

Definition of Terms Found on the Laboratory Compliance Audit Check Sheets

As approved by the Toxic
Substances Committee on January
19, 2006

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

1. Laboratory Access Control Appropriate

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 and a key is required for entry. This approach has proven effective in reducing theft of balances.

2. Arkansas Dept of Labor Poster Displayed in Prominent Location

Occupational Safety and Health Act 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 in either the lab’s Departmental Office or from the University Office of Environmental Health & Safety.

3. Emergency Phone Numbers Posted

A list of important phones numbers should be provided near the phones in the laboratory and immediately outside of the laboratory. An example of an appropriate list of phone numbers is shown in Appendix I.

4. Specific Hazard Warnings Posted

Areas with specific hazards may require signs indicating the specific hazard. Radioactive materials, X-ray equipment, lasers, high magnetic fields are examples.

5. Fire Extinguishers Inspected, Charged, Mounted and Appropriately Labeled

Laboratories using hazardous materials must have good serviceable fire extinguishers within maximum travel distance of 75 feet. Fire extinguishers out side 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 also have a pressure gage 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.

6. First-Aid Kit Available and Adequately Stocked

No specific first-aid kits are described in the regulatory literature. Kits that conform to ANSI-Z308.1-1998 and contain the following items are the required minimum.

- (1) 1"x3" Adhesive plastic bandages, 16/bx
- (1) 32 sq. in. Absorbent gauze compress, 1/bx
- (1) Triangular sling/bandage, 1/bx
- (1) 3"x3" Gauze dressing pads, 4/bx
- (1) Antiseptic cleansing wipes (sting free), 10/bx
- (1) 1/2"x2.5 yd. Adhesive tape, 2/bx
- (1) Exam quality gloves, 2pr/bx
- (1) Burn relief packs, 6/bx
- (1) 4"x5" Instant cold compress, 1/bx
- (1) AMA First Aid Guide booklet

Such kits are available from WalMart 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.

7. Safety Shower Accessibility, Operational and Tested Monthly

All laboratories or storage areas in which hazardous materials are kept are required to have a safety shower in good working order with easy access. Ideally each laboratory should have a dedicated safety shower. In some cases the shower may be shared by several adjacent laboratories if access to the shower does not involve a lockable door, i.e., the safety shower is located in a hallway to which the laboratories share access. The showers must be accessible within 10 seconds by laboratory occupants without assistance. Testing of the safety shower is the responsibility of Facilities Management personnel and shall be done once per month. Testing of the showers will be indicated on waterproof tags prominently attached to the showers.

8. Eye-Wash Station Accessible, Operational and Flushed Weekly

All laboratories or storage areas in which hazardous materials are kept are required to have an eye-wash station in good working order with easy access. Ideally each laboratory should have a dedicated eye-wash station. In some cases the eye-wash station may be shared by several adjacent laboratories if access to the eye-wash station does not involve a lockable door, i.e., the eye-wash station is located in a hallway to which the laboratories share access. The eye-wash station must be accessible within 10 seconds by laboratory occupants without assistance. Testing of the eye-wash station is the responsibility of Facilities Management personnel and shall be done once per month. *However, the requirement for weekly flushing of the eyewash is the responsibility of the laboratory. For sanitation reasons, the eyewash should be flushed for at least five minutes once a week. This helps minimize bacterial contamination and the potential for infections in already injured eye tissues.* Testing and weekly flushing of the eye-wash station will be indicated on a waterproof tag prominently attached to or near the eye-wash.

9. Personal Protective Equipment Available and in Good Working Condition

Appropriate personal protective equipment (PPE) for eyes, face, head, and extremities shall be available in laboratories using hazardous materials. The PPE shall be used and maintained in a sanitary and reliable condition. PPE includes such items as safety glasses, goggles, gloves, respirators, and protective clothing. If special protective equipment such as a respirator is routinely used in a laboratory, instructions and precautions associated with the use, should be described in the laboratory "Chemical Hygiene Manual". Persons required to wear a respirator must be fit tested (EH&S provides this service) and must have medical clearance. Specific questions regarding the requirement for or suitability of PPE should be addressed to EH&S.

10. Work Area Clean and Orderly

Obviously, this is a very subjective topic. However, some guidelines are obvious. The doorways and walkways between benches in the laboratory or storage space should be clear from obstacles. Large piles of paper, journals or cardboard boxes are inappropriate. 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. Electrical cords should be properly routed so as not to be trip hazards. A minimum of 36 inches are required for aisles.

11. Work Areas Properly Illuminated

Laboratories using hazardous materials must have lighting that is adequate for the nature of the work. The working place, floors, and passageways must be clearly visible to the extent that hazards can be identified and avoided during routine work. This is normally a product of the proper design of the laboratory or storage space. However, in cases where working under subdued lighting is required as a routine, extra precautions must be taken to guard against trip hazards and access to the light switches should be clear.

12. Electrical Panels and Switch Covers in Place and Breakers Labeled

State building codes and Arkansas Department of Labor 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 promptly reported to Facilities Management. Sinks are common in most laboratories and GFI receptacles are required for all outlets with 6 ft of a sink.

13. MSDS Readily Available

Laboratories using hazardous materials must material safety data sheets for hazardous chemicals and ensure they are readily accessible to laboratory employees/students in their work areas. Electronic forms and accessible websites are permissible, as long as they are kept current and are readily available to all personnel. If a website is used the address should be prominently displayed in the laboratory. A particularly good web site is Hazard.com. The site contains MSDS's from many of the manufacturers and is readily searchable with multiple entries for the more common chemicals.

14. Hazardous Material Spill Kit Available

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, and other chemical and laboratory suppliers, or can be assembled from available materials. The kits must be strategically placed so that they are readily accessible to all personnel working in the laboratory and all personnel must be advised of their location and trained in their use.

15. Working Reagents Properly Labeled

All reagents in the laboratory or storage area must be clearly labeled with the contents and some indication of the hazard (toxic, corrosive, flammable, stench). 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. Transferring contents into a beaker for easy pouring does not require a label on the beaker. However, if the contents were transferred to a flask (with a lid) and left unattended overnight, then a label would be required.

16. Hazardous Waste Properly Labeled

All hazardous waste in the laboratory or storage area must be clearly labeled with the contents, the date the contents were placed in the container, the date the container was filled and closed, some indication of the hazard (toxic, corrosive, flammable, stench) and a generator's name, phone number, dept, building and room number. The container must also be labeled with the words "**Hazardous Waste**". Chemical names or standard abbreviations are required; formulas or in-house abbreviations or acronyms are not acceptable. Labels will be provided by EH&S for this purpose. Substitute labels may not be used unless permitted by EH&S. If the contents are a mixture then reasonable estimates of the percentages of each component must be included. The material should be disposed within three days of the end fill date. To dispose FAX EH&S appropriate form as described on EH&S web site <http://www.phpl.uark.edu/ehs/>.

17. Hazardous Material Containers Closed and in Good Condition

Laboratories using hazardous materials must keep containers closed during storage. A container holding hazardous material should be open when it is necessary to add or remove waste. This is a commonly cited violation and one that is difficult to remember during everyday operations in the laboratory. Funnels with lids are available (VWR, Fisher...) for 4 liter containers that designed specifically for holding discarded

reagents as well as HPLC effluents. These are highly recommended for high usage laboratories.

Containers must be free from leaks. Combining aqueous solutions with organic solvents often generate conditions which lead to corrosion of metal containers, i.e., 5 gallon drums. These containers should be inspected frequently and not used repeatedly to store hazardous waste.

If liquids are stored in 1 or 4 liter glass containers adequate headspace must be allowed for thermal expansion. Three inches from the top should provide adequate headspace.

Hazardous waste containers must also be placed in secondary containment containers, such as RubberMaid plastic tubs or equivalent. In the event of broken container, the tubs will prevent the contents from dispersing or going down a drain.

Important Note: Hazardous waste must be stored in the room in which it is generated. Hazardous waste cannot be moved to another room for storage unless the room and procedures meet the requirements for 90 day storage. Only a few sights are designated for 90 day storage on this campus.

18. Chemical Inventory Available and Up to Date

Laboratories using hazardous chemicals must maintain a current and accurate inventory. The inventory should be list the name, and the approximate amount on hand. The inventory should be treated as a living document and updated as frequently as needed. Electronic inventories are adequate. Note: The University is in the process of acquiring a university-wide inventory system and all laboratories will be required to maintain their inventory on that system.

19. Hazardous Chemical List and Hazard Signs Appropriately Posted

The NFPA Hazard Diamond must be present at the entry to each laboratory. A list of materials contained in the laboratory that are particularly hazardous must also be provided outside the door to each laboratory. This list should be written to aid fire department personnel. This list should not contain an exhaustive inventory. It should contain all hazardous chemicals in the room in quantities totaling 1 liter or 1 kg or greater and any quantity of explosives, highly reactive or highly toxic substances and all other extremely hazardous materials. For example a 5 lb bottle of sodium chloride is not of interest to the fire department personnel but a 1 lb container of sodium metal is of very significant interest. Gas cylinders in general should be listed.

20. Laboratory Reagents Properly Stored.

Laboratories using hazardous materials must keep incompatible materials from being placed in the same container or any unwashed container having residue from

another incompatible chemical. Storage containers with incompatible materials should also be separated in case leakage or breakage that would result in mixing.

As a minimum, acids, bases and organic solvents should be stored separately. Hydrogen peroxide is generally sold in plastic vented containers and stored in a refrigerator. It should never be stored in sealed glass bottles as these will ultimately explode due to the internal pressure produced by the decomposition.

While it is desirable to store solid oxidizers in separate areas this is not always convenient. Storage on shelves with other dry reagents is acceptable if care is taken to assure that the neighboring reagents are not incompatible. For example, potassium permanganate is often stored with other solid potassium salts such as potassium carbonate, potassium sulfate and potassium hydroxide. The important consideration is compatibility.

21. Flammable Chemicals Stored in Flammable Liquids Cabinet

Flammable liquids must be stored in appropriately designed flammable liquid cabinets (see Appendix II for details). 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. EH&S personnel should be consulted if large quantities of flammable liquids are to be stored.

22. Hazardous Waste Stored No Longer than 3 Working Days

Hazardous waste must be disposed within 3 working days of when the container is declared full and dated as full. Containers must be free from leaks. Combining aqueous solutions with organic solvents often generate conditions which lead to corrosion of metal containers, i.e., 5 gallon drums. These containers should be inspected frequently and not used repeatedly to store hazardous waste.

If liquids are stored in 1 or 4 liter glass containers adequate headspace must be allowed for thermal expansion. Three inches from the top should provide adequate headspace.

To dispose FAX EH&S appropriate form as described on EH&S web site <http://www.phpl.uark.edu/ehs/>.

Important Note: Hazardous waste must be stored in the room in which it is generated. Hazardous waste cannot be moved to another room for storage unless the room and procedures meet the requirements for 90 day storage. Only a few sites are designated for 90 day storage on this campus.

23. Reportable Quantities of Chemicals within Allowable Limits

42 CFR Part 355 Appendix A lists the chemical that are considered to be Extremely Hazardous and the amounts that a facility may possess that are required to be reported to the EPA. Large amounts of these chemicals, even if below the Reportable

Quantity (RQ) must be reported to EH&S, since the RQ includes the total of all such chemicals in University facilities. A rule of thumb is to notify EH&S of amounts > than 10% of the RQ. Appendix III lists the common reagents with low RQ's.

24. Gas Cylinder Secured

All cylinders of compressed gas, including empties, must be secured to a lab bench, wall or other fixed structure by a strap, chain, weighted boot, or other device, to prevent falling and possible damage to the regulator valve. No cylinder should be moved without the cap fully screwed in place.

25. Fume Hood Functional and Unobstructed.

All fumes hoods must have some device indicating air flow. 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. Although individual manufacturers may vary the sash in most hoods must be between 6 and 18 inches for proper operation.

Fume Hoods will be tested twice a year by Facilities Management and some form of tag will be provided to indicate the test date and results.

26. Equipment Guards in Place

Facilities using power equipment must provide one or more methods to protect the operator and other employees in the machine area from hazards such as those created by point of operation, ingoing nip points, rotating parts, flying chips and sparks. These may be barrier guards, electronic safety devices, two-hand tripping devices, etc. In the case of motors with pulleys, belts guards must be in place.

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

Laboratory sinks should be labeled to remind persons to refrain from disposing of chemicals down the sink. A list of chemicals that may be safely disposed in this way can be found in the Chemical Hygiene Manual on the EH&S web site. 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. Sharps and Broken Glass Containers Present

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 EH&S. When the container is full, contact EH&S for pickup and disposal.

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. 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.

29. No Food or Drink in Laboratory

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 or Drink Allowed” or similarly posted.

30. Chemical Hygiene Manual

The Office of Environmental Health and Safety provides a Chemical Hygiene Manual on the web. All laboratory personnel should be familiar with the contents of the manual. 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 manual. 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.

Appendix I

Emergency Phone Numbers

Medical Emergency	911 or 575-2222
Fire Emergency	911 or 575-2222
Police Emergency	911 or 575-2222
Chemical, Biological or Radiological Spill	
During Work Hours	575-5448 7:30 – 5:00
After Work Hours	575-2222
U of A Health Center	575-4451
Poison Control Center	1-800-376-4766
Rape Crisis Hotline	443-2000
Laboratory Supervisor	_____
	(Name and Phone Number)
Alternate Laboratory Supervisor	_____
	(Name and Phone Number)
Building Executive	_____
	(Name and Phone Number)

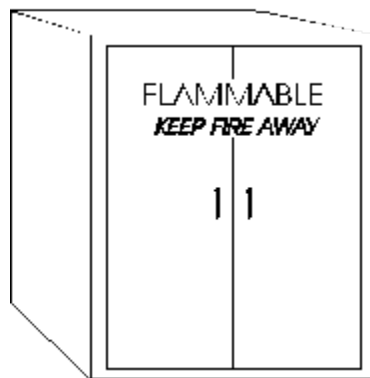
Appendix II. Design, Construction and Capacity of Storage Cabinets

Taken from <http://www.osha.gov/SLTC/smallbusiness/sec8.html>

Not more than 60 gallons of Class I and/or Class II liquids, or not more than 120 gallons of Class III liquids may be stored in an individual cabinet.

This standard permits both metal and wooden storage cabinets. Storage cabinets shall be designed and constructed to limit the internal temperature to not more than 325°F when subjected to a standardized 10-minute fire test. All joints and seams shall remain tight and the door shall remain securely closed during the fire test. Storage cabinets shall be conspicuously labeled, "Flammable - Keep Fire Away."

The bottom, top, door, and sides of metal cabinets shall be at least No. 18 gage sheet metal and double walled with 1½-inch air space. The door shall be provided with a three-point lock, and the door sill shall be raised at least 2 inches above the bottom of the cabinet.



Appendix III. List of common reagents with low Reportable Quantities (RQ's)

Material	Categor y	RQ in pounds (kg)
Acetone cyanohydrin	A	10 (4.54)
Acrolein	X	1 (0.454)
Acrylonitrile	B	100 (45.4)
Aldrin	X	1 (0.454)
Allyl alcohol	B	100 (45.4)
Ammonia	B	100 (45.4)
Ammonium bichromate	A	10 (4.54)
Ammonium bifluoride	B	100 (45.4)
Ammonium chromate	A	10 (4.54)
Ammonium fluoride	B	100 (45.4)
Ammonium sulfide	B	100 (45.4)
Antimony potassium tartrate	B	100 (45.4)
Arsenic disulfide	X	1 (0.454)
Arsenic pentoxide	X	1 (0.454)
Arsenic trichloride	X	1 (0.454)
Arsenic trioxide	X	1 (0.454)
Arsenic trisulfide	X	1 (0.454)
Barium cyanide	A	10 (4.54)
Benzene	A	10 (4.54)
Benzyl chloride	B	100 (45.4)
Beryllium chloride	X	1 (0.454)
Beryllium fluoride	X	1 (0.454)
Beryllium nitrate	X	1 (0.454)
n-Butyl phthalate	A	10 (4.54)
Cadmium acetate	A	10 (4.54)
Cadmium bromide	A	10 (4.54)
Cadmium chloride	A	10 (4.54)
Calcium arsenate	X	1 (0.454)
Calcium arsenite	X	1 (0.454)
Calcium carbide	A	10 (4.54)
Calcium chromate	A	10 (4.54)
Calcium cyanide	A	10 (4.54)
Calcium hypochlorite	A	10 (4.54)
Captan	A	10 (4.54)
Carbaryl	B	100 (45.4)
Carbofuran	A	10 (4.54)
Carbon disulfide	B	100 (45.4)
Carbon tetrachloride	A	10 (4.54)
Chlordane	X	1 (0.454)
Chlorine	A	10 (4.54)
Chlorobenzene	B	100 (45.4)
Chloroform	A	10 (4.54)
Chlorpyrifos	X	1 (0.454)
Chromic acid	A	10 (4.54)
Coumaphos	A	10 (4.54)
Cresol	B	100 (45.4)

Crotonaldehyde	B	100 (45.4)
Cupric acetate	B	100 (45.4)
Cupric acetoarsenite	X	1 (0.454)
Cupric chloride	A	10 (4.54)
Cupric nitrate	B	100 (45.4)
Cupric oxalate	B	100 (45.4)
Cupric sulfate	A	10 (4.54)
Cupric sulfate, ammoniated	B	100 (45.4)
Cupric tartrate	B	100 (45.4)
Cyanogen chloride	A	10 (4.54)
2,4-D Acid	B	100 (45.4)
2,4-D Esters	B	100 (45.4)
DDT	X	1 (0.454)
Diazinon	X	1 (0.454)
Dichlobenil	B	100 (45.4)
Dichlone	X	1 (0.454)
Dichlorobenzene	B	100 (45.4)
Dichloropropene	B	100 (45.4)
Dichloropropene-Dichloropropane (mixture)	B	100 (45.4)
Dichlorvos	A	10 (4.54)
Dicofol	A	10 (4.54)
Dieldrin	X	1 (0.454)
Diethylamine	B	100 (45.4)
Dinitrobenzene (mixed)	B	100 (45.4)
Dinitrophenol	A	10 (4.54)
Dinitrotoluene	A	10 (45.4)
Disulfoton	X	1 (0.454)
Diuron	B	100 (45.4)
Endosulfan	X	1 (0.454)
Endrin	X	1 (0.454)
Epichlorohydrin	B	100 (45.4)
Ethion	A	10 (4.54)
Ethylene dibromide	X	1 (0.454)
Ethylene dichloride	B	100 (45.4)
Ferric fluoride	B	100 (45.4)
Ferrous chloride	B	100 (45.4)
Formaldehyde	B	100 (45.4)
Guthion	X	1 (0.454)
Heptachlor	X	1 (0.454)
Hexachlorocyclopentadiene	A	10 (4.54)
Hydrofluoric acid	B	100 (45.4)
Hydrogen cyanide	A	10 (4.54)
Hydrogen sulfide	B	100 (45.4)
Isoprene	B	100 (45.4)
Kepone	X	1 (0.454)
Lead acetate	A	10 (4.54)
Lead arsenate	X	1 (0.454)
Lead chloride	A	10 (4.54)
Lead fluoborate	A	10 (4.54)
Lead fluoride	A	10 (4.54)

Lead iodide	A	10 (4.54)
Lead nitrite	A	10 (4.54)
Lead stearate	A	10 (4.54)
Lead sulfate	A	10 (4.54)
Lead sulfide	A	10 (4.54)
Lead thiocyanate	A	10 (4.54)
Lindane	X	1 (0.454)
Lithium chromate	A	10 (4.54)
Malathion	B	100 (45.4)
Mercaptodimethur	A	10 (4.54)
Mercuric cyanide	X	1 (0.454)
Mercuric nitrate	A	10 (4.54)
Mercuric sulfate	A	10 (4.54)
Mercuric thiocyanate	A	10 (4.54)
Mercurous nitrate	A	10 (4.54)
Methoxychlor	X	1 (0.454)
Methyl mercaptan	B	100 (45.4)
Methyl parathion	B	100 (45.4)
Mevinphos	A	10 (4.54)
Monoethylamine	B	100 (45.4)
Monomethylamine	B	100 (45.4)
Naled	A	10 (4.54)
Naphthalene	B	100 (45.4)
Naphthenic acid	B	100 (45.4)
Nickel ammonium sulfate	B	100 (45.4)
Nickel chloride	B	100 (45.4)
Nickel hydroxide	A	10 (4.54)
Nickel nitrate	B	100 (45.4)
Nickel sulfate	B	100 (45.4)
Nitrogen dioxide	A	10 (4.54)
Nitrophenol (mixed)	B	100 (45.4)
Parathion	A	10 (4.54)
Pentachlorophenol	A	10 (4.54)
Phosgene	A	10 (4.54)
Phosphorus	X	1 (0.454)
Phosphorus pentasulfide	B	100 (45.4)
Polychlorinated biphenyls	X	1 (0.454)
Potassium arsenate	X	1 (0.454)
Potassium arsenite	X	1 (0.454)
Potassium bichromate	A	10 (4.54)
Potassium chromate	A	10 (4.54)
Potassium cyanide	A	10 (4.54)
Potassium permanganate	B	100 (45.4)
Propargite	A	10 (4.54)
Propylene oxide	B	100 (45.4)
Pyrethrins	X	1 (0.454)
Selenium oxide	A	10 (4.54)
Silver nitrate	X	1 (0.454)
Sodium	A	10 (4.54)
Sodium arsenate	X	1 (0.454)
Sodium arsenite	X	1 (0.454)

Sodium bichromate	A	10 (4.54)
Sodium bifluoride	B	100 (45.4)
Sodium chromate	A	10 (4.54)
Sodium cyanide	A	10 (4.54)
Sodium hypochlorite	B	100 (45.4)
Sodium nitrite	B	100 (45.4)
Sodium selenite	B	100 (45.4)
Strontium chromate	A	10 (4.54)
Strychnine	A	10 (4.54)
TDE	X	1 (0.454)
2,4,5-TP acid	B	100 (45.4)
2,4,5-TP acid esters	B	100 (45.4)
Tetraethyl lead	A	10 (4.54)
Tetraethyl pyrophosphate	A	10 (4.54)
Thallium sulfate	B	100 (45.4)
Toxaphene	X	1 (0.454)
Trichlorfon	B	100 (45.4)
Trichloroethylene	B	100 (45.4)
Trichlorophenol	A	10 (4.54)
Trimethylamine	B	100 (45.4)
Uranyl acetate	B	100 (45.4)
Uranyl nitrate	B	100 (45.4)
Vinylidene chloride	B	100 (45.4)
Xylene (mixed)	B	100 (45.4)
Zinc cyanide	A	10 (4.54)
Zinc phosphide	B	100 (45.4)

Appendix IV Regulatory References

The following describe the regulatory literature governing each item on the laboratory audit. The numbering is the same as that used above and as that used on the laboratory audit sheets.

1. Laboratory Access Control Appropriate.

In general, this audit detail requires complying with 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.

2. Arkansas Dept of Labor Poster Displayed in Prominent Location.

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 in either the lab’s Departmental Office or from the University Office of Environmental Health & Safety.

In general, this audit detail requires complying with Arkansas Act 556 of 1991 and all applicable University of Arkansas Policy and Procedures.

3. Emergency Telephone Numbers Posted.

In general, this audit detail requires complying with 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.

4. Safety Hazard Warnings Posted.

In general, this audit detail requires complying with the Arkansas Fire Prevention Code as 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.

5. Fire Extinguishers Inspected, Charged, Mounted, and Appropriately Labeled.

In general, this audit detail requires complying with 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.

6. First-aid Kit Available and Adequately Stocked.

Federal 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.

American National Standards Institute (ANSI) compliant first aid kit requires a minimum fill according to standard ANSI Z308.1-1998. Even though this requirement is not yet mandatory in every state, it is advisable to find a kit that already meets these standards.

This is how OSHA responded to this specific question:

Question 2: Are there any specific interpretations for the term “readily available”?

Reply: 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.

In general, this audit detail requires complying with 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.

7. Safety Shower Accessible, Operational and Tested Monthly.

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 eyewash and shower equipment. The basic requirement is to have emergency showers and eyewashes within 10 seconds travel distance of a hazard.

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

8. Eye-Wash Station Accessible, Operational and Flushed Weekly.

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 eyewash and shower equipment. The basic requirement is to have emergency showers and eyewashes within 10 seconds travel distance of a hazard.

9. Personal Protective Equipment Available and in Good Working Condition.

In general, this audit detail requires complying with 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.

10. Work Areas Clean and Orderly.

In general, this audit detail requires complying with 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.

In general, this audit detail requires complying with APC&E Regulation #23, Hazardous Waste Management, Section 264 – Standard for owners and Operators of Hazardous Waste Treatment, Storage, Subsection C – Preparedness and Prevention, 264.35 – Required Aisle Space, and all applicable University of Arkansas Policy and Procedures

11. Work Areas Adequately Illuminated.

In general, this audit detail requires complying with 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.

12. Electrical Panels and Switch Covers in Place and Breakers Labeled.

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.

13. MSDS Readily Available.

In general, this audit detail requires complying with 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.

14. Hazardous Material Spill-kit Available.

40 CFR 260 - Hazardous Waste Management System: General

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

15. Working Reagents Properly Labeled

Arkansas “Right to Know Act” In general, this audit detail requires complying with Arkansas Act 556 of 1991 and all applicable University of Arkansas Policy and Procedures

16. Hazardous Waste Properly Labeled

In general, this audit detail requires complying with 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.

17. Hazardous Materials Containers Closed and in Good Condition.

In general, this audit detail requires complying with 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.

18. Chemical Inventory Available and Up to Date

The OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200).

19. Hazardous Chemical List and Hazard Signs Appropriately Posted

NFPA 704

20. Laboratory Reagents Properly Stored.

In general, this audit detail requires complying with 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.

21. Flammable Chemicals Stored in Flammable Liquids Cabinet.

In general, this audit detail requires complying with 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.

22. Hazardous Waste Stored No Longer than 3 Working Days.

In general, this audit detail requires complying with APC&E Regulation #23, Section 262.34 Standard Applicable to Generators of Hazardous Waste

23. Reportable Quantity Chemicals Within Allowable Limits.

42 CFR Part 355 Appendix A lists the chemical that are considered to be Extremely Hazardous and the amounts that a facility may possess that are required to be reported to the EPA. Large amounts of these chemicals, even if below the Reportable Quantity (RQ) must be reported to EH&S, since the RQ includes the total of all such chemicals in

University facilities. A rule of thumb is to notify EH&S of amounts > than 10% of the RQ.

24. Gas cylinders secured.

OSHA 29 CFR 1910.101

25. Fume Hood functional and unobstructed.

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)

26. Equipment guards in place.

In general, this audit detail requires complying with 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.

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

28. Sharps and Broken Glass Containers Present

OSHA 29 CFR 1910.1030 Bloodborne Pathogens Standard.

29. No food or drink in laboratory.

In general, this audit detail requires complying with 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.

30. Chemical Hygiene Manuals

OSHA 29 CFR 1910.1450 App A and 1910.119 Laboratory Safety Standard

