

General Safety in Labs with Hazardous Materials, EHS 51 Exam (Page 1 of 7)

Initials: _____

Important note and instructions: Circle the correct answer or answers for each question. One or more answers may be correct. Each question is worth the number of points equal to the number of choices in that question. Initial as requested.

1. Authorized Occupants:

- A. May perform any procedures in a laboratory that is classified as having only Level I Hazards.
- B. May perform any procedures in laboratories that are classified Level I or II.
- C. May not perform any laboratory procedures unless they also have training as an Authorized User for those procedures.
- D. May not be in the laboratory unless an Authorized User is present.
- E. Cannot be Authorized Users.

2. The safety philosophy that should be adopted by all individuals in the laboratory states:

- A. That all exposures to hazardous materials/radiations shall be kept as low as possible.
- B. That any procedure that does not exceed accepted or regulatory limits is acceptable.
- C. That exposures to hazardous materials/radiations should be kept as far below accepted or regulatory limits as is reasonably achievable.
- D. That exposures that are less than 0.1 of an accepted or regulatory limit are always acceptable.

3. Before initiating use of a new hazardous material, the Authorized User shall review the safety procedures and/or safety requirements that may be specific for that material. This material-specific information is most likely to be found:

- A. In a chemistry text or biology text as appropriate.
- B. In the Material Safety Data Sheets or Safety Data Sheets.
- C. In the vendor's catalog.
- D. On the container label

4. Authorized Occupants in Laboratories:

- A. May remove equipment from a labeled and restricted area when directed to do so by an Authorized User of that area.
- B. May help an Authorized User with his procedures if performed under the supervision of that User.
- C. May handle equipment and/or containers only if such equipment/containers have been decontaminated and removed from a restricted area by an Authorized User.
- D. May use vehicles to transport hazardous materials on campus provided the laboratory supervisor has appropriately packaged the material.
- E. Are never required to use protective equipment/clothing in a laboratory since they are not involved in the handling of hazardous materials.

5. With respect to food, drinks, chewing gum, and cosmetics, it is acceptable to:

- A. Eat and drink in rooms in which hazardous materials are neither stored or used.
- B. Store them in refrigerators that contain no hazardous materials located within a lab with hazardous materials.
- C. Keep drinking cups on a clean desk in a laboratory with hazardous materials as long as they are not used in the laboratory.
- D. Chew gum in laboratories with hazardous materials as long as the chewing gum is inserted before entering the lab.
- E. Store cosmetics in a desk declared to be in a clean area of a laboratory with hazardous materials.

6. Standard Operating Procedures (SOP's) in laboratories with hazardous materials include:
- A. Use of low-key “horse-play” to provide release from the stress of working with the hazardous materials.
 - B. Frequent washing of hands and always washing them before leaving the lab.
 - C. Performing procedures with hazardous materials generally require the use of appropriate gloves, lab coats, and safety glasses/goggles.
 - D. Generally, leaving containers with hazardous materials open during laboratory operations because it makes them more accessible and, therefore, safer to use.
 - E. Avoidance of “hand to body” contact while performing operations involving hazardous materials.
7. In order to leave an unattended process involving hazardous materials,
- A. Only the authorized user needs to review the process and approve it.
 - B. Requires a posting that identifies the procedure and provides a contact's phone number in case of emergencies.
 - C. May, in general, involve processes that release aerosols, mists or vapors as long as the procedure is set up in a functioning hood.
 - D. Requires extra care in reviewing the status of safety precautions and the condition of the equipment being used.
8. With respect to storage of materials in refrigerators,
- A. Containers with hazardous materials need to be sealed only when it can be readily achieved.
 - B. Refrigerators in which flammables/combustibles are stored should be equipped with externally mounted thermostats.
 - C. Labeling of containers is required only when storage is for long periods of time.
 - D. Dates and the name of the experimenter on labels are helpful but not necessary.

9. When a general emergency occurs, you (user) should not:

- A. Call 911 (at the earliest safe time) with clear information concerning the emergency because that responsibility rests with the laboratory supervisor.
- B. Take any low risk (requiring very little time) actions which would decrease the magnitude of the emergency.
- C. Notify others of emergency, evacuate the lab, if needed, closing the doors after verification that no one is left in the lab.
- D. Escort personnel to the nearest elevator and take it to the ground floor so that everyone may quickly leave the building.

10. If someone is seriously injured, you should:

- A. Immediately move the person to a comfortable location.
- B. Keep the person as calm and still as possible.
- C. Even if you have no first aid training, administer first aid if it appears to be needed.
- D. Call 911 for medical assistance as soon as possible.

11. Proper waste management—

- A. Requires all types of waste to be placed in the same container in order to minimize the waste volume and facilitate removal of the waste.
- B. Recommends the placement of uncontaminated sharps (materials with sharp edges or pointed ends) into the bottom of the trash containers routinely handled by housekeeping.
- C. Permits all hazardous materials used in Level I labs to be placed into the sewer as long as the materials are soluble.
- D. Requires the defacing of or removal of all labels from decontaminated containers before they are placed into normal trash.

12. It is required to:
- A. Maintain clearly readable original labels on original containers of hazardous materials if at all possible and to replace them with new labels with equivalent information when it is not possible to maintain the original labels.
 - B. Mark or label secondary containers placed in refrigerators.
 - C. Refuse shipments that are damaged and/or do not have appropriate labels.
 - D. Label or mark every container or piece of equipment being used in a restricted area on a lab bench.
13. Properly functioning fume hoods are not required:
- A. For procedures in which airborne PELS or DACS might be approached.
 - B. For procedures in which the concentration of flammable vapors would be less than 1 % of the explosion limit.
 - C. For the use of hazardous materials of unknown toxicity.
 - D. For the use of materials that give off fumes, vapors, or odors that potentially are only a nuisance or irritation to occupants of the laboratory.
14. When cryogenic materials and cold traps are used,
- A. It is very important to verify that Dewars to be used with liquid nitrogen are clean.
 - B. It is best to select liquid nitrogen for cooling flammable materials in air.
 - C. It is important to be in a well-ventilated area when handling dry ice.
 - D. Gloves and safety goggles (or preferably a face shield) should be used for protection.

15. The safe use of a compressed gas cylinder:

- A. Requires that it be secured to a secure and stable object by means of an approved strap or chain.
- B. Permits it to be rolled on its edge to a new location as long as the cylinder cap is on the cylinder.
- C. Recommends that a little bit of grease be placed on the high-pressure side of the regulator of a cylinder of oxygen because that reduces the probability of an explosion.
- D. Recommends that the reduction valve on the regulator should be bled even though the main cylinder valve is securely closed.

16. Authorized occupants and authorized users:

- A. Shall understand and comply with the relevant and applicable safety provisions specified by warning signs, labels, and/or postings.
- B. Shall know the location and use of safety equipment in the lab.
- C. Do not need to participate in emergency drills if they have done so in the previous six months.
- D. Shall be alert to unsafe conditions by performing frequent informal safety inspections and shall pursue timely correction of such conditions.

Note: Question 17 (next page) shall be answered if non exempt lasers will be in the lab and question 18 must be answered if equipment generating ionizing radiation will be present in the lab. Omit 17 if non exempt lasers will not be present. Omit 18 if no equipment generating ionizing radiation will be present in the lab.

EHS 51 Exam (Page 7 of 7)

17. Authorized Users and Authorized Occupants shall be acquainted with:

A. ANSI Z 136, location and availability of the Kansas University Laser Safety Plan (Part I and V of the LSM), exposure limits, and biological effects of laser beam exposures.

B. ANSI Z 324, location and availability of the Federal Laser Safety Plan, types of lasers, and effects of internal exposure to laser beams.

C. ANSI Z 132

D. ANSI Z 350 and location and availability of the Kansas University Laser Safety Plan (Part I and IV of the LSM), exposure limits, and biological effects of laser beams.

E. ANSI Z 136, location and availability of the Kansas University Laser Safety Plan (Part I and IV of the LSM), exposure limits, and biological effects of laser beams.

18. Authorized Users and Authorized Occupants shall be acquainted with:

A. ANSI Z 136, contents of "Radiation Safety in the Use of Radioactive Materials" by Benjamin Friesen, location and availability of the Kansas University Radiation Safety Plan (Part I and V of the LSM).

B. Contents of "Radiation Safety in the Use of Radioactive Materials" by Benjamin Friesen, location and availability of the Kansas University Radiation Safety Plan (Part I and IV of the LSM), federal/state radiation exposure limits, biological effects of low levels of exposure to ionizing radiation, and applicable Safety Data Sheets.

C. 10 CFR 35 and the location and availability of the Kansas University Radiation Safety Plan (Part I and V of the LSM).

D. 10 CFR 72 that covers biological effects, exposure limits, and all safety regulations adopted by the Kansas University Radiation Safety Plan.

E. 10 CFR 72 and ANSI Z 156.

With the submission of this exam I affirm that I completed the exam without help from any other individual:

Signed: _____ ID. _____
employee/student

The initial score for this exam was _____ points out of a possible 69 points plus _____ points. (The latter is 5 points if either 17 or 18 is answered and 10 points if both are answered.)

Signed: _____ ID _____
supervisor/instructor