SAFETY TRAINING

Training Solutions, Delivered!

LEAD EXPOSURE IN CONSTRUCTION ENVIRONMENTS

Leader's Guide, Fact Sheet & Quiz

Item Number: 4842

This easy-to-use Leader's Guide is provided to assist in conducting a successful presentation.

PREPARING FOR THE MEETING

Here are a few suggestions for using this program:

a) Review the contents of the Fact Sheet that immediately follows this page to familiarize yourself with the program topic and the training points discussed in the program. The Fact Sheet also includes a list of Program Objectives that details the information that participants should learn from watching the program.

b) If required by your organization, make an attendance record to be signed by each participant to document the training to be conducted.

c) Prepare the area and equipment to be used for the training. Make sure the watching environment is comfortable and free from outside distractions. Also, ensure that participants can see and hear the TV screen or computer monitor without obstructions.

d) Make copies of the Review Quiz included at the end of this Leader's Guide to be completed by participants at the conclusion of the presentation. Be aware that the page containing the answers to the quiz comes *before* the quiz itself, which is on the final page.

CONDUCTING THE PRESENTATION

a) Begin the meeting by welcoming the participants. Introduce yourself and give each person an opportunity to become acquainted if there are new people joining the training session.

b) Introduce the program by its title and explain to participants what they are expected to learn as stated in the Program Objectives of the Fact Sheet.

c) Play the program without interruption. Upon completion, lead discussions about your organization's specific policies regarding the subject matter. Make sure to note any unique hazards associated with the program's topic that participants may encounter while performing their job duties at your facility.

d) Hand out copies of the review quiz to all of the participants and make sure each one completes it before concluding the training session.

4842 LEAD EXPOSURE IN CONSTRUCTION ENVIRONMENTS
FACT SHEET

LENGTH: 22 MINUTES

PROGRAM SYNOPSIS:
Lead is one of the first metals that was ever used by man, but it was also the cause of the first recorded occupational disease, "lead colic", suffered by a metal worker who lived about twenty-four hundred years ago. While it has many uses, lead is also "toxic", poisonous to humans, animals and plants. When it is taken into the human body, it usually leads to serious health problems, and it can be fatal. According to the Occupational Safety and Health Administration (OSHA), more than eight hundred thousand workers in the United States are exposed to lead regularly as part of their jobs. Employees need to understand the health hazards of lead exposure, the safety standards that have been established to protect them on the job, and what they can do to safeguard themselves from lead's harmful effects every day. This program reminds employees of the dangers of lead and the health effects long-term exposure can have.

PROGRAM OBJECTIVES:
After watching the program, the participant should:
- Understand the health hazards associated with lead.
- Understand the safety standards that address exposure to lead in construction work.
- Know the policies and procedures their employer implements as part of a compliance program to protect them from lead exposure.
- Understand when and why an employer is required to provide workers with suitable respirators in lead exposure situations.
- Know safe work practices that can reduce their risk of exposure to lead on the job.
- Know specific decontamination practices they should use when they are working with lead.
- Understand how a medical surveillance program monitors lead exposure levels and the health of employees who work with lead.
- Understand how temporary medical removal helps employees recover from overexposure to lead.

PROGRAM OUTLINE

THE HEALTH EFFECTS OF LEAD EXPOSURE
- **Lead was one of the first metals ever used by man.**

—Lead was also the cause of the first recorded occupational disease, "lead colic", suffered by a metal worker who lived about twenty-four hundred years ago.
- **While it has many uses, lead is also "toxic", poisonous to humans, animals and plants.**

—When it is taken into the human body, it usually leads to serious health problems, and it can be fatal.
- **According to the Occupational Safety and Health Administration (OSHA), more than eight hundred thousand workers in the United States are exposed to lead regularly as part of their jobs.**

—That's why the agency has issued safety standards designed to protect those workers from lead's harmful effects.
- **Today, the most common way people are exposed to lead is when they breathe in dust and fumes that contain lead while they are at work.**
- **When lead is inhaled it passes through the lungs into the bloodstream, and collects in your bones and tissue.**

—Lead dust can be accidentally swallowed, as well.

—Either way, once it has been absorbed by the body lead can remain there for years, and cause serious problems.
- **Lead exposure falls into two basic categories:**

—"Long-term"

—"Acute".
- **In long-term exposure, small amounts of lead accumulate in the body over a long period of time.**

—Long-term exposure can cause damage to your brain and nervous system, as well your blood, kidneys and reproductive system.
- **Symptoms of long-term lead exposure include:**

—Headaches; Joint and muscle pain; Elevated blood pressure; Nausea; Dizziness; A metallic taste in the mouth.; Loss of appetite; Fatigue; Constipation.
- **Acute lead exposure occurs when a large amount of lead is absorbed in a short period of time.**

—Symptoms of acute exposure include drowsiness, memory loss, tremors, vomiting and severe abdominal pain.

—It can also produce a brain condition that is called "encephalopathy", which can cause convulsions, coma and death, all in a matter of days.

—Although acute exposures to deadly amounts of lead are highly unusual these days, they are not impossible.
- **The most common type of lead exposure in general industry is long-term.**

—Federal laws are now on the books that protect you by limiting this type of exposure.

- **Chances are you're viewing this program because your job involves some risk of exposure to lead.**
- **This risk is associated with many types of activities, including:**

—The manufacturing and recycling of lead-acid batteries.
—Sanding and stripping lead-based paint.
—Repairing and servicing automobile brakes.
—Welding or cutting old, painted metal.
—Manufacturing ceramics or electronics.
—The smelting, refining, alloying and casting of metals.

THE OSHA LEAD STANDARD & COMPLIANCE METHODS

- **To protect workers from the harmful health effects of lead exposure, OSHA issued its Lead Standard, 29 CFR 1910.1025.**

—This regulation sets limits on how much lead employees are allowed to be exposed to.
—It also establishes procedures employers must follow in order to reduce lead exposure in the workplace as much as possible.

Before work can start on any project or process that involves lead, employers are required to develop a written "compliance" program that describes:

—All activities that could expose employees to lead.
—The "compliance methods" the employer will use to control that exposure.

- **There are three general types of compliance methods.**

—Administrative controls.
—Engineering controls.
—Personal protective equipment.

- **Administrative controls include policies and procedures such as:**

—Safe work practices for housekeeping and decontamination.
—Employee training.
—Medical surveillance and removal programs.

- **Engineering controls include physical and mechanical safeguards such as:**

—Isolation and containment of a lead hazard area.
—Mechanical ventilation with appropriate filters.
—Special vacuums for cleanup and decontamination.

- **The third type of compliance method, personal protective equipment, is anything you wear to protect yourself when administrative and engineering controls alone cannot reduce your lead exposure to acceptable levels.**

—This might include overalls, respirators, gloves, hats, goggles and face shields… whatever is appropriate for the job you are doing.

- **Another key part of the compliance program is employee training.**

—This will be provided before you start work on any job that involves exposure to lead.

- **The training will include information about:**

—The health hazards associated with lead exposure.
—The requirements in the OSHA Lead Standard.
—The contents of your employer's compliance program.

- **You will also learn how to properly use and maintain any PPE that you'll need to wear on the job.**

—Your employer will make any of this information available to you upon request, as well.

RISK ASSESSMENT & MONITORING

- **Before you begin a new task that could expose you to lead, your employer is required to find out just how much lead exposure the job will involve.**
- **The OSHA Standard sets a threshold exposure limit, called the "action level", at 30 micrograms of lead per cubic meter of air over an 8-hour period.**

—The action level's technical details aren't as important as understanding how this benchmark is used in situations where you could be exposed to lead.

- **If your employer's "initial determination" testing shows that airborne lead is below the action level, then no action is required.**

—Work may proceed without exposure controls, but new tests must be conducted if there are any changes in equipment, processes or personnel that might also cause a change in the airborne lead level.

- **If the initial determination shows potential lead exposure is at or above the action level, your employer must do several other things.**

—More detailed testing will be conducted to determine what the lead exposure levels are for each specific job classification in the work area.
—You will be informed regarding which specific work activities could expose you to lead.

—You will immediately receive the lead safety training that we discussed earlier.

- **The action level is also used as a benchmark in the medical surveillance and removal programs that are included in the compliance plan.**
- **The OSHA Standard also sets a maximum daily limit for worker exposure to lead, 50 micrograms of lead per cubic meter of air over an eight-hour shift.**

—This is called the "permissible exposure limit" or "PEL".

- **As we've seen, some tasks in the construction industry can expose you to a lot of lead in a short time.**

—That means workers could easily be exposed to dangerous levels of lead even before the first air monitoring test results come back from the lab.

—So OSHA's Lead Standard for Construction requires employers to provide workers with effective personal protective equipment during this "determination period."

- **To assure that the appropriate amount of protection is provided, OSHA has divided all construction tasks into three categories, based on their potential for airborne lead concentrations.**

—Each category has its own respirator requirements.

- **In the first category are tasks in which workers have the potential to be exposed up to 10 times lead's PEL.**
- **Where lead-based paint is present, these include:**

—Manual demolition, scraping and sanding.

—Heat gun activities.

—Paint removal using power tools that are equipped with dust collection systems.

- **The second category includes tasks that could expose you to airborne lead at more than 10 times lead's PEL, such as:**

—Rivet busting.

—Removing paint with power tools that don't have
dust collection systems.

—Moving abrasive blasting enclosures.

—Cleanup activities.

- **"Lead burning" and the use of mortar containing lead are also included in this category.**
- **Tasks where airborne lead concentrations can exceed 50 times the PEL fall into the third category.**

—They include abrasive blasting, welding, cutting,
and "torch burning".

- **At any of these exposure levels, your employer will provide you with appropriate personal protective equipment.**

—These categories are only meant to be used to determine worker protection while you're waiting for the results of initial air monitoring.

—When the results come in, your employer can change the protection level to suit the actual exposure to airborne lead.

- **If testing shows that the level of airborne lead is below the permissible exposure limit…**

—Then employees are not required to use personal protective equipment.

—However, some employers may want their workers to wear PPE anyway, for maximum protection.

- **If the level of airborne lead in the workplace exceeds the PEL, then your employer must use whatever exposure controls are necessary to reduce it to below the limit.**

—You will be informed as to the steps they are taking.

- **Additionally, air monitoring must be done to track your potential lead exposure on an ongoing basis.**

—Your employer must inform you in writing of all the monitoring results.

—Employers must keep records of all other air monitoring results as well, and make them available to you to review if you like.

THE RESPIRATORY PROTECTION PROGRAM

- **If you will be working in areas where the airborne lead concentration is above the PEL, your employer must provide you with the appropriate PPE to reduce your exposure to acceptable levels.**

—This equipment must be provided to you at no cost.

—Your employer is responsible for keeping it clean and functional, and for disposing of it properly when that is necessary.

- **Since respirators are key to preventing you from inhaling airborne lead, your company's compliance plan includes a "respiratory protection program".**
- **This program requires that you be given a suitable respirator in several types of situations, including:**

—While engineering controls are being set up but are not working yet.

—Whenever administrative and engineering controls aren't able to reduce lead exposure
to below the PEL.

—Whenever you ask for one.

- **The respiratory protection program also requires that you receive any training you need in order to use your respirator correctly.**

- **The training will include:**

—The proper use and maintenance of the respirator.
—What type of filter cartridges to use.
—When and how to replace the cartridges.

- **No respirator can promise you full protection unless it has been "fit tested".**

—The seal that the respirator makes against your face must be tight.
—A fit test will make sure no lead dust can "leak" inside, where you can breathe it.

- **If you have any trouble breathing through your respirator during a fit test, a medical examination will be scheduled to make sure you can wear one safely.**
- **If you ever have doubts about whether your respirator fits you or is working correctly, check with your supervisor before you enter a lead hazard area.**

HOUSEKEEPING

- **The administrative controls that protect you from lead exposure include "standard operating procedures" or SOPs.**

—These are guidelines for what you can do to reduce lead hazards.

- **Your employer's compliance program will address using these "work practice controls" in two particular areas, "housekeeping" and "decontamination".**
- **Housekeeping encompasses the cleanup and disposal of lead-contaminated materials.**

—Its goal is to keep work surfaces free from the buildup of lead dust or other lead residue.

- **Never use compressed air for this!**

—"Blasting" these substances away will only create more problems, by mixing them into air.
—Instead you need to use a vacuum cleaner equipped with a "High Efficiency Particulate Air" (HEPA) filter, that will capture the lead contaminants safely.

- **Once contaminants have been caught, you should empty the vacuum cleaner carefully, so you don't spread them back into the work area.**
- **Since cleaning methods like shoveling, sweeping, and brushing are much more likely to stir up lead dust, you should only use them when vacuuming is impossible or impractical.**
- **You should never eat, drink, smoke or apply cosmetics when you're inside an area that is contaminated with lead.**

All of these activities can transfer contaminants into your body.

DECONTAMINATION

- **Decontamination procedures focus on preventing you from spreading lead to outside the hazard area, via your equipment, clothes or body.**
- **When you break for lunch, or stop work at the end of the day, you need to clean any lead contamination off of your protective clothing and equipment.**

—This should be done in a climate-controlled "changing room" or "decontamination chamber" which is set up for that purpose.

- **Never clean off by blowing, shaking, brushing or doing anything else that will disperse contaminants into the air.**

—Instead, clean off safely, with a HEPA vacuum.

- **Whenever you are working in lead exposure situations your employer will also have set up a climate-controlled lunchroom or eating area.**

—It is critical that you decontaminate your work clothing and equipment before you enter these "clean" zones.
Thoroughly wash your hands and face as well.

- **Since you will be in a space where you or your coworkers will be eating and drinking, and possibly smoking or applying cosmetics, these precautions reduce the risk of anyone accidently swallowing any lead contaminants.**
- **At the end of your shift, you should go through the normal decontamination process, then place your equipment and PPE in the appropriate containers for cleaning or disposal.**
- **Your employer will provide shower facilities so that you can wash up thoroughly before changing back into your street clothes.**

—Separate clothing storage lockers in the changing room will prevent any cross-contamination of lead between your PPE and your street clothes.

- **Remember, decontamination also prevents you from bringing any lead contamination home to your friends and loved ones.**

—So it's important to be thorough.

MEDICAL SURVEILLANCE

- **Even when your employer's exposure controls are keeping on-the-job lead exposure to below lead's permissible exposure limit, you may still receive a low level of exposure, especially if lead is present above the action level.**
- **That's why OSHA's Lead Standard requires employers to establish a medical surveillance program for all employees who are**

exposed at or above the action level for more than 30 days per year.

—The program provides free blood tests and medical examinations on an ongoing basis, to monitor your lead exposure and its effect on your health.

- **First, blood samples will be taken to determine your "blood lead level" (BLL) and "zinc protoporphyrin" (ZPP) level.**

—These will show how much lead exposure, if any, you've already had.

—They also establish a baseline for later readings, and help to determine what your schedule should be for future blood tests and medical exams.

- **The higher your BLL and ZPP, the more often you'll need to be tested, to make sure you're staying within safe limits.**

—You will be informed in writing of all your test results.

- **The periodic medical examinations you receive as part of the surveillance program will include a thorough physical evaluation.**

—The doctor will watch for any changes that indicate you have been overexposed to lead.

- **If you wear a respirator at work, your heart and lung functioning will also be monitored, to make sure the respirator is not overstressing them.**
- **In addition to your periodic examinations, you will be scheduled for an exam immediately if at any time you show symptoms of lead exposure.**

TEMPORARY MEDICAL REMOVAL

- **If your medical exams show that you have too much lead in your blood, or your health starts to be affected, you will need to undergo "temporary medical removal".**

—This means that you are temporarily not permitted to work in areas with airborne-lead concentrations above the action level.

—Instead, your employer will move you to another work area, or send you home with pay.

—The purpose of this "temporary removal" is to allow time for the amount of lead in your body to fall to a safe level.

- **During your "removal", you will receive "Medical Removal Protection" benefits.**

—Under this program, your employer is required to maintain your wages, benefits, job status and seniority, just as though you had not been removed.

- **Your employer must also keep records of all your medical surveillance and removal information, and make them available to you whenever you request it.**

ANSWERS TO THE REVIEW QUIZ

1. b
2. a
3. a
4. a
5. b
6. b
7. a
8. a
9. a
10. b

LEAD EXPOSURE IN CONSTRUCTION ENVIRONMENTS
REVIEW QUIZ

The following questions are provided to determine how well you understand the information presented in this program.

Name_____Date_____

1. "Long-term" lead exposure occurs when large amounts of lead accumulate in the body over a short period of time.

a. True
b. False

2. The most common type of lead exposure in construction environments is "acute" exposure.

a. True
b. False

3. The most common way that people are exposed to lead is when they breathe in dust or fumes that contain lead while they are at work.

a. True
b. False

4. Before work can start on any construction project that involves lead, OSHA requires employers to develop a written compliance program to limit employee exposure to the substance.

a. True
b. False

5. Your employer is required to provide you with lead safety training after you start work on any project that involves exposure to lead.

a. True
b. False

6. If an employer's initial testing shows that airborne lead in a work area is below the "action level", then action must be taken to reduce the exposure level.

a. True
b. False

7. OSHA's maximum daily limit for employee exposure to lead is called the "permissible exposure limit" or PEL.

a. True
b. False

8. OSHA requires construction employers to provide workers with PPE to protect them while the actual lead exposure levels on the job site are being determined.

a. True
b. False

9. A respirator must be fit tested to determine if it can give you full protection against airborne lead.

a. True
b. False

10. A fit test ensures that your respirator is equipped with a suitable filter cartridge.

a. True
b. False