



Definitions of Terms Found in the Laboratory Compliance Audit

Office of Environmental Health & Safety

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Monday - Friday, 7:30am to 5:00pm

enhs.uark.edu

Laboratory audit items are shown below in the numeric sequence on the audit form used by University's Office of Environmental Health & Safety (EHS) compliance coordinator. Each item below includes the EHS definition of the item, approved by the Hazardous Substances Committee, as well as the applicable governmental regulation (Appendix III). The laboratory audits target compliance with all regulatory agencies not just the issues raised by ADEQ. The Arkansas Department of Labor (DOL) also visits the campus on a regular basis and their focus is "Right to Know" related problems and other problems usually attributed to Occupational Safety and Health Administration (OSHA) compliance. Failure to meet these audit requirements may result in initial and daily monetary fines for the University.

1. Appropriate Hazard Warning Signs Not Present/Update Requested (NFPA, GHS, X-Ray, Laser, PHS, Compressed Gas)

All labs have printable door signs placed in a clear pocket at the entrance. Areas with specific hazards require signs indicating the specific hazard. Chemical hazards (NFPA, GHS), compressed gas, particularly hazardous substances (PHS), radioactive materials, X-ray equipment, lasers, and high magnetic fields are examples. Be sure that the door signs are completed accurately. Check the accuracy of the National Fire Protection Association (NFPA) diamond every semester. The template door sign is available on the enhs.uark.edu website under the lab safety tab.

Date Posted: 04-08-2020	Authorized Personnel Only	Room #: CHBC 222-3																								
	Name of Lab	Department: Dept. Name																								
Entrance Procedures & Facilities Instructions Keep training up to date.																										
Emergency Contact Information																										
PI Name	Phone: 575-????	Emergency - 911 Address: Building Address																								
Emergency Information/ NFPA	GHS (found on Safety Data Sheets)																									
	<table border="0"> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td>Health Hazards</td> <td>Flammables</td> <td>Toxic Materials</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td>Gases Under Pressure</td> <td>Corrosive Materials</td> <td>Harmful Materials</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td>Organic Peroxides</td> <td>Oxidizers</td> <td>Environmental Hazards</td> </tr> </table>					Health Hazards	Flammables	Toxic Materials				Gases Under Pressure	Corrosive Materials	Harmful Materials				Organic Peroxides	Oxidizers	Environmental Hazards						
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Regulatory Information	Area Hazards																									
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2. Department of Labor Poster Not Displayed in Prominent Location

OSHA posters must be displayed in the laboratory in a prominent or conspicuous place. A prominent location is one that is visible and easily accessible by all persons using and visiting the lab. The poster required is titled "Arkansas Department of Labor Notice to Employer and Employee, Act 556 of 1991, Public Employees' Chemical Right to Know Act." It is available from either the DOL or from EHS.

3. Emergency Contact Information Needed/Update Requested

A list of important phone numbers should be provided near the phones in the laboratory and/or on the inside of the laboratory door. An example of an appropriate list of phone numbers is shown in Appendix I.

4. Chemical Inventory Update Requested

All labs must update and maintain an accurate chemical inventory in SciShield in accordance with the Chemical Hygiene Plan. The inventory system used by the University is called Chemtracker in SciShield. EHS can assist with large data entries. This inventory should be updated in SciShield annually and whenever a significant change is made to the inventory.

5. Laboratory Access Control is Not Appropriate

All laboratory doors are always required to be in closed position. Access to laboratories or storage areas that contain hazardous material should be restricted to personnel with hazardous material training. Generally, this means that such spaces should have a locking door that is locked when no one is present. In addition, hazardous material should not be stored in hallways or other areas that are accessible to the general population. Tutoring or holding office hours in a laboratory is also inappropriate.



In certain areas, such as laboratories with X-ray equipment and laboratories in which controlled substances, select agents, or radioactive materials are used additional restrictions may be placed on access. It may be desirable to fix the door locks such that the doors cannot be left unlocked. This approach has proven effective in reducing theft.

6. General Laboratory Housekeeping is Unsatisfactory

General housekeeping should be actively maintained, including disposal of garbage and unnecessary equipment. An organized work environment is vital when working with hazardous materials. Proper sanitation should be maintained. Sinks full of glassware for extended periods and excessive reagent containers on the benches are inappropriate. Laboratory benches should not be littered with spilled reagents or samples. Clutter can lead to falls, chemical spills, exposures and can block emergency exits. Dirty floors and counter tops can hide contamination and contribute to overall exposure. Keep all work areas clear and support custodial staff by managing trash properly.

7. Trip Hazards Identified

Aisles and hallways need to be free of items that impede the egress minimum of 36 inches. Store all materials in cabinets, on shelves and out of paths of travel. Position equipment to prevent wires/tubing from running across an aisle. If wiring must run across an aisle suspend from the ceiling or tape/cover on the floor to reduce the possibility of trips/falls.

8. Egress Issues

Aisle space should be at least 3 feet wide, to allow unobstructed access to and from the facility. The doorways and walkways between benches in the laboratory or storage space should be clear from obstacles. Excess trash and refuse should be properly surplused, disposed of or recycled in a timely fashion.

9. Fire Doors Kept Open When Not in Actual Use

All doors to corridors must remain closed unless they are attached to hold open devices connected to a fire detection/suppression system (magnetic hold-opens). Door stops of any kind (flip-ups, wedges, blocks) are prohibited on fire doors.

10. Items Stored Less than 18 inches from Ceiling or Sprinkler Head

Storage of combustible materials (papers, books, etc.) and/or miscellaneous objects within 18 inches of the ceiling is not permitted. Fire sprinkler heads must not be obstructed.

11. Aisle, Egress, Fire Alarm Pull Stations, Fire Extinguishers, or Sprinklers Obstructed

Laboratory occupants must always have an unobstructed pathway to allow rapid egress in the event of an emergency. Emergency equipment such as fire extinguishers, fire alarm pull stations and fire suppression sprinkler heads must always be unobstructed to permit access and allow proper operation.

12. Fire Extinguishers Not Appropriately Inspected, Charged, Mounted, or Labeled

Laboratories using hazardous materials must have good serviceable fire extinguishers within maximum travel distance of 75 feet. Fire extinguishers outside the lab are acceptable if the travel distance is less than 75 feet. Inspection tags must be attached and show an inspection within the last 12 months. The extinguisher should bear a tag showing it has been inspected at approximately 30 days intervals and have a pressure gauge indicator within the operable range.

For fire extinguisher service, refilling after use or missed inspections call the help desk at Facilities Management at 575-5050.

13. First Aid Kits Not Available/Appropriate

Class A first aid kits that conform to ANSI-Z308.1-2015 are required at a minimum. All first-aid kits must be placed in a readily accessible location or the location clearly indicated with signs. First aid kits may be shared between adjacent laboratories if there are no lockable doors between the laboratories. First-aid kits need not be placed in auxiliary rooms such as instrument rooms, cold rooms and warm rooms but signs giving directions to the nearest available first-aid kit must be present. See Appendix III for more information.

14. Calcium Gluconate is Expired

Laboratories that use hydrofluoric acid must have a first aid kit that contains unexpired calcium gluconate.

15. Eye/Face Wash Concerns Identified

Eye/Face wash stations must be clearly labeled and these areas clear from obstruction (there should be 6" of clearance around eyewash and no path obstruction). If units are in hallways, the lab door poses as an obstruction unless it has a push paddle or emergency bar type opener and swings in the direction of the equipment. Always keep eye/face wash caps in place to prevent contamination from entering the unit. Eye/Face wash stations must be tested weekly with testing logged. Flow should be adequate. Unit should be able to operate hands free.

16. Eye/Face Wash/Safety Shower Concerns Identified

Eye/Face Wash/Safety Shower stations must be clearly labeled and these areas kept clear from obstruction (there should be 6" of clearance around eyewash and no path obstruction and there should be 1.5 feet of clearance from the center of the showers water stream to allow for effective body coverage). Always keep eye/face wash caps in place to prevent contamination from entering the unit. Eye/Face Wash and Safety Shower stations must be tested weekly by the lab, with testing logged. Flow should be adequate. Unit should be able to operate hands free. Equipment training should be recorded for all lab members.

17. Refrigerator is Not Appropriately Labeled/Used

Label refrigerators used for chemical storage with a "No Food Storage" sticker. Label refrigerators that are not approved flammable storage units with a "No Flammable Storage/No Food Storage" sticker. All containers stored within the refrigerator should be tightly capped to keep vapors from interacting with each other. All containers stored in the refrigerator must be properly labeled. Do not abbreviate or use structures to describe the chemical name. Never store peroxide formers (i.e., ether) in a refrigerator.


18. Evidence of Eating and Drinking

Food and drink are strictly prohibited from all labs. Disposal of food items and wrappers in lab trashcans is prohibited. Neither food nor drink may be consumed or stored (unless such items are laboratory samples) in a laboratory or storage area containing hazardous materials. No indication that food or drink was consumed in the laboratory should be evident, i.e., empty food containers on the benches or in the trash receptacles. Any refrigerator used to store hazardous materials or samples should be clearly labeled "No Food Storage" or similarly posted.

19. SDS Not Readily Available or Issues Identified

Laboratories using hazardous materials must have safety data sheets (SDS) for hazardous chemicals and ensure they are readily accessible to laboratory employees/students in their work areas. The location of the SDS must be highly visible and signed. EHS can provide location signs. The paper copies of the manufacturers specific SDS should include all compressed gases present in the lab. The SDS should be placed in a labeled binder with alphabetized dividers. Websites (SciShield) or electronic copies will serve as needed backup.




Electronic forms must be kept current and readily available to all personnel. If a website or electronic version is used, the address/location shall be prominently displayed in the laboratory at the computer used to access the information. The University's policy regarding SDS in the workplace is available on the EHS website for you to review and in Appendix II. SDS should be readily available to all members of the lab, for awareness and in the event of an emergency.



Place this sign in the laboratory/shop location of the SDS binder. The binder should contain paper copies of the manufacturers Safety Data Sheets.

If the SDS is not available, access the SDS through BioRAFT (<https://uark.bioraft.com>) using your UARK login and password and select the **SDS Search** function.

In case of emergency, contact the EHS office or UAPD for assistance.
EHS: 575-5448 UAPD: 575-2222



20. Chemical Spill Kit Unavailable or Issues Identified

Emergency spill kit supplies should be available in the lab in the event of small scale spills and emergencies. Each laboratory must have access to a spill kit containing, at a minimum, absorbents, personal protective equipment, and clean up materials. These kits can be purchased from VWR, Fisher, NewPig and other chemical and laboratory suppliers, or can be assembled from available materials. The kits must be strategically placed and/or the location signed so that they are readily accessible to all personnel working in the laboratory. All personnel must be advised of their location and trained in their use. Larger volume incidents should be reported to EHS (if no exposures and contained) for assistance and possible exposure monitoring. Any spills where there are suspected adverse exposures, or they are not contained should be reported to 911.

21. Vacuum/ Dewar Flask Not Taped or Meshed

To reduce the risk of flying debris caused by an implosion, use extra care with Dewar flasks and other evacuated glass apparatus; shield or wrap them to contain chemicals and fragments. Glass vacuum containers, such as desiccators and flasks, should be wrapped with tape to prevent glass from flying in the event of an implosion or explosion.

22. Unsafe Cryogen Use

Cryogenics (i.e., liquid nitrogen, dry ice, etc.) must be used with proper safety controls. Only use liquid nitrogen and dry ice in well-ventilated spaces. Use gloves approved for cryogen use. Use approved tongs to retrieve samples from liquid nitrogen to prevent burns. Lab apron and splash-resistant goggles may be required.

23. Sharps Containers Not Present or are full/overflowing

Laboratories using sharps are required to have a puncture proof container for the disposal of sharps and syringes. Such a container is required in laboratories using sharps (needles, lancets, etc.) of any kind, whether or not there is a risk of exposure to blood or body fluids. Sharps containers are available from EHS. When the container is full (with appropriate head space), contact EHS for pickup and disposal.

24. Broken Glass Containers are Not Present, are Full, or Missing Lid/Liner

Broken glass should be disposed of in a heavy cardboard box designated for that purpose. A plastic liner (trash bag) should be placed in the box to prevent the box from getting wet and a lid kept on the box when not in use. It is not necessary to use broken glass boxes sold by laboratory safety supply houses. When the box is full, tape it shut and place it in the trash. In most campus buildings, this job is outside of the custodial services and must be done by laboratory personnel.

25. Electrical Panels and Switches Covers are Not in Place or Breakers are Not Labeled

State buildings codes and DOL require that covers on switches, receptacles and electrical panels be in place and that all breakers are labeled. If such deficiencies are noted, they should be reported promptly to Facilities Management. Sinks are common in most laboratories and hard wired GFI receptacles are required for all outlets with 6 ft of a sink.

26. Electrical Safety Issues Identified

Cords and cables: The use of extension cords as permanent wiring is prohibited, as is overloading outlets and chaining power strips together. Wires, cords and plugs must be in good condition; frayed cords or cracked insulation near plugs must be repaired or taken out of service immediately. Some older equipment may not be suitable for use in wet labs, particularly if it does not have a polarized or grounded (three-prong) plug.

Working spaces, walkways, and similar locations shall be kept clear of cords to eliminate hazards to occupants. Cords shall not be fastened with staples, hung from nails, or suspended by wire. Surge protectors should be elevated off surfaces and wet benches.

27. Drains and Sinks are Not Cleaned, Unobstructed, or Appropriately Labeled

Laboratory sinks should be labeled to remind persons to refrain from disposing of chemicals down the sink. Laboratory sinks should be clean and unobstructed, including glassware. The sink shown is unacceptable and will lead to accidents.



NOTICE

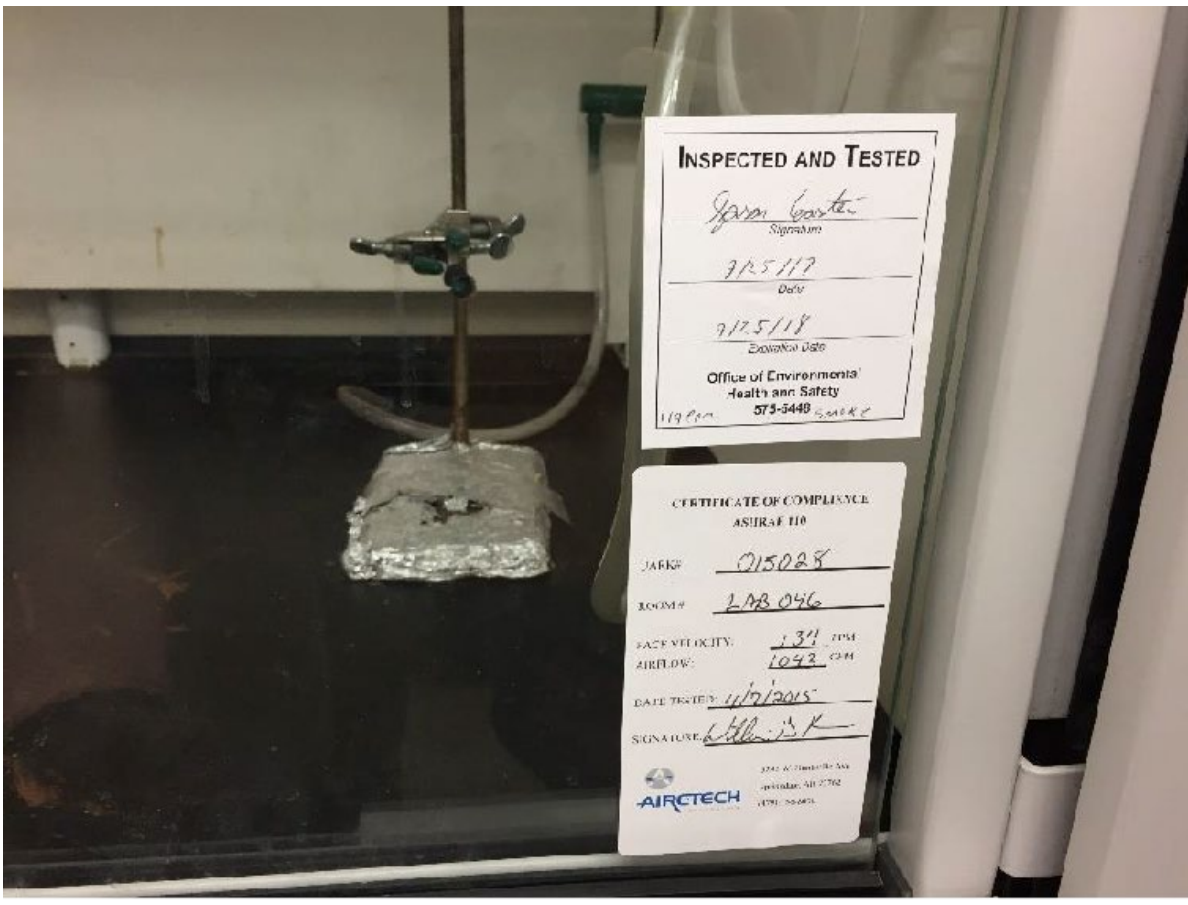
**DO NOT DISPOSE OF OR
POUR ANY MATERIAL
OR CHEMICAL DOWN
ANY DRAIN**

Sinks used for radiological work must be labeled as such and in accordance with the requirements set forth in the University's Radiation Safety Manual.

28. Chemical Fume Hood-Low Flow Warning

The face velocity for chemical fume hoods should be adequate for the materials used. Generally, face velocities are acceptable between 80 and 120 feet per minute (FPM). Some hoods have a local alarm to alert workers of low flow conditions and direct reading velocity gauges. All fumes hoods must have some device indicating airflow. This need not be a quantitative device and can be as simple as a light piece of paper or tape attached to the sash that indicates that air is flowing into the hood.

29. Chemical Fume Hood-Out of Service



Report fume hood repairs or damage to facilities and EHS immediately and stop using your hood if you hear an alarm or suspect a malfunction. Hood sash should be present and functional. No unapproved modifications should have been performed to the hood.

30. Chemical Fume Hood Inspection-Past Due

Chemical fume hoods must be inspected and tested by Facility management annually, to ensure proper function. Following inspection and testing, an EHS sticker should be posted with the date of the most recent test. Every 5 years the hood should be ASHRAE certified. An ASHRAE certification sticker should also be posted on the hood.

31. Chemical Fume Hood Issues Identified

All fume hoods must have some device indicating airflow. This need not be a quantitative device and can be as simple as a light piece of paper or tape attached to the sash that indicates that air is flowing into the hood. Excessive chemical containers or equipment should not be stored in the hood,

particularly near the back of the hooded enclosure. These can impede the flow of air through the hood and can compromise the function of the fume hood. Below is an example of inappropriate use of fume hood.



Fume hoods are not meant to be storage devices (unless specifically designated as such). Storage of incompatible materials and/or hazardous wastes in fume hoods has caused numerous accidents, many of which have caused death or injury. Do not let organic chemicals evaporate in the hood, use a proper waste bottle. Do not leave uncapped bottles of chemicals or waste in a hood. Although individual manufacturers may vary the sash of most hoods must be between 6 and 18 inches for proper operation. Fume hood sashes shall not be removed by lab operator. Fume Hoods will be tested once a year by Facilities Management and some form of tag will be provided to indicate the test date and results.

32. Chemical Fume Hood Not Appropriate for Perchloric Acid Use

Perchloric acid above 72 percent concentrated or any perchloric acid being heated must be done in a hood designed for perchloric acid use.

33. Compressed Gases Not Secured

Compressed gas cylinders must be secured from tipping over at all times. All cylinders of compressed gas, including empties, must be secured to a lab bench, wall or other fixed structure by a strap, chain, or weighted boot, in the middle third of the tank to prevent falling and possible damage to the regulator valve. Toxic compressed gases must be stored in ventilated enclosures (vented cabinets or specially designed enclosures).

34. Compressed Gases Not Properly Capped While Stored

Compressed gases must be properly capped while stored. Cylinder regulators must be removed when not in use and protective shipping caps must be replaced. Store only cylinders needed for immediate use in the lab; excess inventory should be stored in loading dock cages or ordered as needed.

35. Proper PPE is Not Available/Worn or Issues Identified

Personal protective equipment must be available, properly used/stored and in good working condition. Chemical use areas must keep a selection of appropriate gloves, safety glasses, splash goggles, aprons, and lab coats readily available as needed. The work in the lab (type of chemicals and volumes) will dictate the protective equipment needs. Glove permeation and selectin guides should be consulted.

36. PPE-Proper Gloves Not Worn and /or Available

Proper gloves should be worn while working with hazardous materials. Researchers should be educated on specific glove choices and chemical compatibility. Never wear gloves out of the laboratory and change often.

37. PPE-Safety Glasses Not Worn

Safety glasses, with side shields, should be worn at all times when in a laboratory setting. Specific research procedures may present the need to wear a splash shield in addition to safety glasses.

38. PPE-Shorts, Impractical Clothing and/or Open Toe Shoes Worn in Lab

Shorts, short skirts, and/or open-toe sandals are not condoned in laboratories. Clothing should cover as much of the body as practical. Clothing that protects the individual's body from the neck to ankle relatively loose fitting is required. Tights and leggings (including yoga and running tights) are not permitted in the lab. Many chemicals can melt the tights, and tights can also hold chemicals against the skin. Long pants and closed toe shoes will minimize harm to the legs and feet when select hazards are spilled or splashed below the lower hem of the lab coat.



39. Hazardous Wastes Not Being Appropriately Labeled

All hazardous waste in the laboratory or storage area must be clearly labeled with the EHS provided Hazardous Waste labels. The labels must be filled in with the contents and percentages, some indication of the hazard (toxic, corrosive, flammable, etc.) and generator's (PIs) information. Contact EHS if labels are needed.

40. Hazardous Waste Satellite Locations Not Identified With Appropriate Signage

Each laboratory generating hazardous waste must designate an appropriate area as a satellite accumulation area and must label the area as such. Waste accumulation must be restricted and limited to these areas, and not stored in any other area in the laboratory. Secondary containment for waste containers must be present in the area. The location of satellite accumulation area must not be changed without prior notification to EHS and approval of the Chemical Hygiene Officer. Waste accumulation areas in laboratories are considered to be satellite accumulation areas of the University's 90-day hazardous waste accumulation and storage area, and are strictly regulated by the Arkansas Department of Environmental Quality (ADEQ)

41. Hazardous Wastes and Materials Not Stored Separately

Hazardous wastes and materials must be stored in separate locations. The laws governing the use of hazardous materials and the storage of hazardous wastes are different and require separate storage areas.

42. Hazardous Wastes Issues Identified

Each laboratory generating hazardous waste must meet the regulations outlined by ADEQ such as labeling and storage, proper container type/capping, and processing. Waste should be segregated from other materials in a designated location, labeled with EHS labels, secondary containment for waste containers must be present in the area, funnels should not be left in storage containers, appropriate head space should be present in containers and container material should be compatible with the waste being stored.

43. Chemical Labeling Inadequate or Missing

Chemical labeling must be visible and intact on all vessels containing chemicals. All chemicals in the laboratory or storage area must be clearly labeled with the contents and some indication of the hazard (toxic, corrosive, flammable, etc). Chemical names or standard abbreviations are required. Formulas or in-house abbreviations or acronyms are not acceptable. Labels must be applied to all temporary containers if the laboratory personnel are not in immediate control of the container.

44. Expired Peroxide Forming Chemicals

Certain chemicals can form peroxides after prolonged storage, making the bottle potentially shock sensitive. Record the date on the label when peroxide formers arrive in your lab. If you are unsure of the stability of any of these containers DO NOT OPEN THEM - contact EHS immediately.

45. Undated Peroxide Formers Identified

Undated peroxide formers have been identified. Certain chemicals can form peroxides after prolonged storage, making the bottle potentially shock sensitive. Record the date on the label when peroxide formers

arrive in your lab. If you are unsure of the stability of any of these containers DO NOT OPEN THEM - contact EHS immediately.

46. Chemical Storage Cabinet Not Properly Labeled

Each cabinet should be labeled with the corresponding chemical stored.

47. Chemical Storage- Secondary Containment Needed

Liquids must be stored in secondary containment. Some cabinets have sumps for this purpose or a separate bin may be necessary. Hazardous waste containers must also be placed in secondary containment containers, such as plastic tubs or equivalent. In the event of a broken container, the tubs will prevent the contents from dispersing or going down a drain.

48. Laboratory Chemicals and Reagents Not Properly Stored

Laboratories using hazardous materials must keep incompatible materials from being placed in the same container/cabinet. At a minimum, acids, bases and organic solvents should be stored separately. Use a tray or basin (secondary containment) under concentrated acids and bases or chemicals of different hazard classes.

49. Improper Storage of Corrosive Chemicals

Store corrosive chemicals in a corrosive storage cabinet or in secondary containment. Do not store corrosive chemicals directly on metal or wood surfaces. Corrosive chemicals must be segregated from incompatible chemicals.

50. Storage Cabinet/Shelf Not Appropriate for Chemicals Being Stored

Cabinets should be compatible for the materials stored (e.g., corrosives in a corrosive cabinet). Each cabinet should be labeled with the corresponding chemical stored. Large bottles and bottles containing toxic, flammable, or corrosive liquids should be stored on shelves below eye level (approximately 5 feet).

51. Flammable Liquids are Not Stored in Flammables Liquids Cabinet

Flammable liquids must be stored in appropriately designed flammable liquid cabinets. Reagent bottles should be returned to the cabinets in a timely manner and should not accumulate on the bench top. Bulk storage of solvents should be done in areas specifically designed for this function. EHS personnel should be consulted if large quantities of flammable liquids are to be stored.

52. Chemical Storage/Vacuum Pump Cabinet Door Not Latching/Issues Identified

Chemical storage cabinet doors must be kept closed to afford proper storage and fire protection. All cabinets used for storing chemicals or operating vacuum pumps must be functional and in good condition.

53. No Bonding/Grounding When Dispensing Flammable Liquids

Conductive containers must be bonded and connected to earth ground when transferring or dispensing Class 1 flammable liquids from containers that are larger than one gallon or four liters in size.

54. Chemical Containers Not Properly Capped

All chemicals, when not in use, should be fully capped to prevent spills and exposures. Makeshift caps are not condoned. Use a proper vessel and closure for every chemical.

55. Particularly Hazardous Substances Standard Operating Procedures (SOPs) are Not Available

Supplementary information in the form of "Standard Operating Procedures" (SOP's) should be maintained in each laboratory to cover material not addressed in the University plan. For example, SOP's for X-ray generators, high power lasers, and the handling of select agents or controlled substances should be available in the laboratory when appropriate. A SOP that includes use of a Particularly Hazardous Substance requires prior approval by the Hazardous Substances Committee.

56. Training Delinquencies are Showing in SciShield

EHS provides safety training through SciShield as outlined in the Universities Chemical Hygiene Plan. Research faculty, students and staff working with chemicals must complete training which is determined by the hazards present and the job activities entered for each member in SciShield. All laboratory personnel should be trained in accordance with their job activities. Go to <https://uark.scishield.com/> to view and complete training.

57. Unapproved Solitary Work

No solitary work is permitted in the Laboratory on procedures involving hazardous chemicals or other physical hazards without formal written permission by the PI/Laboratory Manager to work unsupervised. Undergraduates must be supervised in the lab at all times by a Lead Investigator, PI/Laboratory Manager, or experienced graduate student assigned by the PI/Laboratory Manager or have formal written permission by the PI/Laboratory Manager to work unsupervised.

Appendix I

Emergency Phone Numbers

- Medical Emergency/Ambulance – **911**
- Fayetteville Police Department – **911**
- Fayetteville Fire Department – **911**
- Hazardous Materials Emergency

Response Team – **911**

- Regional Hazardous Materials Response Team – **911**

- U of A Police Department – **479-575-2222**
- U of A Health Center – **479-575-4451**
- Poison Control Center – 1-800-3-POISON (1-800-376-4766)
- Rape Crisis Hotline – **479-443-2000**
- U of A Environmental Health and Safety

– **479-575-5448** (During Work Hours) or
479-575-2222 or 911 (After Work Hours)

Appendix II

Safety Data Sheet (SDS) Information

What is an SDS, formerly known as MSDS, and how are they made available?

Safety Data Sheets (SDS) provide detailed health and safety related information for specific chemicals and compounds. The SDS serves two main purposes 1) to meet federal and state chemical right to know laws enabling safe use and 2) to ensure information is readily available during an emergency (e.g., person has been exposed and needs treatment).

In order to comply with regulations governing employee "chemical right to know", all employees and users of hazardous chemicals MUST maintain in the workplace copies of the required SDS for each hazardous chemical and shall ensure they are readily accessible during each work shift to employees/users when they are in their work areas(s). Electronic access and other alternatives to maintaining paper copies of the SDS are permitted as long as no barriers to immediate employee/user access in each workplace are created by such options and there is a backup method to obtain access to SDSs when electronic access is not available.

The preferred, and most effective way to meet the chemical right to know requirements is to have paper copies of manufacturer-specific SDSs located where the hazardous chemicals are used (i.e., in the work area). In a University setting, it is recognized this may not be practicable in all cases. For those cases, the University Enterprise Environmental Health and Safety (EHS) information management (IM) system (SciShield) provides access to an SDS service provider that houses approximately 1 million manufacturer-specific SDSs. When it is not practicable, or feasible, to maintain paper copies in the workplace, employees/users must be provided a means in the work area to access the SDSs and the instructions for access must be clearly visible. At times when this access is not available, employees/users needing an SDS should contact the EHS office (during normal work hours call 479-575-5448) or after hours contact University Police (479-575-2222) and asked to be connected with an EHS representative.

Copies of the Arkansas regulations governing employee "chemical right to know" and SDSs may be obtained from EHS by calling (479) 575-5448 or stopping by our offices, located in the Facilities Management complex.

How do I get an SDS?

- 1. Locate the SDS Binder in the Signed Location of the Laboratory/Shop (note: not all laboratories may have paper copies in the work area, but it is always encouraged to minimally have paper copies of SDSs for Particularly Hazardous Substances available in the work area).**

Your supervisor should have a manufacturer-specific SDS for any hazardous chemical you are required to work with or use. These should be kept in a binder that is available to employees at the work site/area for immediate access.

- 2. Access Manufacturer-specific SDSs through SciShield**

The University EHS IM system (SciShield) maintains access to manufacturer-specific SDSs and they are available at the following site: <https://uark.scishield.com/>

3. Contact EHS

EHS maintains an extensive library of SDSs. All students, faculty and staff are invited to search these volumes for any required SDS. Copies may be made free of charge. Please see the disclaimer below. EHS is located in Facilities Management at:

521 S. Razorback Road
Fayetteville, AR 72701

After normal work hours, SDS access can be obtained by contacting University police (479- 575-2222) and requesting to be put in contact with an EHS representative.

4. Develop your own SDS

Write your own SDS for unique research-produced compounds or mixtures. The user of a chemical or compound DOES NOT have to rely upon information contained in an SDS obtained from any of the above sources. Users can develop their own SDS from scratch. In fact, any generator of "noncommercial" hazardous chemicals or compounds (but NOT hazardous waste) generated as a product of campus research or process, should develop a unique SDS for those products. Guidelines for writing SDSs can be found in the Code of Federal Regulations (29 CFR 1910.1200(g)). Please call EHS for further information on locally developing SDS.

5. Other ways to obtain an SDS

Ask the manufacturer. It is the responsibility of the chemical manufacturers to ensure that distributors and purchasers are provided with the appropriate SDS with their initial shipment and with the first shipment after an SDS is updated. When a specific request is made, many manufacturers will willingly send a SDS directly to the chemical user, regardless of how many shipments have been made. If you are ordering material directly from the manufacturer, the best time to request the SDS is when the material is ordered.

If all the above methods fail and immediate access is needed, perform an internet search. Search on "manufacturer + chemical name + SDS" or "chemical name + SDS" or "CAS number + SDS" will turn up the correct result 99% of the time. If the search proves unsuccessful, a number of internet options remain. Searching on "SDS" will reveal that there are numerous SDS providers on the internet. Some providers charge for their service while others provide it free of charge.

Disclaimer: Environmental Health and Safety cannot confirm the accuracy or applicability of any SDS within the EHS library, or SDSs obtained from any other source. SDS are manufacturer specific. A SDS developed by one manufacturer may or may not be an appropriate substitute for the same chemical produced by a different manufacturer. Due to the huge number of different chemicals used at the university, it is possible that some of the SDSs in the library may not be the current revision.

Appendix III

Key Regulatory References, Policy Requirements, and EHS Guidance Requirements

The following describe the regulatory literature governing items on the laboratory audit.

Department of Labor Poster Displayed in Prominent Location

The poster required is titled "Arkansas Department of Labor Notice to Employer and Employee, Arkansas Act 556 of 1991, Public Employees' Chemical Right To Know Act." It is available in either the lab's Departmental Office or from the University Office of Environmental Health & Safety.

Appropriate Hazard Warning Signs Not Present/Update Requested (NFPA, GHS, X-Ray, Laser, PHS, Compressed Gas)

Arkansas Fire Prevention Code: based on the International Building Code by the International Code Council, Chapter 10 – Means of Egress, part 1003.2.10 and all applicable University of Arkansas Policy and Procedures.

NFPA 704

Emergency Contact Information

APC&E Regulation #23, Section 262- Standard Applicable to Generators of Hazardous Waste, Subsection C – Pre- Transport Requirements, 262.30 - 262.36 and all applicable University of Arkansas Policy and Procedures.

Chemical Inventory

NFPA 704

Laboratory Access Control Appropriate

APC&E Regulation #23, Section 265 – Interim Status Standards of Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, Subsection B – General Facility Standards, 265.14 – Security, and all applicable University of Arkansas Policy and Procedures.

Chemical Hygiene Plan Training Expired

OSHA 29 CFR 1910.1450 App A and 1910.119 Laboratory Safety Standard

General laboratory Housekeeping and Work Areas Properly Illuminated

Standard #29 CFR (Code of Federal Regulations), Part 1910 Occupational Safety and Health Standards, Subpart J – General Environmental Controls, standard 1910.141 Sanitation, and all applicable University of Arkansas Policy and Procedures.

APC&E Regulation #23, Hazardous Waste Management, Section 264 – Standard for owners and Operators of Hazardous Waste Treatment, Storage, and Disposal facilities, Subsection C – Preparedness and Prevention, 264.35 – Required Aisle Space, and all applicable University of Arkansas Policy and Procedures

Work Areas Adequately Illuminated:

Standard #29 CFR (Code of Federal Regulations), Part 1910 – Occupational Safety and Health Standards, Subpart R – Special Industries, standard 1910.261(a)(2), and all references to American National Standard Practice for Industrial Lighting – A11.1 – 1965 (R-1970), and all applicable University of Arkansas Policy and Procedures.

Fire Extinguishers Inspected, Charged, Mounted, and Appropriately Labeled

National Fire Codes as compiled by the National Fire Protection Association, NFPA 10 – Standard for Portable Fire Extinguishers, Chapters 5 and 6, and all applicable University of Arkansas Policy and Procedures.

First-aid Kit Available and Adequately Stocked

Standard #29 CFR (Code of Federal Regulations), Part 1910 - Occupational Safety and Health Standards, Subpart K – Medical and First Aid, standard 1910.151 – Medical Services and First Aid, Appendix A, and all applicable University of Arkansas Policy and Procedures

OSHA Regulation Standard 1910.151.b requires "Adequate first aid supplies shall be readily available." The contents must at least be able to treat minor injuries that occur in the workplace. However, there are no specific requirements on the contents.

The term “readily available” is not defined in the standard. However, responding in a timely manner can mean the difference between life and death. Therefore, the person who has been trained to render first aid must be able to quickly access the first aid supplies in order to effectively provide injured or ill employees with first aid attention. The first aid supplies should be located in an easily accessible area, and the first aid provider generally should not have to travel through several doorways, hallways and/or stairways to access first aid supplies.

American National Standards Institute (ANSI) compliant first aid kit requires a minimum fill according to standard ANSI Z308.1-2015. Even though this requirement is not yet mandatory in every state, it is advisable to find a kit that already meets these standards.

Class A kits that conform to ANSI-Z308.1-2015 and contain the following items are the required minimum. Class A kits are designed to deal with most common workplace injuries, such as minor cuts, abrasions and sprains.

Required Supplies in ANSI/ISEA Z308.1-2015 Class A First Aid Kits:

- **16 - Adhesive Bandages, 1" x 3"**
- **1 - Adhesive Tape 2.5 yd**
- **10 - Antibiotic Treatment Application, 1/57 oz**
- **10 - Antiseptic Applications 1/57 oz**
- **1 - Breathing Barrier**
- **1 - Burn Dressing, gel soaked, 4" x 4"**
- **10 - Burn Treatment, 1/32 oz**

- **1 - Cold Pack**
- **2 - Eye Covering**
- **1 - Eye Wash, 1 oz.**
- **1 - First Aid Guide**
- **6 - Hand Sanitizer, 0.9g**
- **2 - Pair Exam Gloves**
- **1 - Roller Bandage, 2" x 4 yds**
- **1 - Scissors**
- **2 - Sterile Pad, 3" x 3"**
- **2 - Trauma Pad, 5" x 9"**
- **1 - Triangular Bandage, 40" x 40" x 56"**

Such kits are available from Wal-Mart and other retailers and need not be purchased from a laboratory supplier. All first-aid kits must be placed in a readily accessible location or the location clearly indicated with signs. Each laboratory must contain at least the above minimum first-aid kit. First aid kits may be shared between adjacent laboratories if there are no lockable doors between the laboratories. First-aid kits need not be placed in auxiliary rooms such as instrument rooms, cold rooms and warm rooms but signs giving directions to the nearest available first-aid kit must be present.

Eye/Face Wash/Safety Shower

OSHA 29 CFR 1910.151

Where the eyes or body of any person may be exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body shall be provided within the work area for immediate use.

ANSI Z358.1

This national consensus standard provides details on emergency eye/face wash and shower equipment. The basic requirement is to have emergency showers and eye/face washes within 10 seconds travel distance of a hazard.

(OSHA references the ANSI standard as a guideline for interpretation of the OSHA standard)

Refrigerator Properly Labeled (e.g. No Food, No Solvents) and Spark-proof where Appropriate

Fire Protection for Laboratories using Chemical Code, NFPA-45, the Flammable and Combustible Liquids Code, NFPA-30 and the National Electric Code, NFPA-70.

No Food or Drink or Evidence of Food or Drink in Laboratory

Standard #29 CFR (Code of Federal Regulations), Part 1910
Occupational Safety and Health Standards, Subpart J – General Environmental Controls, standard 1910.141

June 16, 2023

- Sanitation, and all applicable University of Arkansas Policy and Procedures.

SDS Readily Available

Standard #29 CFR (Code of Federal Regulations), Part 1910 – Occupational Safety and Health Standards, Subpart Z – Toxic and Hazardous Substances, standard 1910.1200 – Hazard Communication, and all applicable University of Arkansas Policy and Procedures

Hazardous Material Spill-kit Available

40 CFR 260 - Hazardous Waste Management System: General

OSHA Law CFR 1910.00-1910.180,
Subtitle HM-126.F.

Sharps and Broken Glass Containers Present

OSHA 29 CFR 1910.1030 Bloodborne Pathogens Standard.

Electrical Panels and Switch Covers in Place and Breakers Labeled. No Frayed/ Cracked Electrical Cords

State buildings codes and Arkansas Department of Labor require that these covers be in place and that breakers are labeled. If such deficiencies are noted, they should be promptly reported to Facilities Management.

Federal OSHA Regulation Standard 1926.416(b) and Arkansas Department of Labor state restrictions on use of electrical cords.

Equipment Guards in Place. Vacuum Ballasts/Dewar Flasks Taped or Meshed

Standard #29 CFR (Code of Federal Regulations), Part 1910 Occupational Safety and Health Standards, Subpart O – Machinery and Machine Guarding, standard 1910.212 General requirements for all Machines, and all applicable University of Arkansas Policy and Procedures.

29 CFR 1910.1450

Drains and Sinks Clean, Unobstructed, and Appropriately Labeled (if required)

University of Arkansas Policy and Procedures EPA 265.170

Fume Hood Issues and Functionality

OSHA 1910.1450 Appendix A

National Research Council Prudent Practices in the Laboratory, Handling and Disposal of Chemicals, NFPA (National Fire and Protection Agency)

ANSI/AIHA (American National Standards Institute / American Industrial Hygiene Association)

N.I.H. (National Institutes of Health) National Institutes of Health Fume Hood Containment Testing

NIOSH (National Institute for Occupational Safety and Health)

ACGIH (American Conference of Governmental Hygienists Industrial Ventilation A Manual of Recommended Practice

Gas Cylinders Secured

OSHA 29 CFR 1910.101

NFPA 30

NFPA 55

Personal Protective Equipment Available and in Good Working Condition

Standard #29 CFR (Code of Federal Regulations), Part 1910
Occupational Safety and Health Standards, Subpart I – Personal Protective Equipment, standard 1910.132
General Requirements, and all applicable University of Arkansas Policy and Procedures.

Hazardous Waste Items: Waste Containers Closed and in Good Condition and Properly Labeled

APC&E Regulation #23, Section 265-Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, Subsection I – Use and Management of Containers, 265.170 – 265.178 and all applicable University of Arkansas Policy and Procedures.

HW Signage – Reg 23 Section 262.34 (c) (1) (ii) states the generator (UofA) “marks his containers either with the words Hazardous Waste or other words that identify”.

Keep closed Signage – CAO LIS 05-143 – Order item #4 states “the UofA will post signs reminding workers to close container in satellite accumulation area(s)”. In response to this consent administrative order item we agreed to use the wording on the signs you see in labs: Hazardous Waste Accumulation Area, All containers must be Labeled, Dated, Closed.

Hazardous Waste Properly Labeled: APC&E Regulation #23, Section 262- Standard Applicable to Generators of Hazardous Waste, Subsection C – Pre Transport Requirements, 262.30 - 262.36 and all applicable University of Arkansas Policy and Procedures.

Satellite Accumulation Area is Identified with Signage; Hazardous Waste and Reagents cannot be Stored Together

Labs typically operate under the satellite accumulation area (SAA) regulations of 40 CFR 262.34(c). Also see APC&EC Reg. 23

Laboratory Reagents Properly Stored, Chemical Storage Cabinets Labeled Properly

APC&E Regulation #23, Section 265-Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, Subsection I – Use and Management of Containers, 265.170 – 265.178 including Appendix V - Examples of Incompatible Materials and all applicable University of Arkansas Policy and Procedures.

Working Reagents Properly Labeled. Peroxides Display Received and Open Date

Arkansas “Right to Know Act” Arkansas Act 556 of 1991 and all applicable University of Arkansas Policy and Procedures

29 CFR 1910.1200

CCOHS, “OSHA Answers: How Do I Work Safely with Organic Peroxides?”,
<https://www.ccohs.ca/oshanswers/prevention/orgperox.html>

Flammable Chemicals Stored in Flammable Liquids Cabinet. Total Solvents Outside < 25 Gallons

APC&E Regulation #23, Section 262- Standard Applicable to Generators of Hazardous Waste,
Subsection C – Pre Transport Requirements, 262.30 - 262.36 and all applicable University of Arkansas
Policy and Procedures.

OSHA 29 CFR 1910.106

NFPA 30

Reagents are Stored in Proper Container

IFC 2012