Risk navigator

Lead exposure awareness for contractors

By Ray Howard, MBA,
Director, Technical Engineering and
Risk Solution Services Training

Construction

Table of contents

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Risk Solution Services provides technical insight related to existing and potential insured risks at Markel. The team partners with our customers, claims, and underwriters to educate on both current and future risk trends and supports our clients with a broad offering of risk management solutions.

E-mail our team at risksolutions@markel.com.

Table of contents

As a contractor, your employees and/or subcontractors may encounter lead-based paint (LBP) or work on a job site at which regulated LBP work is ongoing. When absorbed into the body in high enough doses, lead can be toxic. The major source of lead for most adults is occupational exposure.

What is lead?

Elemental lead is a heavy, soft, malleable blue-colored metal. It typically occurs naturally in the form of ores. Lead was added to paint to speed up drying, increase its wear and durability, maintain a fresh appearance, and resist moisture that caused corrosion on surfaces.

History of lead paint

When lead-based paint was marketed before its federal ban in consumer products in 1978, it was a legal product in great demand because it was washable and durable. It was repeatedly endorsed by the US and state and local governments, and specified for use on government buildings until the mid-1970s. Its use peaked in 1922, and by 1940 the use of white lead pigments for interiors was on the way out.

As uses of lead pigments in paints evolved, so did the primary pathways through which children were thought to be exposed to lead and the level of exposure thought to be safe. It was not until 1974 that household dust emerged as a possible pathway for lead exposure. Only in the late 1970s did comprehensive epidemiological studies of children's blood lead levels begin, raising modern concerns about blood lead levels. When the Lead Poisoning Prevention Act was passed in 1971, a blood lead level of 60 micrograms per deciliter was considered safe. In 1991, acknowledging the change was based on "very recent research," the Centers for Disease Control and Prevention (CDC) lowered the blood lead level of concern to ten or above.

The updated level of concern remained until 2012 when the CDC established a new measure of blood lead levels–the "reference" level–that was set to include the highest 2.5 percent of tested children. That reference value, which is not health-based and will change over time, is currently five micrograms per deciliter. For infants and young children, surface dust and soil are major lead exposure hazards because young children play on floors and outside play spaces that may be contaminated with lead. The surface dust and soil exposure pathways are often derived from LBP.

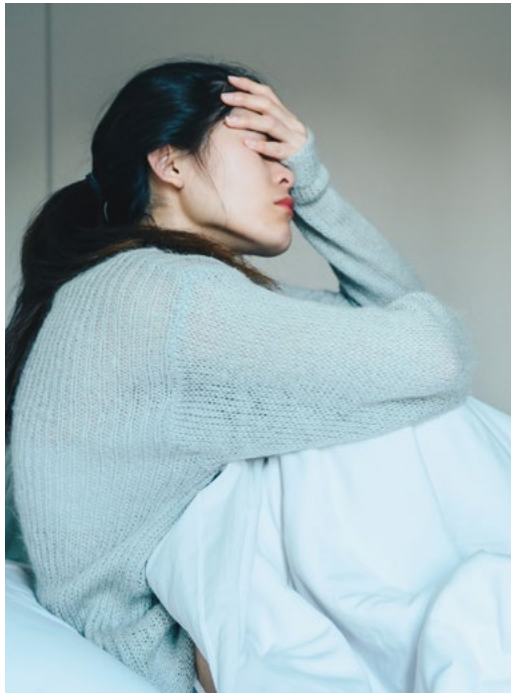
Tens of millions of housing units contain at least some LBP. Children living in homes with LBP become exposed by directly eating chips of LBP or chewing on protruding surfaces painted with LBP. In construction, lead is used for roofs, cornices, tank linings, electrical conduits, and soft solder used in plumbing. Although banned in consumer paint products since 1978, because lead-based paint inhibits rusting and iron and steel corrosion, it continues to be used on bridges, railways, ships, lighthouses, and other steel structures.

Table of contents

Lead exposure

Lead in the body can cause serious damage to the central and peripheral nervous system, the cardiovascular system, and the kidneys. Lead is also toxic to both the male and female reproductive systems.

Lead is most commonly absorbed into the body by inhalation but can also be absorbed through the digestive system if it enters the mouth and is ingested. Once in the bloodstream, lead is stored in various organs and body tissues. As exposure continues, the amount stored increases if the body absorbs more than it excretes.



Symptoms of chronic lead exposure include:

- Loss of appetite
- Constipation
- Nausea
- Excessive tiredness
- Headache
- Fine tremors
- Colic with severe abdominal pain
- Metallic taste in the mouth
- Weakness
- Nervous irritability
- Hyperactivity
- Muscle and joint pain
- Anxiety
- Pallor
- Insomnia
- Numbness
- Dizziness

A person can obtain lead poisoning through exposure to a single high-level source or through the cumulative effect of repeated exposure to several low-level sources. The more common route of exposure is the ingestion of lead-bearing dust that is generated by lead-based paint when it deteriorates, chalks, or is disturbed through renovations or abrasion from opening and closing windows.

Employers whose employees may be exposed to lead and who have been contacted by employees with concerns about reproductive issues must make medical examinations and consultations available.

Table of contents

Regulations

Below is a partial list of federal regulations pertaining to lead exposure. State, county, and even municipalities may have their own regulations related to lead products in commercial and residential structures.

- **The Occupational Safety and Health Administration's (OSHA) lead standard for the construction industry (29 CFR 1926.62)** applies to all construction work where an employee may be occupationally exposed to lead. The standard applies to demolition or salvage of structures where lead or materials containing lead are present; removal or encapsulation of materials containing lead; new construction, alteration, repair, or renovation of structures, substrates, or portions thereof, that contain lead, or materials containing lead; installation of products containing lead; lead contamination or emergency cleanup; transportation, disposal, storage, or containment of lead or materials containing lead on the site or location at which construction activities are performed; and maintenance operations associated with those activities. The standard establishes exposure limits, action limits, training and monitoring requirements, personal protective equipment (PPE) requirements, and medical surveillance requirements
- **The Environmental Protection Agency's (EPA) Lead Renovation, Repair, and Painting Program rule under *Lead-Based Paint Poisoning Prevention in Certain Residential Structures* (40 CFR Part 745)** requires those engaged in RRP activities in homes or child-occupied facilities (e.g., day care centers and kindergartens) built prior to 1978 be trained and certified in lead-safe work practices, and use these work practices to guard against lead contamination. It also requires that contractors provide information on lead safety prior to beginning work
- **The Toxic Substances Control Act (TSCA) Lead Abatement Program**
  - **Training and certification program for lead-based paint activities (TSCA Sections 402/404)** requires that those engaged in lead abatements, risk assessments, and inspections in homes or child-occupied facilities (e.g., day care centers and kindergartens) built prior to 1978 be trained and certified in specific practices to ensure accuracy and safety
  - **Residential hazard standards for lead in paint, dust, and soil (TSCA Section 403)** sets standards for dangerous levels of lead in paint, household dust, and residential soil
- **The Residential Lead-Based Paint Disclosure Program (Section 1018 of Title X)** requires potential buyers and renters of housing built prior to 1978 receive certain information about lead and lead hazards in the residence prior to becoming obligated to buy or rent and provides the opportunity for an independent lead inspection for buyers

Worker protection

Contractors should be careful to adhere to the worker protections outlined in the OSHA regulations. These protections include, but are not limited to:

- Monitoring work areas to detect whether employees' lead exposure is above the permissible exposure limit (PEL) of 50 micrograms per cubic meter of air (µg/m3), which is the maximum worker exposure to lead averaged over an eight-hour period) or action limit (AL-30 µg/m3)
- Using appropriate engineering controls and work practices to keep exposure below the PEL and AL, where feasible

May 2021

Table of contents

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- Using proper PPE (e.g., respirators) to supplement engineering controls and work practices when they alone are unable to ensure worker protection

- Communicating and erecting warning signs in areas that have exposure potential above the PEL and AL. No smoking, eating, or drinking should occur in those areas. Appropriate personal protective equipment must be provided and used to prevent exposure
- Instituting a lead information and training program and ensuring employee participation for all workers exposed at or above the AL. Training should be provided prior to the time of job assignment or start-up date and at least annually thereafter
- Providing a medical surveillance program for all employees who are or will be exposed at or above the AL. Analysis of blood lead samples must be conducted by an OSHA-approved laboratory on the following schedule:
  - At least every two months for the first six months and every six months thereafter for employees exposed to lead above the AL for more than 30 days annually;
  - At least every two months for employees whose last blood sampling and analysis indicated a blood lead level at or above 40 µg/dl; and
  - At least monthly while an employee is removed from exposure due to an elevated blood lead level (over 50 µg/dl)
- Maintaining records pertaining to exposure assessment and medical surveillance

Issues for contractors and their employees to consider

- The building owner or another responsible person should oversee the custodial and maintenance staffs and contractors during all activities involving enclosed or encapsulated LBP
- The OSHA standard requires each employer to perform an initial exposure assessment to determine if any employee may be exposed to lead at or above the AL. The exposure assessment must be conducted by a competent person
- Individuals conducting lead-based paint abatement, risk assessment, or inspection must be properly trained and certified by an accredited training program
- Until the employer documents that employees are not exposed above the PEL, some degree of interim protection is required for certain tasks prone to high exposure
- The employer should consult a qualified safety and health professional to develop and implement an effective, site-specific worker protection program
- For each job at which employees are exposed above the PEL, the employer must establish a written compliance program
- If an employee's airborne lead level is at or above the AL for more than 30 days in any consecutive 12 months, the employer must make biological monitoring available to that employee
- A competent person capable of identifying existing and predictable lead hazards in the surroundings or working conditions, is required for initial exposure assessment and regular inspections at lead exposure job sites. The competent person has the authority to take prompt corrective measures to eliminate exposure hazards. Be careful of the way a competent person is identified by an employer; OSHA is very strict about those requirements

Table of contents

- Engineering controls, good work practices and training, and use of PPE are the most effective way to protect workers from lead exposure
- Specific attention should be paid at multi-contractor work sites. A description of arrangements made among contractors with respect to informing affecting employees potentially exposed to lead should be performed in compliance with the OSHA multi-employer worksites policy

Questions to ask when potential exposure to LBP occurs

- Is the building owner or another responsible person actively overseeing custodial or maintenance staffs and contractors during all activities involving enclosed or encapsulated LBP? Oversight will minimize the potential for inadvertent lead release during maintenance, renovation, or demolition
- Have you conducted an initial exposure assessment to determine whether employees are exposed to lead above the AL? The exposure assessment should be based on any information, observation, or calculation that indicates employee exposure to lead; any previous measurements of airborne lead; and any employee complaints of symptoms attributable to lead exposure. Where monitoring is required, the employer shall collect personal samples representative of a full shift, including at least one sample for each job classification in each work area either for each shift or for the shift with the highest exposure level

- Are the inspectors and contractors hired to conducting lead-based paint abatement, risk assessment, or inspection properly trained and certified by an accredited training program? Training programs may offer courses for inspectors, risk assessors, supervisors, abatement workers, and project designers. These professionals are required to complete an initial training course and annual refresher courses
- Have you documented that employees are not exposed to lead above the PEL? If not, interim protection such as respiratory protection, protective work clothing and equipment, hygiene facilities, biological monitoring, and training is required
- Have you consulted a qualified safety and health professional to develop a site-specific worker protection program that includes lead exposure?
- Are your workers exposed above the PEL? If so, have you established a written compliance program? The compliance program must provide for frequent and regular inspection of job sites, materials, and equipment by a competent person. The written program must be reviewed and updated at least annually, and the update process should be documented

Table of contents

- Are your employees exposed above the AL for more than 30 days in a consecutive 12-month period? If so, biological monitoring must be made available
- Are appropriate engineering controls, good work practices, and lead exposure training programs in place? Is there documentation available that demonstrates the controls have been put into place, and is that documentation retained after a project is complete?
- Do you work on multi-employer worksites? Are you or another employer on the job site performing work that may result in lead exposure? It is the responsibility of the employer whose work created the exposure condition to address the hazard it created and bring the hazard into compliance

May 2021

Table of contents