Lead - Be Aware and Beware

Lead (Pb) is a bluish-gray metal found in nature. Because it is chemically similar to calcium, it is readily absorbed by the body. Once in the body, it can be stored in bones and other tissue for as long as 30 years. Therefore, small doses of lead over a long period can pose a risk to a person's health.

Lead is absorbed primarily through the lungs and stomach, is cumulative in the body, and can potentially cause lead poisoning. Left untreated, lead poisoning can damage the blood-forming system, internal organs, including the reproductive system, kidneys, nervous system, and the brain. Symptoms of chronic overexposure include metallic taste in the mouth, nausea, weakness, insomnia, headache, tremors, numbness, and severe abdominal pain. Severe lead poisoning can lead to seizures, coma, and death.

Employees who perform sawing, sanding and other mechanical processes on lead containing products can be exposed to airborne lead dust. Because lead melts at a relatively low temperature, it can be easily heated until it emits tiny particles called fumes. Fumes can be generated by welding and torch cutting. They can even be produced if a heat gun is improperly used during paint removal.

The Occupational Safety and Health Administration (OSHA) requires that local exhaust ventilation, wet methods, or other feasible practices be used to limit the inhalation of lead fumes and dusts. When engineering and work practices are not effective, employees must wear the appropriate respirators.

In older buildings, a common source can be from lead paint peeling from walls, windows, ceilings or other surfaces. If you notice paint has peeled or peelings have contaminated other surfaces, notify someone who can determine whether the particles contain lead. A sample might be sent to a laboratory to test for lead. Unless a test shows that these particles do not contain lead, keep people away from contaminated surfaces and do not allow fans or other devices to "blow" the particles into the air.

Another situation to be aware of is where nearby housekeeping, repair or construction work is done on surfaces that might involve lead paint. The following regulations apply to workers exposed to lead: 1) 29 CFR §1910.1025 for General Industry, and 2) 29 CFR §1926.62 for construction. OSHA has strict requirements for housekeeping of surfaces contaminated with lead.

- Vacuum cleaners must have high efficiency (HEPA) filters.
- Compressed air may not be used unless it is connected to an exhaust hood that "captures" the contaminated stream of air.
- Shoveling, sweeping, and brushing may be used only if other methods have been tried and have been shown to be ineffective.

Hygiene is very important where lead contacts the skin. Lead does not readily dissolve in water, so it can be difficult to wash away. Very tiny particles of lead can remain on the hands and be transferred to food or chewing gum. Lead from the contaminated item can then be ingested, which increases the amount of lead that accumulates in the body.

Most lead circulates in the blood for only a few days after exposure; therefore, the timing of blood tests is very important. Absorbed lead is distributed through the blood and most of it is deposited in the bones. Some lead is also deposited in soft body tissues and organs, including the nerves and the brain. Because the kidneys limit excretion of calcium and lead, lead can build up in the body over many years.

Acute or large dose over-exposures can quickly result in seizures, coma, and even death. Lesser, more common poisonings result in flu-like symptoms, which often fail to be correctly diagnosed. Long-term exposures can damage the nervous system, impacting coordination and behavior.

Exposure can have serious effects on the reproductive function in both men and women. Lead can pass through the placental barrier to a developing embryo or fetus. Additional effects include digestive symptoms, kidney damage, high blood pressure, and anemia.

The keys to reducing the risks due to ingesting or breathing lead particles are to identify lead paints and other lead contamination, keep surfaces free of lead contamination, and work with lead using the appropriate methods.

Management:

1. Are we using lead blocks, bricks, sheets, or bags of lead shot, and do we store such materials on site?
2. Is our lead shielding inventory properly stored in containers or covered in designated areas?
3. Do we use inventory tracking to facilitate proper lead storage and to keep lead inventories to a minimum?
4. Are our safety and health people and affected workers aware of OSHA's requirement that all surfaces in our lead storage be maintained as free as practical of lead dust?
5. Do we have written procedures for handling lead, lead compounds, and lead wastes?
6. What training have we provided our workers on working with lead and lead compounds?
7. Have we made available to our workforce the personal protective equipment (PPE) to work safely with lead?
8. If workers are exposed to lead above the Permissible Exposure Level (PEL), are we prepared to provide them the change rooms, showers, and filtered air lunchrooms that OSHA requires?
9. What training have we provided our workers on characterization of lead-containing wastes and reporting of unpermitted releases?

Supervisors and Workers:

1. Do we need respirators and other PPE for the job?
2. Is there a respiratory protection program or written procedures to help us select, use, and properly fit the appropriate respirator?
3. Are warning signs posted where lead exposure could occur?
4. Do we need to seal off the work area with plastic sheets or other means?
5. Will the air in the work area be sampled periodically to confirm an acceptable air quality for work?
6. Are there change rooms, showers, and filtered air lunchrooms available to workers if we are exposed to lead above the PEL?
7. How is the lead dust to be removed from the PPE before entering lunchrooms used by workers exposed to lead above the permissible exposure level (PEL)?
8. Do we need medical examinations because of possible overexposure?
9. Have all employees for the job been properly trained?