UNIVERSITY OF KANSAS - LAWRENCE CAMPUS LABORATORY SAFETY MANUAL
PART I - General Laboratory Safety Plan

Section 2) Standard Operating Procedures in Laboratories with Hazardous Materials (HM)/Radiation Generating Devices (RGDs)

*2.1) Responsibilities for and under Standard Operating Procedure

*2.1.1) Responsibilities of Laboratory Personnel/Students

Laboratory Personnel/Students and other Occupants of Laboratories shall:

*2.1.1.1) Comply with the standard operating procedures identified or referenced in this chapter where Hazardous Materials are handled or stored or where Radiation Generating Devices are used.

Note: This means that all individuals frequenting a laboratory shall meet the qualifications of either an Authorized Occupant, a Visitor, or an Authorized User for the Hazardous Materials/Radiation Generating Devices they will use. See Glossary for definitions. Hazardous Materials that meet the criteria for more than one type of hazard must be used as specified for all the classes and categories of hazards involved. If there appear to be incompatible Standard Operating Procedures contact EHS for an evaluation and for recommendations.

Reminder: The word "shall" introduces a requirement for the identified type of individual (authorized occupant, authorized user, etc.) unless prior written approval from EHS and/or the Laboratory Safety Committee for an exception has been obtained. In some cases, medical conditions might require an exception. Alternative approaches to safety would be explored in such cases.

*2.1.2) Responsibilities of Unit Safety Coordinators (USC) and Authorized Laboratory Supervisors (ALS):

Authorized Laboratory Supervisors/Unit Safety Coordinators shall:

*2.1.2.1) Implement and follow, in their areas of responsibility, the Standard Operating Procedures (SOPs) identified in this chapter and the applicable hazard-specific Standard Operating Procedures of Parts II-V.

Note: This means that a laboratory supervisor shall be an Authorized Laboratory Supervisor if Hazardous Materials/radiations are used, and the Unit Safety Coordinator shall be an Authorized User for each of the types of hazards for which the Unit Safety Coordinator has responsibilities.

*2.1.2.2) When/where necessary, develop and implement, in their areas of responsibility, more specific or stringent operating procedures than those specified in this manual and/or obtain required EHS Safety Authorizations and implement the conditions specified by those authorizations. (Section I-3.9 specifies when EHS Safety Authorizations are required.)

*2.1.2.3) Make available and properly maintain the facilities/equipment required for compliance with these procedures by the authorized users.

2.1.3) Responsibilities of Environment, Health and Safety Department

EHS shall:

2.1.3.1) Develop and recommend to the Laboratory Safety Committee general, campus-wide, standard operating procedures for inclusion in this Laboratory Safety Manual. Note: the appropriate EHS personnel work with their designated subcommittees of the Laboratory Safety Committee.

2.1.3.2) Review the existing Standard Operating Procedure on a routine basis and recommend changes to the appropriate subcommittees of the Laboratory Safety Committee as necessary and appropriate.

2.1.3.3) Review proposed Laboratory-Specific Safety Plans for Level III labs and either approve, approve with additional conditions, or disapprove such proposed LSSPs.

2.1.3.4) Review proposed Laboratory-Specific Safety Plans for Level IV activities and forward with recommendations to the appropriate subcommittee of the Laboratory Safety Committee.

2.1.3.5) Provide assistance to Unit Safety Coordinators and Laboratory Supervisors in implementing these general, campus-wide, standard operating procedures in their respective areas of responsibility.

2.1.3.6) Provide assistance to Unit Safety Coordinators and Laboratory Supervisors in developing and implementing more laboratory-specific or stringent operating procedures in their areas of responsibility when/where necessary or in the preparation of required Laboratory-Specific Safety Plans and their implementation upon approval.

2.1.4) Responsibilities of the Laboratory Safety Committee (LSC):

The Laboratory Safety Committee:

2.1.4.1) Shall review and approve recommended general, campus-wide, standard operating procedures, or changes for inclusion in this Laboratory Safety Manual. May also assist in the development of these Standard Operating Procedures.

2.1.4.2) May assist with the development, review, and/or approve more laboratory-specific or stringent operating procedures, as requested.

2.1.4.3) Shall review proposed Laboratory-Specific Safety Plans for Level IV labs and recommend either approval, approval with additional conditions or disapproval of such proposed LSSPs. (Provide such review of proposed LSSPs for Level III labs when EHS or a Laboratory Supervisor requests such review.)

Note: The Laboratory Safety Committee shall have four standing subcommittees-- Chemical Hygiene/Safety, Biosafety/rDNA, Radiation Safety, and Laser Safety. When required under regulations, the subcommittees function as a committee on their own. For example, responsibilities assigned to the Radiation Safety Committee by regulations and KU license cannot be assumed by the committee at large. For those functions the subcommittee on Radiation Safety is the Radiation Safety Committee with independent authority. The function of the committee at large is to provide an integrated, comprehensive, and efficient safety plan and to monitor its effectiveness.

*2.2) Universal Procurement Procedures for Hazardous Materials (HM)/Radiation Generating Devices (RGDs)

The Authorized User shall:

2.2.1) Estimate the amount of each hazardous material (HM) required by carefully preplanning the work task or experiment.

*2.2.2) Select only those Hazardous Materials or Radiation Generating Devices for which the available ventilation/ containment/ shielding is adequate.

*2.2.3) Obtain approval at the required level before ordering Hazardous Materials or a Radiation Generating Device.

Note 1: Authorized Users shall always obtain approval from the Authorized Laboratory Supervisor (ALS) before ordering Hazardous Materials. In some cases, the Authorized Laboratory Supervisor may grant standing approval for re-orders. Initial orders always require Authorized Laboratory Supervisor approval.

*Note 2: For some Hazardous Materials and all Radiation Generating Devices, prior approval by EHS and/or appropriate subcommittee is required for each order. Laboratory-Specific Safety Plans approved by the EHS Dept. and the appropriate subcommittee are required in some cases before the initial order. For example, see Chapter 3 of Part II for EHS Safety Authorization-Requiring Hazardous Chemicals, Chapter 3 of Part III for EHS Safety Authorization-Requiring Biohazards, Chapter 4 of Part IV for radioactive materials and Chapter 3 of Part V for Lasers. In such cases the Authorized User/Authorized Laboratory Supervisor shall comply with all conditions specified in the Laboratory-Specific Safety Plans in addition to this Laboratory Safety Manual. See 2.2.8 below.

2.2.4) Obtain and review appropriate hazard information (Safety Data Sheets, Standards) prior to ordering new or unusual Hazardous Materials.

Reminder: Users must be Authorized Users for all materials that will be used before such materials arrive in the laboratory.

2.2.5) Order Hazardous Materials in smallest quantity possible.

The Authorized Laboratory Supervisor shall:

*2.2.6) Order the least Hazardous Materials/Radiation Generating Devices required for anticipated projects.

*2.2.7) Before ordering any Hazardous Materials or Radiation Generating Devices, prepare for the proper storage, location and use of the Hazardous Materials or Radiation Generating Device as applicable. (For example, design and location of storage facilities, shielding and location of Radiation Generating Devices, posting of appropriate warning signs, acquisition of necessary personal protective equipment, dissemination of proper handling information to all laboratory users/occupants/visitors and provision for and completion of required training.) See Chapter 3 (Hazard Control Measures) of this Part I for additional guidance.

*2.2.8) Before ordering any Hazardous Materials or Radiation Generating Devices, possesses the required approval or Laboratory-Specific Safety Plan for the Hazardous Materials/Radiation Generating Devices.

2.3) Hazardous Material (HM) Receipt and Distribution

The Authorized User shall:

2.3.1) Not accept any Hazardous Materials whose container is not properly labeled or is damaged.

2.3.2) Review and observe specific information (container label and/or Safety Data Sheets) on the safe handling and storage of the Hazardous Materials.

2.3.3) Place all Hazardous Material containers that are to be delivered by hand within a shock-resistant carrying container or bucket.

2.3.4) Verify that the load is stable and secure before transporting Hazardous Materials by cart.

2.3.5) In buildings, whenever possible, transport Hazardous Materials on freight-only elevators to avoid potential exposure to public.

2.3.6) Contact the EHS Department (864-4089) when Hazardous Materials need to be transported in a vehicle on campus.

2.4) Hazardous Materials (HM) Storage

The proper storage of Hazardous Materials is a complicated subject due to the diversity of individual physical properties of the numerous Hazardous Materials that may be present in the laboratory environment. Some general procedures for safe Hazardous Materials storage are listed below. They are not intended to be all inclusive but serve as minimum safety procedures to follow when storing Hazardous Materials. It may be necessary to adopt more specific procedures for particular laboratory situations. Specific instructions on Hazardous Materials storage may be obtained from the Safety Data Sheets (SDSs), container label, or by contacting the EHS Dept. (864-4089).

The Authorized User (AU) shall:

2.4.1) Provide a definite storage place for each chemical and return the chemical to that location after each use. Store materials in chemical storage cabinets and on shelving designated for such storage.

2.4.2) Verify that all containers are in good condition and properly labeled. Place the user's name and the date received on all purchased materials to help inventory control. See sections 2.6.12.3, 3.4.4.4

2.4.3 Do not store materials on shelves higher than 5 feet (~1.5 m).

2.4.4) Avoid storing chemicals in chemical fume hoods, except for those chemicals in current use.

2.4.5) Avoid storing chemicals on bench tops, except for those chemicals in use. Also avoid storing materials and equipment on top of cabinets. If sprinklers are present, maintain a clearance of at least 18 inches from the sprinkler heads

2.4.6) Store Hazardous Materials appropriately so that incompatible materials are separated. Observe all precautions regarding the storage of incompatible chemicals.

2.4.6.1) Segregate Hazardous Materials in storage by the appropriate hazard class.

EHS-recommended segregation schematic follows:

a) Compressed gases (separate incompatible gases)

b) Flammable and Combustible Liquids

c) Flammable Solids

d) Water Reactive Chemicals

e) Pyrophoric &Air Reactive Chemicals

f) Corrosives (Separate Acids from Bases)

g) Oxidizers & Organic Peroxides

h) Poisonous/Toxic Compounds

i) Explosive Compounds

j) Biohazards

k) Radioactive Materials

2.4.7) Segregate/ separate Hazardous Materials by physical means (walls, secondary containers) if required.

2.4.8) Avoid storing heavy materials up high level

2.4.9) Store chemicals in separate compatible groups sorted alphabetically. See Part I - Appendices 8.2.2 for one color-coded method of arranging chemicals. Storage by hazard class applies to materials stored in all locations: shelves, cabinets, freezers, refrigerators, etc.

2.4.11) Store flammable liquids in approved flammable liquid storage cabinets. Do not expose stored chemicals to heat or direct sunlight.

2.4.12) Corrosives should be stored in approved corrosive cabinets.

2.4.13) Secure all storage shelves and cabinets to prevent tipping. Make sure they contain front-edge lips to prevent containers from falling. Ideally, place containers of liquids on metal or plastic trays (secondary containments) that could hold the liquid if the container broke and prevent the contamination.

2.4.14) Establish and maintain storage locations that are dry and adequately ventilated. Store volatile toxic or odoriferous chemicals in a ventilated cabinet. If a chemical does not require a ventilated cabinet, store it inside a closable cabinet or on a shelf that has a front-edge lip.

2.4.15) Store Hazardous Materials secured against unauthorized access when required by regulations.

*Note: All radioactive materials and most other "EHS Safety Authorization-Requiring Hazardous Materials"" [see Glossary] are subject to this requirement. When such storage is not provided, the room that contains the materials must have an Authorized User present to prevent access to the materials whenever the room is not locked.

2.4.16) Keep exits, passageways, areas under tables or benches, and emergency equipment areas free of stored equipment and materials

The Authorized User should:

2.4.17) Select the storage locations for easy and safe access.

2.4.18) Have adequate supplies of spill control/cleanup absorbents on hand. Chemical spill kits are available through EHS Hazardous Materials group.

*2.5) Universal Safety Practices/Conduct in Laboratories with Hazardous Materials (HM)/Radiation Generating Devices (RGDs)

*The proper use of Hazardous Materials/Radiation Generating Device is also a complicated subject due to the diversity of hazards associated with the numerous Hazardous Materials and Radiation Generating Devices that may be used in the laboratory environment. Some general procedures for safe Hazardous Materials/Radiation Generating Device usage are provided in this section. They are not intended to be all inclusive but serve as minimum safety procedures to be followed where Hazardous Materials/Radiation Generating Devices are used or handled. Specific safety instructions for using specific Hazardous Materials may be obtained from the Material Safety Data Sheet, container label, or by contacting EHS Dept. For Radiation Generating Devices, the manuals for the equipment are a good source of safety information in addition to the references given in sections 1.1.3 and 1.1.4 of this Part.

Note: The term "use" includes all handling of Hazardous Materials and any use, re-location or repair of Radiation Generating Devices.

*2.5.1) Restrictions Applicable to Visitors, Non-Laboratory Personnel and/or Non-Laboratory Authorized Occupants in Rooms with Hazardous Materials

*2.5.1.1) Restrictions for Rooms posted with Level I or II Hazards (See 3.4.6 and Glossary.)

Visitors may:

a) Walk to an inner office (if there is one) by the closest route without touching anything in route.

b) Enter the room and remain near the entrance until an Authorized User has been requested and established as an escort.

Visitors shall not:

c) Touch or handle any items, furniture, or equipment in the room.

Authorized Users shall:

d) Briefly inform the visitor of the nature of the hazards in the room, provide any special laboratory-specific instructions if needed, and supervise the visitor in such a fashion that exposure to Hazardous Materials is avoided if possible. Visitors are not allowed if the exposure is likely to be at a level greater than that permitted for the general public.

Authorized Occupants who are not laboratory personnel/students shall:

e) Not touch the surfaces of laboratory bench tops, hoods, safety cabinets, etc., or items in or on such furniture and equipment in Level I and II laboratories unless such contact is required to perform the necessary service and the Authorized Laboratory Supervisor has specifically cleared the equipment to be serviced as being free of contamination and has provided access to that equipment by removing all potentially contaminated materials and containers that may be in the way.

Note 1: In laboratories posted at Level I or II, the Authorized Laboratory Supervisor need not be present with the Authorized Occupant provided that the Authorized Laboratory Supervisor has certified to the supervisor of the Authorized Occupant that the service may be provided without risk of exposure to Hazardous Materials.

Reminder: Housekeeping activities in laboratories with Hazardous Materials are restricted to cleaning floors and removing normal uncontaminated trash. Office personnel also shall not touch items and surfaces of equipment/furniture in the laboratory.

f) Not touch or handle any containers clearly labeled as containing hazardous chemicals, hazardous biological agents, or radioactive materials.

Note: This restriction applies to all Authorized Occupants. Authorized Occupants shall not move or manipulate such containers and shall not be asked to do so by Authorized Users or the Authorized Laboratory Supervisor.

*2.5.1.2) Restrictions for Rooms posted with Level III and IV Hazards (See 3.4.6 and Glossary.)

Visitors shall:

a) Knock on the door and wait for an escort and shall not enter the room until a qualified escort is available.

b) Not touch or handle any items, furniture, or equipment in the room.

Authorized Laboratory Supervisors shall:

c) Briefly inform the visitor of the nature of the hazards in the room, provide any special laboratory-specific instructions if needed, and supervise the visitor in such a fashion that exposure to Hazardous Materials is avoided if possible. Visitors are not allowed if the exposure is likely to be at a level greater than that permitted for the general public.

Authorized Occupants for Level I & II labs and not part of the laboratory staff shall:

d) Not enter a laboratory posted as containing Level III or IV hazards unless accompanied by the Authorized Laboratory Supervisor (or EHS-Approved designee as posted) who is responsible for guiding the activity of the individual in such a fashion that contact with Hazardous Materials is avoided.

e) Not touch any items in the laboratory or any surfaces associated with laboratory benches, storage cabinets, hoods, and other equipment in rooms posted as containing Level III or IV hazards unless the Authorized Laboratory Supervisor (or EHS-approved designee as posted) has certified the items or surfaces that need to be serviced as being free from contamination with Hazardous Materials and is present to supervise the individual so that other hazards will not be encountered by the individual.

Explanatory Note: For Level III or IV laboratories, there are no non-laboratory Authorized Occupants because unsupervised occupancy and/or activities by such individuals are prohibited. Furthermore, only individuals who have the training required for an Authorized User in Level I & II labs may perform supervised work in a Level III or IV lab. All individuals not assigned to such a lab must be under the direct supervision of the Authorized Laboratory Supervisor (or EHS-approved designee as posted) while in a level III or IV lab.

2.5.2) Restrictions Applicable to Individuals who are Authorized Occupants in Rooms with Hazardous Materials (All levels)

Authorized Occupants shall:

2.5.2.1) Not touch or handle any containers clearly labeled as containing hazardous chemicals, biohazards, or radioactive materials for which they have not been certified as an Authorized User.

2.5.2.2) Not touch or handle any equipment, containers, or other items that are in an area that has been marked and labeled as one in which Hazardous Materials are being used for which the Authorized Occupant has not been certified as an Authorized User.

Note: This means that no equipment or materials may ever be removed from such an area by the Authorized Occupant. The Authorized User for that area must decontaminate the materials/equipment, remove labels and markings, and place them outside the area before an Authorized Occupant may have access to them.

Note: An example of an Authorized Occupant is an individual who is an Authorized User of hazardous chemicals but is not an Authorized User of Radioactive Materials. Such an Authorized Occupant may not handle radioactive materials and may not remove items from an area reserved for work with radioactive materials even if the item is unlabeled.

*2.5.3) General Procedures

Authorized Users and Authorized Occupants shall (unless "should" is introduced):

*2.5.3.1) Review and be familiar with applicable emergency procedures.
See section 2.9 and posted laboratory-specific emergency procedures.

Note: For Hazardous Materials this includes emergency spill procedures. For Radiation Generating Devices this includes safe shut down procedures.

*2.5.3.2) Know the locations of available safety equipment and how to use such equipment.

*2.5.3.3) Not engage in behavior that compromises safety.

a) Not throw objects, run, push individuals, play practical jokes, or engage in any other "horse play." Note: Sudden loud noises are also to be avoided.

2.5.3.4) Not eat, drink, smoke, chew gum, or apply cosmetics, or store these items in areas where Hazardous Materials are stored or used.

These items easily become contaminated from airborne Hazardous Materials or from contacting contaminated work surfaces, thus allowing the hazardous contaminant to be ingested, inhaled, or absorbed through the skin.

Note 1: No one, including authorized occupants or visitors, is permitted to introduce into the laboratory items that are meant to be ingested or applied to the body or the containers for such items. The only exception is the following: If access to a room that is not an authorized laboratory--for example, an office--is not available except through an authorized laboratory, items may be taken directly to such a room by the nearest and safest route. Such items may not be placed on any surface in the laboratory during that transfer through the laboratory.

Note 2: By habit, there should be no "hand to face or body" contact while working with Hazardous Materials.

Note 3: "Area" includes the whole room (contiguous 4 walls with closeable door) in which the Hazardous Materials are used.

Reminder: Smoking is not allowed in any university building.

Authorized Users and Authorized Occupants shall (unless “should” is introduced):

*2.5.3.5) Practice good housekeeping

Examples: Lab benches, desks, and other facilities should be clean, neat and uncluttered. Drawers and cabinets should be closed when not in use. Aisles and exits must be free of obstructions. Spilled materials and broken glassware must be carefully and promptly cleaned up. The floors must be kept free of materials that might cause slipping.

Note: Authorized Occupants, upon noticing spilled Hazardous Materials or contaminated broken glassware, should inform an authorized user about the spill and request a “clean up.” They shall not perform such clean up themselves. Authorized Occupants shall clean up nonhazardous spills (water, for example) or uncontaminated broken objects.

*2.5.3.6) Dispose of all sharp objects ("sharps"), such as broken glassware and hypodermic needles, in an EHS-approved container. There are no exceptions to this requirement. Go to I-6.2.1.4 for detailed procedures for handling this type of waste.

Note: This applies to Authorized Occupants who have created uncontaminated sharp objects. Authorized Occupants should request Authorized Users to take care of the disposal of potentially contaminated sharps and shall not handle such items if they are potentially contaminated.-

2.5.3.7) Practice good personal hygiene by always washing hands and face after handling Hazardous Materials or working in a room with Hazardous Materials and before leaving the area for eating, drinking, or smoking.

Authorized Users and Authorized Occupants shall (unless "should" is introduced):

2.5.3.8) Wear appropriate clothing and shoes at all times as follows:

a) Wear shoes that cover the entire foot.

Bare feet, sandals, and open-toed shoes are not permitted in labs where chemical, physical, biological, or radioactive material hazards are present.

b) Wear clothes that cover as much of the body area as possible.

Shorts worn without a protective full-length laboratory coat are prohibited. See also section 3.6.

c) (Should) wear gloves when the assigned activity requires contact with potentially contaminated surfaces or items in rooms posted with Level I or II hazards and shall wear gloves for such activities in rooms posted with Level III or IV hazards.

Note: The restrictions given in 2.5.1 above specify that there shall be no contact with surfaces and items in any laboratory with Hazardous Materials if the assignment does not require it. Housekeeping is restricted to cleaning floors and emptying normal uncontaminated trash. Their assignment does not require contact with other items or furniture/equipment surfaces in the room. That is also true of general office personnel.

d) Wear appropriate eye and or face protection if the assigned activity might involve the creation of materials that might hit the face or eye and shall minimize the amount of bare skin that is exposed (long-sleeved shirts, etc.).

e) Wear any special safety apparel specified by the posting at the entrance of a laboratory. The Authorized Laboratory Supervisor shall instruct the Authorized Occupant in the proper use of the safety apparel.

Note: There may be laboratories in which Authorized Occupants are required to wear special safety apparel--lab coats, gloves, safety glasses, etc. The laboratory-specific SOPs will stipulate when this is required, and such requirements must be posted at the entrance. (Such situations should be very rare at KU.)

2.5.3.9) Shall know the meaning of posted warning signs and labels and comply with applicable restrictions and procedures mandated by those signs and labels.

Authorized Users shall (unless "should" is introduced):

*2.5.3.10) Wear appropriate personal protective equipment/apparel (eye protection, hand protection, clothing, etc.) to protect from hazard of inadvertent contamination with Hazardous Materials or exposure to radiations. Go to section 3.6 for detailed requirements and procedures. All of section I-3.6 is part of this requirement.

Note: In some cases, laboratory-specific Standard Operating Procedures may require Authorized Occupants to use special Personal Protective Equipment.

a) Use dedicated laboratory coats under conditions when contamination with Hazardous Materials is likely. See I-3.6.4.2.

b) Use protective gloves as specified in I-3.6.4.1.

2.5.3.11) Perform procedures so that the creation of splashes or aerosols is prevented or, as a last resort, minimized.

Note 1: This means using special care and/or special procedures in the removal of screw caps, pouring liquids, homogenization, sonication, use of mixers, centrifugation, etc. The latter four may produce respirable aerosols in addition to larger droplets. This also includes the handling of bedding materials from animal cages.

Note 2: Where the potential for splashes or aerosols is substantial, special laboratory-specific engineered safeguards may be required. Fume hoods are generally required for chemicals. At Biosafety Level II, these may require a Biological Safety Cabinet. See III-3.4.2.

*2.5.3.12) Use the "buddy system" if at all possible.

Note: This means that occupants of laboratories should have someone within calling distance and preferably within sight.

2.5.3.13) Not intentionally smell, taste, or touch with bare hands, any Hazardous Materials.

Note: Authorized Occupants are never to touch containers with Hazardous Materials or surfaces bearing warning labels.

2.5.3.14) Keep containers closed at all times, except when filling/dispensing.

2.5.3.15) Not leave potentially Hazardous Materials or processes unattended.

Note: Overnight or weekend processes are covered under section 2.6.2.

*2.5.3.16) Use equipment only for its intended purpose.

*2.5.3.17) Know the hazards and follow applicable Standard Operating Procedure associated with the Hazardous Materials/Radiation Generating Devices being used as specified in Parts II, III, IV or V. Know and observe laboratory-specific Standard Operating Procedure and/or Laboratory-Specific Safety Plan conditions as applicable for the materials/Radiation Generating Devices.

*2.5.3.18) Be alert to unsafe conditions and actions and pursue correction of such unsafe conditions and actions. See 2.5.4 below.

Note: Someone else's accident can be as dangerous to you as any you might have.

*2.5.3.19) Think, act, and encourage safety until it becomes a habit.

*2.5.4) Reporting Unsafe Conditions and/or Actions

Introduction: It is the policy of the University that any individual on campus may request an inspection or evaluation by the EHS staff of conditions that they believe may constitute a health or safety hazard. However, when the conditions or actions constitute a minor risk/hazard, individuals will report to and work with the responsible laboratory supervisor in correcting the conditions or modifying the behaviors. If conditions or actions create an imminent danger or a serious risk/hazard, EHS shall be notified immediately. If necessary, the chair of the Laboratory Safety Committee may also be notified. See Glossary for definitions of imminent danger and serious risks/hazards. Confidentiality, to the extent permitted by regulations and possible under the circumstances, will be maintained by EHS for the one notifying EHS of the unsafe condition/acts if requested to do so.

Any person who has identified an unsafe condition or act shall:

*2.5.4.1) Immediately report the unsafe condition or act to EHS at 864-4089 if imminent danger or a serious risk/hazard is involved. (Note: If it is actually an emergency, the emergency procedures shall be followed. If the person reporting to EHS and/or the Authorized Laboratory Supervisor has the expertise to take corrective actions, he/she should do so, especially if timely action might eliminate the hazard.)

*2.5.4.2) Take corrective action "as soon as it is reasonably achievable" if the condition is a minor risk/hazard and the condition or behavior can be safely corrected. Report it to the Authorized Laboratory Supervisor only if it is likely to occur again.

*2.5.4.3) Remind an individual performing an unsafe act or who is not following required Standard Operating Procedures of the correct procedure.

*2.5.4.4) Report continuing and uncorrected minor risks/hazards to the Authorized Laboratory Supervisor/Unit Safety Coordinator. If no corrections are made, EHS should be informed.

Note of caution: All of the procedures specified in 2.5.4 should be carried out in the spirit of a mutual support and caring and not as adversaries.

*2.6) Specialized Safe Laboratory Practices in the Use of Hazardous Materials/Radiation Generating Devices

Note: In this section, topics are listed. Authorized User is understood to be the subject of every imperative sentence. Shall is understood unless the procedure begins with a "Should."

*2.6.1) Working Arrangements

Authorized Users (in undergraduate laboratories) shall:

*2.6.1.1) Not work with potentially hazardous laboratory operations in the undergraduate laboratories unless there is a qualified Teaching Assistant on duty in that laboratory.

Authorized Users (graduate, postdoctoral, and advanced undergraduate students) should:

*2.6.1.2) Notify at least one other person who will remain within sight or sound during the working period when Hazardous Materials/Radiation Generating Devices are used.

*2.6.2) Overnight Reactions/Experiments

Authorized Users shall:

*2.6.2.1) Obtain Authorized Laboratory Supervisor approval of the arrangement before leaving an unattended process involving Hazardous Materials/Radiation Generating Devices.

*2.6.2.2) Take special care in checking water lines, power stirrers, electric heating sources, pumps, and condensers to insure that connections are tight, equipment is secure, flow rates are appropriate, moving parts are lubricated, etc., before the equipment is left unattended.

Note: Reactions left overnight or unattended are prime sources for fires, floods, and explosions.

*2.6.2.3) Fill out the appropriate form indicating information about the reaction or operation and how the responsible person can be contacted in case a problem arises during the night and attach the form in a prominent location near the apparatus/equipment.

Note: This form shall have the Authorized Laboratory Supervisor signature in order to accomplish the requirement of 2.6.2.1.

2.6.3) Pipetting

2.6.3.1) Never pipette by mouth. (Use the appropriate mechanical device.)

2.6.4) Reagent Addition

2.6.4.1) Always add reagents slowly; never "dump" them in.

Note: Be especially careful with a potentially exothermic reaction that fails to start. Further addition of reagents could result in an uncontrollable reaction.

2.6.4.2) Never add any solid to a liquid that is near its boiling point.

2.6.5) Spraying or Splattering of Hazardous Materials

2.6.5.1) Never point containers, such as flasks, test tubes, separatory funnels, etc, toward another person.

Note: This precaution applies to any apparatus that might spill or spray a corrosive or toxic material onto another individual.

*2.6.6) Glass and Sharp Objects – do not leave out in open. Store and dispose appropriately.

2.6.7) Frozen Stoppers and Stopcocks

2.6.7.1) Should lubricate all ground glass surfaces lightly with stopcock grease.

Note: In the event that a stopper, stopcock, or joint becomes frozen it usually can be loosened as follows: (1) Remove all liquids, dry the apparatus, and allow it to cool; (2) heat the outer joint quickly (20-30 sec.) and evenly (rotate it) in the flame of a burner; pull apart before inner joint warms. If the procedure fails, contact your lab supervisor.

2.6.8) Glass Tubing

The following precautions shall be taken when a glass tube, rod or thermometer is being inserted through the hole in the cork or rubber stopper:

2.6.8.1) Be certain that the hole in the stopper is not too small.

2.6.8.2) Always fire polish glass tubes.

2.6.8.3) Lubricate the glass and stopper with glycerin (glycerol), silicone oil or stopcock grease or other appropriate lubricant.

2.6.8.4) Protect your hand with a cloth towel, rag, or other appropriate hand protection.

2.6.8.5) Grasp the tubing near to the end being inserted

2.6.8.6) Twist the tube through the hole with firm, steady pressure but shall not force it.

2.6.9) Glassware (general)

2.6.9.1) Should check glassware carefully for flaws such as cracks or chips before assembly.

2.6.9.2) Clamp apparatus to a support rack firmly but without putting strain on any glassware.

Note: Apparatus should be clamped sufficiently far above the bench that a cold bath could be used to quickly moderate a reaction that has become too vigorous.

2.6.9.3) Check all glass joints, stoppers, hose connections, and the alignment of stirring motors before starting any reaction.

2.6.10) Cold Traps and Cryogenic Hazards

Contact with cryogenic materials (e.g., dry ice and various liquefied gases) can cause severe burns Even brief skin contact with liquid nitrogen (bp -195 ºC) can cause tissue damage similar to thermal burns, while prolonged contact can cause blood clots that have potentially serious consequences.

2.6.10.1) Wear goggles (or preferably a face shield) and gloves when handling dry ice, cold baths, or cryogenic liquids such as liquid nitrogen.

2.6.10.2) Work in a well-ventilated area.

2.6.10.3) Not lower your head into a dry ice chest because of the danger of asphyxiation.

2.6.10.4) Tape the outside of, or enclose in a metal container, any Dewars used for cold traps or to transport liquefied gases in order to avoid hazards from implosions.

2.6.10.5) Not use liquid nitrogen to cool vessels on a vacuum line open to the atmosphere.

Note: Oxygen can condense from the atmosphere within the vessel. If the line is then closed, an extreme pressure buildup can occur when the liquid nitrogen coolant evaporates or the cold trap is removed.

2.6.10.6) Not use liquid nitrogen to cool a flammable material in air.

Note: Atmospheric oxygen can condense to produce an explosion hazard.

2.6.10.7) Use clean Dewars for liquid nitrogen.

2.6.10.8) Not attempt transfer of liquefied gases from one container to another the first time without supervision.

2.6.11) Compressed Gas Cylinders

2.6.11.1) Secure compressed gas cylinders by approved straps or chains to a sturdy object such as lab bench, wall, or inside a cylinder cabinet. Cylinders should be individually strapped or chained approximately 2/3 of the way up on the body of the cylinder. Cylinder racks may be used for multiple cylinders.

2.6.11.2) Not move cylinders without the cylinder cap in place in order to protect the valve stem from being accidentally broken.

2.6.11.3) Keep the main cylinder valve closed and any reduction valve bled when a cylinder is not in use.

2.6.11.4) Never bleed a cylinder completely empty, but leave a slight positive pressure to keep out contaminants.

2.6.11.5) Not put oil or grease on the high-pressure side of the regulator on an oxygen cylinder. This may cause an explosion.

2.6.11.6) Not modify or repair regulators unless qualified (trained) to do so.

2.6.11.7) Transport cylinders into or out of laboratory rooms by means of an appropriate cylinder cart. (The use of a cart does not preclude the need to have the cylinder cap in place.)

2.6.12) Refrigerators

2.6.12.1) Store Flammables/Combustibles only in refrigerators that are UL/FM/NFPA approved for such storage.

2.6.12.2) Verify that all containers of Hazardous Materials stored in these units are tightly sealed.

2.6.12.3) Label each container with the name of the compound or source of the material being stored, the name of the experimenter, and the date.

2.6.12.4) Not store food or beverages for consumption in refrigerators being used to store Hazardous Materials of any type.

*2.6.13) Other Commercial Laboratory Equipment

*2.6.13.1) (Should) follow the safety instructions, if any, included in the vendor's manual. If such instructions appear to be in conflict with Standard Operating Procedures specified in this manual, EHS should be consulted.

(Authorized Laboratory Supervisors may promote such instructions to "shall" in laboratory-specific Standard Operating Procedures. Laboratory-Specific Safety Plans may do so as well.)

*2.6.14) Hazard Information and Communication

*2.6.14.1) Follow the practices and instructions given in section 3.4 of chapter 3. (Inventories, labeling and signs are addressed.)

*2.6.15) Hazard Control Equipment

2.6.15.1) Follow the practices and instructions given in chapter 3.

Section 3.5 addresses engineering controls--ventilation, hoods, biological safety cabinets, etc.
Section 3.6 addresses personal protective equipment/apparel--clothing, respirators, movable shields, etc.
Section 3.7 addresses safety equipment -- storage, showers, etc.

*2.6.16) Safety Inspections

2.6.16.1) Follow the requirements specified in section 3.8 of Chapter 3.

2.7) References to Hazard-Specific Safety Procedures and Requirements

EXPLANATORY NOTE: This section directs the authorized users to other parts of this manual based upon the specific type of hazards that are present in the laboratory. The previous sections specify procedures that are applicable to the handling of all types of Hazardous Materials/Radiation Generating Devices.

Authorized Users shall, as applicable:

2.7.1) Flammable/Combustible Liquids and Gases (See Glossary for definition.)

2.7.1.1) Follow all requirements and procedures specified in Part II-Section 2.4, in addition to those of this Part I.

2.7.2) Corrosives (See Glossary for definition.)

2.7.2.1) Follow all requirements and procedures specified in Part II-Section 2.5, in addition to those of this Part I.

2.7.3) Reactives (See Glossary for definitions.)

2.7.3.1) Follow all requirements and procedures specified in Part II-Section 2.6, in addition to those of this Part I.

2.7.4) Explosive Compounds (See Glossary for definition.)

2.7.4.1) Follow all requirements and procedures specified in Part II-Section 2.7, in addition to those of this Part I.

2.7.5) Particularly Toxic Chemicals (See Glossary for Definitions.)

2.7.5.1) Follow all requirements and procedures specified in Part II-Section 2.8, in addition to those of this Part I.

2.7.6) Biohazards (See Glossary.)

2.7.6.1) Follow all requirements and procedures specified in Part III in addition to those of this Part I.

Note: Part III covers the additional safety requirements for the use of hazardous organisms/biological agents at Level I and II. These address primarily decontamination, disinfection and sterilization procedures.

2.7.7) EHS Safety Authorization-Requiring Hazardous Chemicals (See Glossary for definition.)

The chemicals included in this category are identified in Part II - Chapter 3, Section 3.9.3.1 and Section 3.9.3.2.

2.7.7.1) Follow all conditions, requirements and procedures specified in Part I-Section 3.9.

Special Note: Authorized Occupants must have the training specified for Authorized Occupants in Part I: Chapter 4.

2.7.8) EHS Safety Authorization-Requiring Biohazards

All Biohazards requiring Level III or Level IV safety provisions are in this category. Lists of Biohazards Level III or IV safety provisions are found in references listed in Part III-Section 3.7.1.

2.7.8.1) Follow all requirements and procedures specified in Part I- Section 3.9.

Special Note: Authorized Occupants must have the training specified for Authorized Occupants in Part I: Chapter 4.

2.7.9) Radioactive Materials (See Glossary for definition.)

2.7.9.1) Follow all conditions, requirements and procedures specified in Part IV.

Note: The use of any radioactive materials requires an EHS Safety Authorization in the form of a Radiation Safety Permit.

Special Note: Authorized Occupants shall follow the procedures specified in this chapter for Authorized Occupants.

2.7.10) Radiation Generating Devices that Produce Ionizing Radiation

2.7.10.1) Follow all applicable requirements and procedures in Part IV (with special emphasis on Chapter 1 and 7) and the applicable portions of Part I identified with an * or a superscript I.

Note: The use of any radiation generating device requires an EHS Safety Authorization in the form of a Radiation Safety Permit.

Special Note: Authorized Occupants must have the training specified for Authorized Occupants in Part I: Chapter 4.

2.7.11) Lasers

2.7.11.1) Follow all requirements and procedures specified in Part V and applicable portions of Part I (identified with an * or a superscript L).

Note: The use of any Class 2, Class 3a. Class3b or Class 4 laser/laser system requires an EHS Safety Authorization.

Special Note: Authorized Occupants must have the training specified for Authorized Occupants in Part I: Chapter 4.

*2.8) Laboratory-Specific Standard Operating Procedures

Even though each laboratory supervisor and laboratory person is responsible for complying with the minimum Standard Operating Procedures previously identified in this chapter and category specific Standard Operating Procedures in Parts II - V, they shall also develop and implement more specific or stringent laboratory standard operating procedures where/when necessary.

The Authorized Laboratory Supervisor shall:

*2.8.1) Develop written laboratory-specific Standard Operating Procedures when necessary.

Note: It is recommended that they be kept with the laboratory's copy of this KU Laboratory Safety Manual. Any Authorized User-developed Standard Operating Procedures must be reviewed and approved by the Authorized Laboratory Supervisor.

EHS recommends the following:

*2.8.2) SOP Format

Laboratory-specific Standard Operating Procedures shall provide the following minimum information:

*2.8.2.1) SOP Title

*2.8.2.2) Building, Department, Lab, & Room #

*2.8.2.3) Authorized Laboratory Supervisor

*2.8.2.4) Process Identification

*2.8.2.5) Hazard Assessment

*2.8.2.6) Hazard Controls

*2.8.2.7) Emergency Procedures

*2.8.2.8) Experimental Methodology

*2.8.2.9) Signature of Preparer of the Standard Operating Procedures & Date of Issue.

*2.8.2.10) Lab Supervisor Signature & Date

*2.8.3) See Part I - Appendix 8.2.1, for a blank copy of the recommended form for documenting laboratory-specific Standard Operating Procedures.

*2.8.4) Laboratory-specific Standard Operating Procedures should be kept in section 7.2 of Chapter 7, Record Keeping), of this manual.

*2.9) Emergency Procedures

During normal laboratory operations there is always the potential for an emergency situation to arise. Emergencies can be the result of Hazardous Materials spills/releases, malfunctioning equipment, fire, and/or personal injury/need for medical assistance. In the event of an emergency, the appropriate action must be implemented. This may include evacuation of the facility if necessary. Internal communication is very important because it is essential that all employees know how to act and react during an emergency. It is necessary that written emergency action procedures be developed and that all employees be trained and participate in drills. All accidents, regardless of severity, must be reported and investigated.

*2.9.1) Responsibilities of the Authorized Laboratory Supervisor/Departmental Safety Coordinator/Department Chair

The Authorized Laboratory Supervisor, Unit Safety Coordinator or Dept. Chair shall:

*2.9.1.1) Develop and post laboratory-specific or department-specific emergency procedures. EHS shall provide assistance as requested. This shall be based upon the pre-planning described in 2.9.4 below.

*2.9.1.2) Appropriately train all laboratory users/occupants in these procedures.

*2.9.1.3) Perform sufficient drills to acquaint all laboratory users/occupants with the procedures to be followed. (Records shall be kept of drills including an evaluation of performance and follow-up remedial actions when indicated.)

*2.9.1.4) Report accidents to EHS and, if injuries that require treatment are involved, to Human Resources and conduct appropriate investigations.

Note: Serious work-related injuries must be treated at Lawrence Memorial Hospital. If emergency treatment is required, go to LMH Emergency Room. If it is not an emergency, call the LMH Occupational Health Clinic at 749-6467 to schedule an appointment. A 1101-A accident report must be sent to KU Human Resources.

*2.9.2) Responsibilities of Authorized Users, Authorized Occupants, and other Personnel/Students

Authorized Users, Authorized Occupants, and all other Department Personnel/Students shall:

*2.9.2.1) Be trained in the applicable emergency procedures.

*2.9.2.2) Participate in drills when those are initiated.

*2.9.2.3) Follow the emergency procedures during drills and during actual emergencies.

*2.9.3) General Emergency Procedures

All individuals shall follow the basic requirements of this section. (If an action has already been effectively taken, repetition is not required. Ensuring that all affected individuals are notified and take action is a cooperative venture.)

Occupants shall:

*2.9.3.1) Notify other individuals in the lab of the emergency situation.

If necessary, alert facility/building occupants by activating building alarm system. Contact Kansas University Police Department (911) and inform of situation/need for emergency assistance.

*2.9.3.2) Evacuate the laboratory, closing doors behind you (verify the evacuation of all occupants).

Take any quick, obvious and low risk actions that would minimize the consequences of the emergency.

If building alarm is activated, leave building/facility through the nearest, safe emergency exit. Do not use elevators! Provide assistance to those who may need it.

*2.9.3.3) Assemble outside the lab in the designated safe area. (All individuals to remain in the assembly area until released.)

If evacuating to the outside, assemble at a safe location upwind from the facility. Check to make sure all personnel, students and visitors are accounted for. Keep everyone together, and do not allow re-entry into facility until it has been cleared by KUPD. Segregate any individuals who may be contaminated with Hazardous Materials.

*2.9.3.4) Report to Emergency Services Field Command. Person who reported incident or who has knowledge about the emergency should immediately report to the Emergency Services Field Command Post. Initially this would be the first responding KUPD officer identified.

*2.9.4) Emergency Preplanning and Preparation

Laboratory supervisors and Hazardous Materials/Radiation Generating Device users must prepare for potential laboratory emergencies by proper preplanning and preparation. The following factors are to be considered:

Authorized Laboratory Supervisors shall:

*2.9.4.1) Review the nature of the activities/operations to be conducted in order to identify potential hazards (i.e., know the hazardous properties of the materials/Radiation Generating Devices being used and quantities present in the lab).

*2.9.4.2) Identify locations where these emergencies could arise.

*2.9.4.3) Be familiar with the locations of emergency equipment, supplies, building alarms, and evacuation routes.

*2.9.4.4) Make available appropriate emergency equipment/supplies in the lab (or nearby) before initiating Hazardous Materials/Radiation Generating Device activities/operations. These include:

a) Safety Showers and Eyewashes See section 3.7.2 & 3.7.3

b) Fire Extinguishers and Fire Blanket See section 3.7.4.

c) First Aid Kit See section 3.7.5.

d) Spill Control/Cleanup Kit See section 3.7.7.

*2.9.5) Medical Emergencies See also 2.9.1.4 above.

*2.9.5.1) Serious Injury/Emergency Medical Assistance

Personnel, students or visitors shall:

a) Contact KUPD (911) immediately and identify need for emergency medical assistance. Provide information as asked by the Dispatcher.

b) Assist injured person only if properly trained to administer first aid.

Otherwise, keep injured person still and calm. Keep unnecessary individuals away. Do not move the injured person unless it is necessary to prevent his/her exposure to further harm. However, individuals shall not endanger themselves.

c) Protect themselves and others from any injured person's blood/body fluids and from any hazards that may have caused the injury.

d) Notify individuals in adjacent areas of any potential hazards.

Authorized Laboratory Supervisor shall:

e) Complete the appropriate accident/injury reports, conduct an accident investigation, and initiate corrective action(s).

*2.9.5.2) Minor Injury/Non-Emergency Medical Assistance See also 2.9.1.4 above.

Personnel, students, or visitors may:

a) Handle minor injuries by self-treatment. (However administer first aid only if properly trained to do so. Otherwise, contact KUPD (911) for emergency medical assistance.)

Personnel, students, or visitors shall:

b) Protect themselves and others from the injured person's blood/body fluids and from any hazards that may have caused the injury.

Personnel, students, or visitors should:

c) Seek proper medical attention.

[Note 1]: Students should go to Watkins Health Center. If it is closed, Students should go to the Lawrence Memorial Hospital Emergency Room.

[Note 2]; University employees must go to Lawrence Memorial Hospital for on-the-job injuries requiring medical treatment.

Authorized Laboratory Supervisors shall:

d) Complete the appropriate accident/ injury reports, conduct an accident investigation, and initiate corrective action(s).

*2.9.6) Fire Emergencies

Fires are a possible emergency in the laboratory setting. In the event of a fire:

Laboratory users/occupants shall:

*2.9.6.1) Assist any person in immediate danger to safety, but only if it can be accomplished without risk to themselves.

*2.9.6.2) Activate the building alarm system so that other individuals in the facility/building can begin evacuation.

*2.9.6.3) Contact KUPD (911) to report the fire.

*2.9.6.4) If the fire is small, use a nearby extinguisher to control and extinguish it, but only if trained in using fire extinguishers. If the initial extinguishing attempt does not succeed, evacuate the area. (Do not go after more extinguishers or back into the fire area.)

*2.9.6.5) Not attempt to fight fires that are large, are out of control, or may be in the presence of a toxic atmosphere.

*2.9.6.6) Evacuate the area or building immediately. Close doors behind you as you leave. Do not use elevators!

*2.9.6.7) Evacuate a building immediately if the facility alarm is sounding.

*2.9.6.8) Assemble at a pre-determined meeting area. Supervisor is responsible for taking roll and accounting for all laboratory users/occupants/visitors.

*2.9.6.9) Not re-enter the building without permission of KUPD.

*2.9.6.10) Report all fires to the KU Police Department so that the appropriate investigations may be made, if necessary.

2.9.7) Hazardous Material Spills/Releases

Spills/releases of Hazardous Materials are also a possible emergency in the laboratory environment. The proper response action is dependent upon the hazard and quantity of material spilled/released. All spills need to be reported to your supervisor immediately.

2.9.7.1) Emergency Hazardous Materials Spills/Release

a) Emergency Hazardous Materials spills/releases are those that are of sufficient hazard to require a response from KUPD, EHS, and the Lawrence Fire Department. A Hazardous Materials spill/release is considered to be an emergency spill/release whenever it:

- Causes personal injury or exposure requiring medical attention.
- Causes a fire hazard.
- Requires the need for special personal protective equipment.
- Contaminates a public area or causes airborne contamination that requires laboratory or building evacuation.
- Cannot be controlled or cleaned up by authorized users.
- Requires prolonged or overnight cleanup.
- Involves an unknown substance.
- Enters the land, water, or air.

b) Emergency Spill/Release Response Procedures:

Personnel, students, or visitors shall:

- Contact KUPD (911) [and EHS at 4-4089, if possible] immediately and identify need for emergency spill assistance. Provide information as asked by the Dispatcher.
- If the spill presents an immediate danger, evacuate the spill area, warn others nearby of the hazard and keep individuals out.
- Protect themselves first. Assist injured individuals only if it can be accomplished without risk to themselves.
- Send someone down to meet the responding agencies.
- If the spill presents a danger to other building occupants, activate the building alarm and evacuate.
- Not operate electrical switches except to de-energize if flammable vapors are present. Turn off or remove heat sources if safe to do so.
- If the spilled substance is an unknown, limit actions to self-protection, KUPD notification (911), isolation of the spill, evacuation and to securing the area.
- Try to control the spread or the volume of the spilled material by absorbents or containment if the spill does not present immediate personal danger.

2.9.7.2) Minor Hazardous Material Spills/Releases

a) Minor Hazardous Material spills/releases are those that do not meet the definition of an emergency spill as described previously and can usually be handled by properly trained and equipped. The following procedures should be used for minor spills/releases:

Authorized Users shall:

- Attend to any individuals who may have been contaminated. If person requires medical attention this is an Emergency Spill.
- Notify persons in immediate area of the spill and evacuate all nonessential individuals.
- Control the spread of the spilled material by absorbents or containment.
- If the spilled material is flammable, turn off ignition sources.
- Avoid skin contact and breathing vapors, mists, fumes, or particles from spilled materials.
- Leave on or establish exhaust ventilation, if safe to do so.
- Contact EHS for assistance and disposal of spilled materials.

The following steps shall ONLY be performed by qualified and appropriately trained individuals.

- Secure appropriate spill cleanup supplies. EHS has positioned small spill kits in every chemical stockroom.
- Don appropriate personal protective equipment.
- Use a neutralizing agent/absorbent mixture on corrosive liquids.
- Other liquids should be absorbed with an appropriate, non-reactive material such as vermiculite, clay, dry sand, paper towels, other spill absorbents. EHS recommends 3M Powersorb Universal Sorbent that is available from Fisher Scientific.
- Collect spilled material and used cleanup supplies into an appropriate container and contact EHS for proper disposal.
- Collect spilled solids in a container for reuse, or disposal by EHS. Be Careful! Sweeping can cause airborne particulates that can be inhaled. If spilled solids are highly toxic, it would be better to clean them up using a HEPA vacuum. Contact EHS for assistance.
- Mop or wipe any contaminated surfaces before reusing.

2.9.7.3) Hazardous Chemical Spills

Follow previous instructions in Part I - Section 2.9.7.1 & 2.9.7.2. Contact EHS (864-4089) for further information or assistance for procedures in handling special types of Hazardous Chemical spills/releases.

2.9.7.4) Biohazard Spills/Releases

Handle biohazard spills/releases in accordance with the procedures in Part III.
Contact EHS (864-4089) for further information or assistance.

2.9.7.5) Radioactive Spills/Releases

Handle radioactive spills/releases in accordance with the procedures referenced in Part IV.
Contact EHS - Radiation Safety Services (864-4089) for further information or assistance.