



**STREETER**  
ASSOCIATES

**SHARP MINDS. SUPERIOR CONSTRUCTION.**



# **LEAD AWARENESS COMPLIANCE** and **TRAINING**

TAB II



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## **LEAD AWARENESS POLICY**

Streeter Associates, Inc. does not perform Lead Abatement work. There are however, certain trigger tasks that may fall under Streeter Associates, Inc. normal course of work. These tasks are known as trigger tasks. The Project Superintendent shall determine if tasks being performed are trigger tasks that may have the potential for lead exposure.

If exposure is expected or suspected the Lead Program will be instituted or the owner will employ a lead abatement contractor to perform the work.

**NO WORK IS TO BE DONE WITHOUT IMPLEMENTATION OF THE LEAD PROGRAM BY THE CORPORATE SAFETY DIRECTOR, PROJECT SAFETY COORDINATOR AND PROJECT SUPERINTENDENT.**



## LEAD IN CONSTRUCTION TRAINING PROGRAM

### Scope

The OSHA Lead Exposure in Construction Standard Interim, Final Rule, was issued on May 4, 1993. It covers all construction related exposure to airborne lead. Construction work means alteration and/or repair, including painting and decorating. It includes demolition or salvage activities, removal or encapsulation of materials containing lead, new construction, alteration or repair of structures containing lead, installation of products containing lead, lead contamination/emergency clean up, transportation, disposal, or storage of lead contaminated materials, and maintenance activities associated with construction activities.

### Purpose of the OSHA Standard

The purpose of the Lead Standard is to prevent intake of harmful quantities of lead. Lead can be inhaled by breathing dust or fumes, or it can be eaten. This usually occurs when employees eat food or smoke cigarettes when their fingers or hands are contaminated with lead. With the exception of certain lead soaps, lead is not absorbed through the skin. By implementing the steps laid out in our compliance plan, it is the hope of our company that employees will not experience some of the adverse health effects associated with lead. Nonetheless, this information is included in our training program.

### Health Hazards

Lead is a metallic poison. Unlike many metals which the body can use such as iron and magnesium, lead serves no known useful function in the body. In high doses, it can kill in a matter of days. In the human body, lead is directly absorbed and distributed to different organs and excreted. The body is incapable of metabolizing (using for fuel) lead. Inhaled lead deposits can enter deep into the lungs. The lead in the lungs is completely absorbed into the bloodstream.

When lead is swallowed, it can be absorbed from the stomach into the blood stream, though, this is not too efficient. Normally, 10-15% of swallowed lead is absorbed into the blood stream. However, pregnant women and children can absorb as much as 50% of lead from their stomach into the blood stream. Further, individuals who are fasting or have iron or calcium deficiencies will also absorb lead at much higher rates into the blood stream.

Once in the blood, the lead is distributed throughout the body to soft tissues such as the kidneys, bone marrow, liver and brain, as well as bones and teeth. Bones and teeth contain approximately 95% of the total body burden of lead in adults.

Exposures to lead can kill. It can affect the brain, leading to seizures, coma, and death. Lead poisoning can occur at high exposures concentration (acute) or low exposure



concentrations over a long period of time (chronic). It can cause either temporary or permanent damage. Even jobs of a one or two-week duration are capable of causing lead poisoning.

Lead is a cumulative poison. It accumulates in the blood, bones, and organs including the kidneys, brain and liver. It stays in the bones for decades. It can be slowly released over time and cause toxic effects. Early effects of lead poisoning are not specific and usually resemble the flu. Lead dust can also be carried home on contaminated clothing and can result in exposure and symptoms in other family members.

### Acute Health Effects

The effects of exposure to fumes and dust of lead may not develop quickly. Symptoms may include decreased physical fitness, fatigue, sleep disturbance, headache, aching bones, aching muscles, constipation, abdominal pains, headache, decreased appetite, anemia, decreased sex drive, and decreased sex drive. These effects are reported to be reversible if an employee is medically removed from the area.

Acute health effects can be severe which can include damage to the nervous system which includes symptoms of wrist or foot drop, tremors, convulsions, or seizures.

Ingestion of large amounts of lead may lead to seizures, coma and death.

### Chronic Exposures

As mentioned, lead can accumulate in the body over a period of time. Therefore, long term exposures to low levels of lead can build up a burden of lead in the body and produce more severe symptoms. These symptoms include anemia, pale skin, a blue line at the gum margin, decreased hand/grip strength, abdominal pain, severe constipation, nausea, vomiting, and paralysis of the wrist joint. If the nervous system is affected, usually due to very high exposures, the resulting effects can include severe headache, convulsions, coma, delirium, and death. In non-fatal cases, recovery is slow and not always complete.

Prolonged exposure to lead may also result in kidney damage. Usually, this damage is not detected until 66% of kidney function is destroyed.

### Reproductive Hazards

Chronic exposure to lead poses a severe reproductive hazard to both men and women! Overexposure to lead may result in decreased sex drive, impotence, and sterility in men. Lead can alter the structure of sperm cells which increases the risk of birth defects. Women have sustained miscarriages when their husbands have been overexposed to lead.



Women exposed to lead can also sustain miscarriages or yield birth defects as well. Lead exposure may also result in decreased fertility and abnormal menstrual cycles in women. Exposure to lead can severely affect a pregnancy because lead can cross the placental barrier and thus cause damage to the developing fetus.

Children born of parents, either of whom were exposed to excess lead levels, are more likely to have birth defects, mental retardation, behavioral disorders or die during the first year of childhood. Blood lead levels of workers (both male and female) who intend to have children should be maintained below 30 micrograms per deciliter of blood to minimize adverse reproductive health effects to the parents and to the developing fetus.

### Impact Upon Children

Evidence of toxic effects of low levels of lead appear mostly in studies on children. Low lead concentrations in children most seriously affect the central nervous system and the peripheral nervous system. It has been found that children with highly elevated lead levels have poor hand-to-eye coordination, longer reflex reaction time, poor muscle control, and lower IQ scores. These children were also more likely to drop out of high school than children with low lead levels. Increases in anti-social behavior have also been reported in children with high blood lead levels.

Until recently, it was believed that children who suffer from low dose lead toxicity began accumulating the lead in their bodies through infancy, usually as a result of eating lead paint chips or inhaling lead paint dust. However, it has been demonstrated that elevated blood lead levels began concentrating lead in the body during fetal development by absorbing the lead passed through the placenta from their mother's blood. Affects associated with infants who have had exposure to maternal blood lead levels, include hyperactivity, aggressive behavior, hearing loss, delays in the age in which the child first walks, and balancing problems. These findings indicate that while very low levels of lead may not have significant toxic effects on adult females, these same levels can have a major impact on the neurological and intellectual development of the fetus.

For these reasons, workers at our lead construction projects are not permitted to wear work clothing home. Instead, all employees will go through a decontamination phase involving removal of work clothes, showering and changing into street clothes.

### Cancer

There is no evidence linking employee exposure to lead with developing of cancer of any type.



### OSHA Limits

The new Lead Exposure in Construction Standard has established a permissible exposure limit of 50 micrograms per cubic meter of air averaged over an 8-hour day. When employee exposures exceed this level, engineering controls, safe work practices, and respiratory protection are required.

Along with the permissible exposure limit, OSHA has established an action level of 30 micrograms per cubic meter of air averaged over an 8-hour period. When employee exposure levels to lead exceed the action level, certain requirements of the standard are triggered such as air sampling, medical surveillance, and employee training.

### OSHA Requirements

The Lead in Construction Standard has established specific requirements for the following: exposure assessment; interim protection; methods of compliance including a compliance program; respirators; personal protective equipment and work clothing; housekeeping; hygiene facilities and practices; medical surveillance and removal; employee information and training; signs; and recordkeeping.

### Exposure Assessment

Exposure assessment requires that the employee exposure to airborne lead be determined. The exposure will be monitored in the employee's breathing zone. Air sampling need not be done for all employees. Representative sampling can be conducted which means that employees in each job classification, in each work area, and in the shift with the potentially greatest exposures can be monitored. Initial air sampling can be eliminated if there is previous monitoring data, within the last 12 months, which indicates the lead levels in air or if there is objective data which indicates that a process cannot lead to exposures above the action level.

If the air monitoring data indicated that the employee exposure is below the action level, no new monitoring needs to take place unless there has been a change in the process, equipment, personnel, etc., which can produce exposures above the action level. If exposures exceed the action level but are below the permissible exposure limit, re-monitoring of the employee exposure must occur within 6 months. Termination of monitoring can occur if two consecutive measurements taken at least 7 days apart are below the action level.

If exposures exceed the permissible exposure limit, then monitoring of the employee exposure to lead must be done on a quarterly frequency.

All employees will be notified of the air monitoring results in writing within 5 days of completion of the exposure assessment. If the exposure is above the permissible exposure



limit, a statement will be issued that indicates this fact and the corrective action which will be taken to reduce the employee exposure below the permissible exposure limit.

### Interim Protection

In most cases, the exposure assessment will not be completed until lead operations are underway or even ended. Therefore, in order to protect employees during that period of time, some degree of interim protection will be provided. OSHA requires that the following types of interim protection be provided: respiratory protection; engineering controls; personal protective equipment; change areas; hand washing facilities; biological monitoring; and training.

There are three groups of tasks which require interim protection. The first groups of tasks are those where exposures will exceed the exposure limit, but will be below 500 micrograms per cubic meter. The second task group presumes employee exposure above 500 micrograms per cubic meter and requires respiratory protection with a protection factor of 25. The third task presumes a very high exposure of lead in excess of 2500 micrograms per cubic meter and requires providing a respirator with a protection factor of above 50. Various tasks in the exposure interim groups are specified in Chapter 3 of this manual.

### Compliance Program

It is required that engineering controls, work practice controls, and respirators be used to reduce the employee exposure below the permissible exposure limit to the extent feasible. Administrative controls, in the form of job rotation can also be utilized.

OSHA requires that our organization have a written compliance plan. This compliance plan will be maintained by the competent person and will be revised every 6 months. The compliance plan features a description of each activity in which lead is emitted; specific means to achieve compliance; technology used to reduce exposure below the permissible exposure limit; air monitoring data; a detailed schedule which indicates the implementation of the compliance program; and informing other contractors of exposure. This compliance program is available to employees at any time during the work shift.

### Respiratory Protection

Respiratory protection is required when exposures to lead exceed the permissible exposure limit. The respiratory protection will be provided at no cost to the employees. The type of respirator which can be worn depends upon the airborne concentration of lead. Powered air purifying respirators can be worn when lead concentrations are below 2500 micrograms per cubic meter.





The usage of respirators requires that a respiratory protection program be implemented. The program must comply with OSHA Standard 1910.134. That standard establishes minimum criteria for a respiratory protection program. Specific requirements of the respiratory protection program are provided in Appendix A (Section 18) of this manual.

All employees who wear a negative pressure respirators must undergo a fit testing procedure, training and be medically cleared. If at any time employees experience difficulty in breathing during the usage of the respirator, leave the danger area, remove the mask in a safe area and contact the safety director.

### Protective Clothing and Equipment

Protective work clothing will be provided to all employees who are exposed above the permissible exposure limit. Clean clothes will be provided on a weekly frequency when levels of lead exceed the permissible exposure limit. If levels of lead exceed 200 micro-grams per cubic meter, then clean clothes will be provided on a daily frequency.

The employees are never to wear protective work clothing home. All protective clothing will be removed at the end of the shift. No blowing, shaking, or other means which can cause lead to become airborne should be applied to clothing worn by employees. Preferably, heavily contaminated clothing should be HEPA vacuumed. After protective clothing is removed, employees should remove the respirators last and wash hands and face and/or take a shower.

### Housekeeping

A housekeeping program will be established to reduce the accumulation of lead dust on surfaces. Vacuuming with HEPA filters is the preferred method. Usage of compressed air to clean floors and other surfaces is not allowed unless this removal with compressed air is done with a ventilation system designed to contain lead dust. Dry or wet sweeping, shoveling, or brushing is not to be used except where vacuuming or other effective measures have been tried and do not work.

### Hygiene Facilities & Practice

Hand washing facilities will be provided at all operations where exposure to lead occurs. Change areas, showers and lunch rooms or eating areas will be made available as well. Food and beverages, tobacco products and cosmetics can only be applied in the clean areas where exposures are below the permissible exposure limit. Change rooms will be equipped with separate storage facilities for protective clothing and equipment and street clothes to prevent contamination. After showering, no required protective clothing or equipment worn during the work shift can be worn home. All contaminated clothing must be left in change areas in drums which are labeled as to their contents.



Lunchrooms or eating areas may not be entered with protective clothing or equipment unless surface dust has been removed by vacuuming, down draft booth, or other cleaning methods. Workers must wash their hands and face prior to eating, drinking, or smoking.

### Medical Surveillance

A medical surveillance program is in place. Its purpose is to determine if the work practices, engineering controls, and personal protective equipment providing adequate protection for employees to prevent lead poisoning. All medical surveillance will be performed by or under the supervision of a licensed physician. The medical surveillance is available without cost to employees and will be done at a reasonable time and place. The medical surveillance has two parts, biological monitoring and medical examinations.

The complete medical surveillance program is available to all employees who are or may be exposed to lead in excess of the action level for more than 30 days per year. Initial medical surveillance consists of blood sampling for lead and zinc protoporphyrin and this will be provided to all employees exposed at any time above the action level. The blood test will be conducted every two months for six months and every six months hereafter if the blood levels are below 40 micrograms per deciliter. If blood lead levels are above 40 micrograms per deciliter, blood lead monitoring will occur every six months to at least every two months and not be reduced until two consecutive blood lead levels indicate a level below 40 micrograms per deciliter.

If the employee's blood lead levels are above 40 micrograms per deciliter, they will be informed in writing within 5 days of their test results.

The standard also has a medical removal provision. Any employees who have blood lead levels in excess of 50 micrograms per deciliter must be medically removed from the work place. Employees are not allowed to return to the work place until the two consecutive blood lead levels are below 40 micrograms per deciliter.

### Chelation Therapy

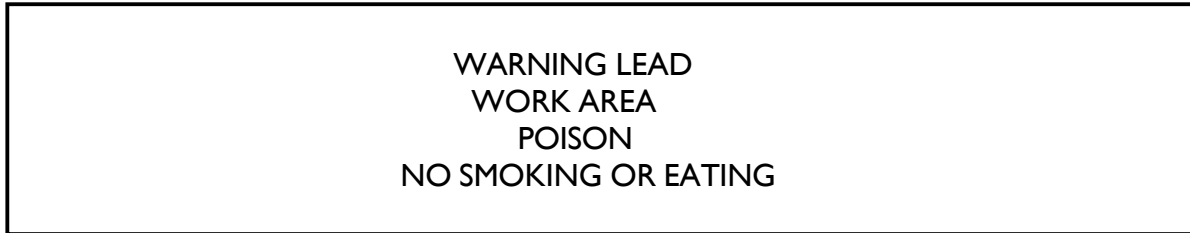
No employees will be subject to prophylactic chelation therapy at any time. The purpose of chelation is to prevent elevated blood lead levels in workers who are occupationally exposed to lead, by using various types of drugs to lower the blood levels to pre-designated concentrations believed to be safe. However, routine chelation therapy to prevent an increase or reduce current blood lead levels is unacceptable.

If therapeutic or diagnostic chelation is to be performed, it will be done under the supervision of a licensed physician in a clinical setting with thorough and appropriate medical monitoring and each employee will be notified in writing prior to its occurrence



### Signs

Signs will be posted in all areas where the exposure to lead exceeds the permissible exposure limit. The signs will have the following information:



### Recordkeeping

All medical surveillance information, objective data, exposure monitoring, medical removal information, and any other documents which indicate an employee's exposure to lead will be kept for the duration of the employee's employment plus 30 years.

All employees have a right to have access to this information upon request.

### Summary

All construction activities where exposure to lead may exist are required by OSHA to provide annual training to employees. This program has been designed to address those training needs and to comply with the training requirements. If you have further questions regarding the lead exposure at your workplace, please feel free to inquire at the end of this training program or ask your supervisor