: The Authorized Laboratory Supervisor or Unit Safety Coordinator shall make this book available to all users and occupants. This could be in the departmental or division library or available via internet access.

4.2.3.2) The location and availability of the University of Kansas Laboratory Biosafety Plan (Part I & III of this Laboratory Safety Manual), the CDC manual referenced in 4.2.3.1 for Level III & IV labs, recombinant DNA guidelines, if applicable, and the Bloodborne Pathogen Program, if applicable) including laboratory-specific Safety Operating Procedures and Laboratory-Specific Safety Plans.

4.2.3.3) Signs and symptoms associated with exposures to hazardous biological agents used in the laboratory.

4.2.3.4) The location and availability of known reference materials (including Safety Data Sheets) on the hazards and safety practices associated with Biohazards found in the laboratory.

*4.2.4) Information for Authorized Users (AU) of Radioactive Materials/RGDs (producing ionizing radiations) and Authorized Occupants of rooms with such materials/equipment.

As a minimum, all Authorized Users and Authorized Occupants shall be informed of:

4.2.4.1) The contents of "Radiation Safety in the Use of Radioactive Materials" by Benjamin Friesen and its appendices.

Note: The Authorized Laboratory Supervisor or Unit Safety Coordinator shall make this book available to all users and occupants. This could be in the departmental or division library or available via Internet access.

4.2.4.2) The location and availability of the University of Kansas Laboratory Radiation Safety Plan (Part I & Part IV of this Laboratory Safety Manual).

- 4.2.4.3) Federal and State radiation exposure limits including the License-mandated ALARA limits.
 - 4.2.4.4) Effects of low-level exposures to ionizing radiation. (See chapter IV of the text specified in 4.2.4.1 above for Authorized Users and Part IV of this manual for Authorized Occupants.)
 - 4.2.4.5) The location and availability of applicable Safety Data Sheets and Permits (Laboratory-Specific Safety Plans) that address hazards and safety practices associated with sources of ionizing radiation (materials or equipment) found in the laboratory.
- *4.2.5) Information for Authorized Users (AU) of Lasers and Authorized Occupants of rooms in which lasers are being used.

As a minimum, all Authorized Users and Authorized Occupants shall be informed of:

- 4.2.5.1) The contents of ANSI Z-136.

Note: The Authorized Laboratory Supervisor or Unit Safety Coordinator shall make this reference available to all users and occupants. This could be in the departmental or division library or via Internet access.

- 4.2.5.2) The location and availability of the University of Kansas Laboratory Laser Safety Plan (Part I and Part V of this Laboratory Safety Manual) and laboratory- specific Safety Operating Procedures and any applicable Laboratory-Specific Safety Plans.
- 4.2.5.3) Exposure limits specified in ANSI Z-136.
- 4.2.5.4) Effects of exposures to laser beams. (See Part V.)

***4.3) Required Training for Authorized Occupants**

As a minimum, Authorized Laboratory Supervisors shall provide Authorized Occupant training which includes:

4.3.1) A brief overview of the types of adverse health effects that may occur with exposure to Hazardous Materials/Radiations.

4.3.2) Sources of more specific information for specific types of exposures.

Note: Section 4.2 above provides references to such sources. The Authorized Occupant shall know where those sources can be found and what type of information is in those sources. Authorized Occupants are not required to master the content of those sources.

4.3.3) How to obtain guidance in safety practices from the Safety Data Sheets and information on specific hazards associated with the Hazardous Materials addressed by the Safety Data Sheet.

4.3.4) Safety procedures required for adequate safety in performing assigned activities in rooms with Hazardous Materials/Radiation Generating Devices.

Note: See Part I: Section 2.5 for applicable Safety Operating Procedures.

***4.4) Required Training for "Visitors"**

4.4.1) Required training for visitors in any laboratory

As a minimum, Authorized Laboratory Supervisors shall provide visitor training which includes:

4.4.1.1) General nature of hazards in the laboratory--chemical, biological, physical, and/or types of radiation sources.

4.4.1.2) Instructions to avoid contact with all laboratory bench surfaces, storage cabinets, fume hoods, biological cabinets, etc., and all containers in the laboratory.

4.4.1.3) Instructions necessary for avoiding exposure to Hazardous Materials/Radiations.

Reminder: Visitors are not permitted if exposures to Hazardous Materials or Radiations at levels greater than those permitted for the general public cannot be avoided through the supervision of the visitor by a qualified escort. See section I-2.5.1.

4.4.2) Additional training requirements for Visitors in Level III and IV Laboratories

4.4.2.1) Information on the nature of the hazards that cause the laboratory to be classified at the III or IV level including a brief explanation of biological risks associated with exposure.

***4.5) Required Training for Authorized Users**

4.5.1) Required Training for all Users (Authorized Users) of Hazardous Chemicals

As a minimum, Authorized Laboratory Supervisors shall provide Authorized User training which includes:

- 4.5.1.1) Methods and observations that may be used to detect the presence or release of hazardous chemicals.
- 4.5.1.2) The physical and health hazards associated with chemicals in the work area.
- 4.5.1.3) Measures the chemical users can take to protect themselves from these hazards.
- 4.5.1.4) The content of Part I and Part II of this manual.
- 4.5.1.5) Any other laboratory-specific chemical hygiene requirements.

4.5.2) Required Training for all Users of "EHS Safety Authorization-Requiring Hazardous Chemicals"

In addition, Authorized Laboratory Supervisors shall provide Authorized User training which includes:

- 4.5.2.1) The requirements of section 3.9 and 4.3 of Part II, as well as, any training specifically required by an approved Laboratory-Specific Safety Plan.

4.5.3) Required Training for all Users (Authorized Users) of Biohazards

As a minimum, Authorized Laboratory Supervisors shall provide Authorized User training which includes:

- 4.5.3.1) Methods and observations, if available, to detect the presence or release of biohazards.
- 4.5.3.2) The physical and health hazards associated with biohazards in the work area.
- 4.5.3.3) Measures the users can take to protect themselves from these hazards.
- 4.5.3.4) The content of Part I and Part III of this manual.
- 4.5.3.5) Any other laboratory-specific safety requirements. (For example, these might include immunizations.)

4.5.4) Required Training for all Users of “EHS Safety Authorization-Requiring Biohazards” (Biosafety levels 3 & 4 of the CDC classification).

In addition, Authorized Laboratory Supervisors shall provide Authorized User training which includes:

4.5.4.1) The requirements of section 4.1 of Part III.

*4.5.5) Required Training for all Users (Authorized Users) of Sources (Radioactive Materials or Equipment) of Ionizing Radiation

As a minimum, Authorized Laboratory Supervisors shall provide Authorized User training which includes:

4.5.5.1) Methods available to detect the presence radioactive materials or radiation fields.

4.5.5.2) The physical and health hazards associated with exposure to radiation in the work area.

4.5.5.3) Measures the users can take to protect themselves from these hazards.

4.5.5.4) The content of Part I and Part IV of this manual, and of applicable state regulations.

4.5.5.5) The skills and knowledge specified in Chapter 12 of Part IV for the applicable level of training.

4.5.5.6) Any other laboratory-specific safety requirements as specified in the applicable Laboratory-Specific Safety Plan.

*4.5.6) Required Training for all Users (Authorized Users) of Class II, III, or IV Lasers

As a minimum, Authorized Laboratory Supervisors shall provide Authorized User training which includes:

4.5.6.1) Methods and observations that are available to detect the presence hazardous laser beams.

4.5.6.2) The hazards associated with exposure to laser beams in the work area.

4.5.6.3) Measures the users can and shall take to protect themselves from these hazards.

4.5.6.4) The content of Part I and Part V of this manual.

Although there are some sections of Part I that are not applicable to laser users, there are sections of almost every chapter that are applicable. Sections of Part I applicable to Radiation Generating Devices are marked with an * or ^L.

4.5.6.5) Any other laboratory-specific safety requirements.

4.5.7) On-going Training Procedures

The Authorized Laboratory Supervisors/Unit Safety Coordinators should:

4.5.7.1) Observe the working behavior of Authorized Users and Authorized Occupants on an "on-going" basis, reinforce instances of correct safety behaviors, and correct unsafe behaviors (including demonstrations of correct behavior, if appropriate).

***4.6) Information & Training Frequency**

Users of Hazardous Materials/Radiations shall:

*4.6.1) Be provided with the required information and training at the time of their initial assignment to work with Hazardous Materials/Radiation Generating Devices. This means prior to undertaking any laboratory activity involving these Hazardous Materials/Radiation Generating Devices.

*4.6.2) Be provided with the required information and training prior to assignments involving potential new exposure situations.

*4.6.3) Undergo periodic refresher training that covers the required information and training identified in this Chapter. Some issues require annual refresher training and others may be biennial. Consult with EHS.

Authorized Occupants of Rooms with Hazardous Materials/Radiation Generating Devices shall:

4.6.4) Be provided with the required information and training at the time of their initial assignment to a work area where Hazardous Materials/Radiation Generating Devices are present. This means prior to undertaking any unsupervised activity in such an area.

4.6.5) Undergo refresher training that covers the required information and training identified in this chapter.

Visitors to Rooms with Hazardous Materials/Radiation Generating Devices shall:

4.6.6) Be provided the information specified in 4.4.1 above at the time of the visit unless written documentation is available to demonstrate that the information has been provided within the year prior to the date of the visit.

***4.7) Information & Training Documentation**

Authorized Laboratory Supervisors (ALS) shall:

*4.7.1) Provide users and "occupants" in their respective areas with the minimum required information and documented training as described in sections 4.2 - 4.5, and at the frequency identified in section 4.6 of this Chapter.

*4.7.2) Maintain documentation concerning Information and Training for users of hazardous chemicals, hazardous biological agents and lasers that includes the following:

4.7.2.1) Username and position title.

4.7.2.2) Department, Building, Room #, Campus Phone.

4.7.2.3) Laboratory Supervisor's name and campus phone.

4.7.2.4) Description of information/training, date, and provider name.

4.7.2.5) Trainee's signature acknowledging the receipt of the required information and completion of the required training together with the date

4.7.2.6) For the initial training, results of an exam with a satisfactory score. The content of the exam should be documented. For refresher training a "sign off" version of documentation is sufficient unless the Laboratory-Specific Safety Plans or laboratory-specific Standard Operating Procedures specify otherwise. Documentation of continuing radiation safety training is covered in Part IV.

4.7.3) Submit documentation of training for Category F Authorized Radiation Users to the Radiation Safety Service as specified in Chapter 12, Part IV.

4.7.4) Submit documentation of the "laboratory skills" training for other categories of training for Authorized Radiation Users that has been provided as authorized by the Radiation Safety Service. See Chapter 12 of Part IV for forms to be used for this documentation.

Note: Documentation of required "self study" or "classroom" training and/or lab skills training provided by the Radiation Safety Service is documented and recorded by them.

The Radiation Safety Service of the EHS Department shall:

4.7.5) Maintain the documentation for the information and training provided to Authorized Radiation Users and Authorized Occupants of rooms with radiation sources.

***4.8) Information & Training Resources**

Prospective supervisors and users of Hazardous Materials/Radiations shall:

*4.8.1) Contact EHS (864-4089) for assistance in providing the required information and training.

4.8.2) On-line safety training - KU-EHS currently offers 80+ safety courses/modules online via KU Blackboard/Canvas and MyTalent Learning. There are 34 courses that address Lab Safety issues/concerns. <https://ehs.ku.edu/training>

- a) Many Depts/Units have already set established required minimum training grids for personnel in their units. These are available through EHS online sites per each unit page.
- b) Many PI's/Lab Supervisors have lab/group specific pages that establish additional required training. These are available through EHS online sites per each PI/Class page.

4.8.3) Classroom/small group training – KU-EHS can provide a variety of training via request.