

California Association for Medical Laboratory Technology

Distance Learning Program

A SAFETY PLAN FOR LABORATORIES

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Course # DL-909
Approved for 1.0 CE/Contact Hours
Level of Difficulty: Basic

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Notification of Distance Learning Deadline
DON'T PUT YOUR LICENSE IN JEOPARDY!

This is a reminder that all the continuing education units required to renew your license must be earned no later than the expiration date printed on your license. If some of your units are made up of Distance Learning courses, please allow yourself enough time to retake the test in the event you do not pass on the first attempt. CAMLT urges you to earn your CE units early!

A SAFETY PLAN FOR LABORATORIES

Objectives:

At the conclusion of this course, the participant will be able to:

1. list the essential elements of a Safety Manual
2. describe controls used to prevent overexposure to blood and body fluids
3. formulate a safety plan for his or her laboratory

Introduction:

Do you think accidents just "happen" to people? Do they just have a case of bad luck? Safety experts say every accident has a cause and can be prevented, but accident prevention takes teamwork - between your employer and you with state and federal safety standards as your guidelines. So what does it take to ensure a safe work environment? A safety plan that includes all of the elements of the various safety standards that provide for a hazard-free environment can champion the cause.

Formalizing the laboratory's safety program in writing is the first step in any plan. Every policy, procedure, flowchart, form, or any other documentation that defines and describes a process should be included in the written plan. As the plan develops, the individual processes need to be measured.

The **Safety Manual** is the heart of the safety plan and the subject of this learning module. The policies and procedures that rule safety in the workplace are described. A safety manual should contain the following parts:

- **Signature page** - The signature page indicates when the safety manual was originally prepared and the date (annually) that it was reviewed and/or revised. The signature should be that of the chief medical officer of the laboratory or designee.
- **Table of Contents** - The table of contents is a listing of each section and its location within the manual. It is helpful if the manual has index tabs for each section for ease in locating information.
- **Safety Committee** - The purposes of the laboratory safety committee are to provide a centralized focus for safety issues, to develop and revise policies and procedures, to monitor safety and to promote safety awareness and improved safety practices. The committee should meet quarterly, at a minimum. Members can assist the safety officer in conducting risk assessments, chemical inventories, monitoring laboratory activities for safety compliance and assisting with safety training. Each year the list of membership on the committee is reviewed and revised. Committee membership must include decision making management level personnel and non-supervisory employees. The tenure of a committee member should have a limit to allow other employees to benefit from the committee experience and to increase the number of safety advocates in the department.

- **Incident Report** - The incident report is the form that the employer needs for reporting injuries or exposure. There is a section to be completed by the employee and one that is completed by Occupational Health, either on site or by a designated facility. Cause analysis and corrective actions are important information to be included on this form
- **First Aid** - Most accidents have little or no injury associated with them and can be handled on site with routing first aid such as a hot or cold compress, Band-Aid, or other minor intervention. However, additional first aid must be available and employees need to understand how to access the aid when appropriate. Employees should be knowledgeable about the Heimlich maneuver as well as CPR if the employee needs that skill for the job. For electrical shock the victim should be flat on the ground and covered to prevent chilling. Chemical or bloodborne pathogen splashes to the eyes should be washed with a 15-minute flushing of tepid (lukewarm) water from the eyewash station. First- and second-degree burns should be placed under cool water. Third-degree burns require the attention of medical personnel as quickly as possible.
- **Fire Safety** - All employees should know the three classes of fires. Class A involves ordinary combustible materials such as paper, wood or cloth. Class B involves flammable liquids and Class C is electrical fires. The laboratory must have routine quarterly fire drills to ensure that each employee has an annual evacuation and triage training. It is recommended that only a quarter of the staff participate in any one drill at any one time to allow for the work to continue. All employees should know the acronym RACE (Remove persons from the area, Activate the fire alarm, Call someone in authority to notify them of the location of the fire, and Extinguish the fire with an extinguisher). With respect to fire extinguishers, employees should be trained annually and understand the acronym PASS (Pull the pin, Aim at the base of the fire, Squeeze the lever or handle, and Sweep side to side). Fire extinguishers are to be inspected annually.
- **Compressed Gases** - The four types of gases are compressed, liquefied, dissolved and cryogenic. Cylinders are moved secured to carts or hand trucks and never rolled, dragged, or slid. Cylinders are stored in a cool location with proper ventilation. They are to be secured, by means of a chain, to the wall or positioned upright on a non-tip base. Empty cylinders must be marked "empty".
- **Electrical Safety** - All electrical equipment must be grounded with a three-pronged plug. Equipment with frayed wires is taken out of use until repaired. Adapters, extension cords, and space heaters are prohibited, except as approved by the fire department and management. A three foot radius around circuit breaker boxes must be clear at all times to assure access and remove flammable materials.
- **Chemical Hygiene Plan** - A list of carcinogens used in the laboratory must be in the safety manual and available when requested. An annual chemical inventory is performed. Material Safety Data Sheets (MSDS) for each hazardous chemical are maintained in a designated binder so that employees on all shifts can access them if necessary. No food or drink can be stored in refrigerators used for chemicals. Chemical storerooms must be well ventilated and acids should not be stored above shoulder height. Nitric acid must be stored away from other acids. Flammable cabinets should be vented to the outside. Eyewash stations are to be flushed and the eyepieces disinfected weekly. Safety showers

that are plumbed are to be tested weekly as well. Personal protective equipment (PPE) must be worn as appropriate for the type of chemical used. At a minimum, a fluid resistant lab coat and gloves must be worn with safety goggles. A face shield can also be added. A Chemical Hygiene Officer must be appointed. Usually the Safety Officer or someone in supervision fulfills this role.

- **Formaldehyde Plan** - The formaldehyde protocol is used only when the laboratory uses formaldehyde in any concentration. A baseline employee exposure monitoring is conducted on an annual basis or more often if the permissible exposure levels (PEL) are at or above the action level of 0.5 parts per million (ppm) for eight hours or at or above the short term exposure level (STEL) of 2.0 ppm for a 15 minute sampling. A written plan must describe the corrective action that will be taken to decrease the exposure if the PEL is over 0.75 ppm. Respirators are to be used when the action level is exceeded. Respirator programs include medical exams, fit tests and training for each employee exposed.
- **Waste Management** - Facilities must have a plan to reduce, reuse or recycle items to minimize the waste generated on site. The waste management plan provides safe handling, storage, treatment and disposal of hazardous (chemicals) and infectious wastes generated by the facility. Federal, State, and local regulations apply and protocols must meet or exceed those standards.
- **Disaster Plan** - In hospital situations, when a disaster is called, all personnel remain at their workstation until otherwise instructed by a supervisor. A call down list is used to call additional staff if needed. A well-marked central receiving area for specimens from disaster victims should be designated. A list of available blood units should be sent to the proper authorities (e.g.: Emergency Department).
- **Evacuation Policy** - All employees must know the proper evacuation route from their workbench. Routes are posted in each work area of the laboratory. Evacuation routes are updated annually or when a significant change in the facility or protocol occurs. In addition, plans are needed to evacuate disabled employees according to the facility's protocol. Supervisors perform a roll call at the triage location to be sure everyone is accounted for.
- **Radiation Safety** - Employees working with radioactive materials must take the ALARA (As Low As Reasonably Achievable) exam. Body monitors are worn by RAM (radioactive material) users who are exposed to a whole body dose of more than 100 millirems/yr. Ring monitors are worn by individuals who are likely to handle more than 100 millicuries/yr. of an energetic beta emitting radionuclide.
- **Exposure Control** - Bloodborne pathogens are a part of the daily life of laboratory employees. Engineering controls are the first line of defense in preventing overexposure to blood and body fluids. When engineering controls cannot eliminate the exposure, work practice controls are the next line of defense. These can vary depending on the task assessment performed by the supervisor with assistance from the Safety Officer. If work practice control cannot eliminate the exposure then proper personal protective equipment (PPE) is required. These include a fluid resistant lab coat, gloves worn over the cuff of

the lab coat and face protection in the form of protective eyewear with a facemask or a face shield. Each laboratory is expected to have a written exposure control plan in place outlining the procedures and protocols in the laboratory to protect employees.

- **Infection Control** - Hand washing is the most effective infection control measure an employee can perform to protect themselves. It is essential that hands be washed for at least 15 seconds with an antimicrobial soap and water whenever they have been contaminated, upon removing gloves, or before leaving the laboratory.
- **Lockout/Tagout** - The use of lockout/tagout procedures prevents the accidental release of energy. Lockout is the process of blocking the flow of energy from a power source to a piece of equipment. It is accomplished by installing a lockout device at the power source so that the equipment cannot be operated. A lockout device is a lock, block, or chain that keeps a valve or lever in the off position. The only key is to be in the control of the individual working on the equipment. Tagout is accomplished by placing a tag on the power source to act as a warning not to restore energy. Tags clearly state: DO NOT OPERATE. Both locks and tags must be strong enough to prevent unauthorized removal.
- **Decommissioning** - When a laboratory moves or ceases to operate, the space must be decommissioned to make sure no residual chemical, biohazard, or radioactive contamination exists. A pickup of all radioactive waste must be arranged and decontamination performed on any area exceeding 200 dpm/100 cu.mm. All waste chemicals and infectious materials must be removed and packed for proper disposal according to local ordinances and state regulations.
- **Training** - Documentation of training of all employees on the various safety policies and procedures must be maintained for three years. This includes but is not limited to bloodborne pathogen, chemical hygiene, formaldehyde and respiratory protection.

Your safety plan is a living document and should be reviewed annually and updated as necessary. Remember, safety never takes a vacation - being prepared at all times just makes good sense.

References:

1. U.S. Department of Labor, final rule part II. Federal Register 29 CFR Part 1910. Occupational Exposure to Hazardous Chemicals in Laboratories, Wednesday, January 31, 1990.
2. U.S. Department of Labor, final rule. Federal Register 29 CFR Part 1910.1030. Occupational Exposure to Bloodborne Pathogens, Friday, December 6, 1991.
3. U.S. Department of Labor, final rule. Federal Register 29 CFR Part 1910.1048. Occupational Exposure to Formaldehyde, Wednesday, May 27, 1992.
4. U.S. Department of Labor. OSHA Instruction CPL 2-2.44C. March 6, 1992.
5. Gile, T.J. Laboratory Safety Training Programs on CD-ROM. MediaLab, Inc. June, 1996.

REVIEW QUESTIONS – Course DL-909 – A Safety Plan for Laboratories
(Please select the one best answer)

1. How often should the safety committee meet (minimum)?
 - a. Weekly
 - b. Monthly
 - c. Quarterly
 - d. Annually

2. What class of fire involves ordinary combustible materials such as paper, wood, or cloth?
 - a. Class ABC
 - b. Class B
 - c. Class C
 - d. Class A

3. Which of the following is true for compressed gases?
 - a. The empty ones are returned unmarked
 - b. They are moved secured to carts or hand trucks
 - c. Position of the container does not matter
 - d. They can be stored anywhere

4. How often is a chemical inventory performed?
 - a. Quarterly
 - b. Semi-annually
 - c. Annually
 - d. Bi-annually

5. How often are eyewash stations flushed?
 - a. Daily
 - b. Weekly
 - c. Monthly
 - d. Annually

6. Employees working with radioactivity must take a safety exam. What is it called?
 - a. ALARA
 - b. RACE
 - c. PASS
 - d. SAFE

7. What type of control is the first line of defense in preventing overexposure to blood and body fluids?
 - a. Engineering
 - b. Work Practice
 - c. Administrative
 - d. Protective

8. What is the most effective infection control measure an employee can do to protect himself or herself?
 - a. Working behind a plastic shield
 - b. Hand washing
 - c. Wearing PPE
 - d. No eating, drinking, smoking or applying cosmetics in the workplace

9. The lockout procedure:
 - a. Places a tag on the power source to act as a warning
 - b. Keeps a valve or lever in the on position for preventative maintenance
 - c. Blocks the flow of energy from a power source to a piece of equipment
 - d. Forces the lab to cease operation

10. How long must safety training records be kept?
 - a. Three years
 - b. Ten years
 - c. Twenty five years
 - d. Thirty years plus the length of employment

Course Name -A Safety Plan for Laboratories- 1.0 CE Course # DL-909

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Please circle the one best answer for each question.

- | | | | | | | | | | |
|----|---|---|---|---|-----|---|---|---|---|
| 1. | a | b | c | d | 6. | a | b | c | d |
| 2. | a | b | c | d | 7. | a | b | c | d |
| 3. | a | b | c | d | 8. | a | b | c | d |
| 4. | a | b | c | d | 9. | a | b | c | d |
| 5. | a | b | c | d | 10. | a | b | c | d |
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Distance Learning Evaluation Form

According to state regulations, this evaluation must be completed and returned in order to receive CE hours. Your comments help us to provide you with better continuing education materials in the distance learning format. Please circle the number that agrees with your assessment.

1. Overall, I was satisfied with the quality of this Distance Learning course.

(strongly agree) 5 4 3 2 1 (strongly disagree)

2. The objectives of this Distance Learning course were met.

(strongly agree) 5 4 3 2 1 (strongly disagree)

3. The difficulty of this Distance Learning course was consistent with the number of CE hours.

(strongly agree) 5 4 3 2 1 (strongly disagree)

4. I will use what I learned from this Distance Learning course.

(strongly agree) 5 4 3 2 1 (strongly disagree)

5. The time to complete this Distance Learning course was: _____ hours

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What did you like or dislike?