**The *BSO Plus Safety Topic* is a review designed from the BSO Plus agenda. This safety topic is your way to stay current on the safety information over the 3 years between BSO Plus and BSR.**

# LEAD

## What is lead?

Lead is a heavy metal that has been in industrial use for thousands of years. It is pale, silvery grey when freshly cut but darkens on exposure to air. It is heavy, malleable and a poor conductor of electricity. It may be used in its pure elemental form or combined chemically with other elements to form lead compounds. Inorganic lead compounds are used in pigments, paints, glasses, plastics and rubber compounds. Lead will tarnish quickly forming a thin layer of lead oxide in moist air; however, it has a high resistance to corrosion.

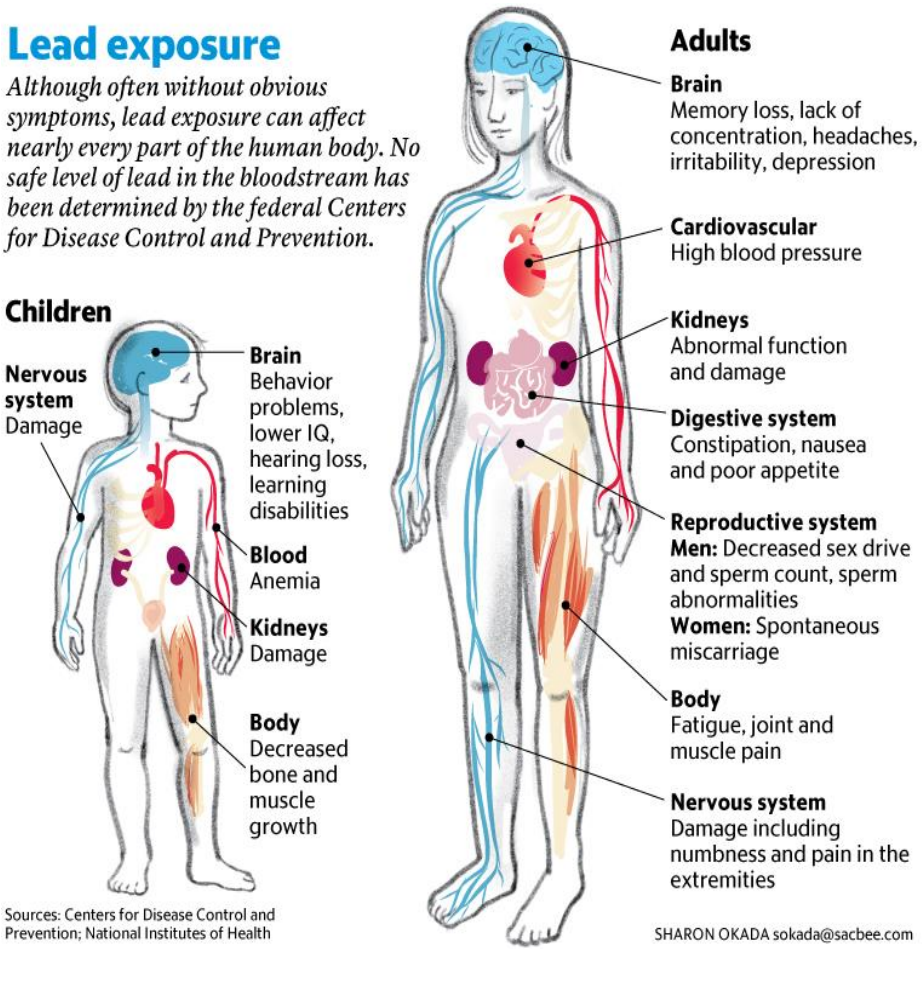
This substance is listed as a Designated Substance under O. Reg. 490/09. This Regulation applies, with respect to lead, to every employer and worker at a workplace where lead is present, produced, processed, used, handled or stored and at which a worker is likely to be exposed to lead (O. Reg. 490/09, s. 10.).

## What are the health effects of lead exposure?

Lead is toxic to almost all of our organs and can affect virtually every system of the body. Repeated exposure to low doses of lead, or short-term exposure to high doses, causes health problems. Once absorbed into the body, 95% of this metal accumulates in the bones and can be released back throughout the body over time, causing damage to the liver, kidneys, brain, bones, and nervous system.

Two routes of entry are of major concern: inhalation and ingestion. Airborne lead particles in the form of fumes, dusts and mists can be inhaled deeply into the lungs if they are small enough. Larger particles are trapped in the upper respiratory tract, cleared from the lungs, and subsequently swallowed. You can also swallow lead dust if it gets in your food or drinks, or if you eat or smoke without washing your hands first.

Although there are many possible symptoms, they should not be relied upon to warn of a lead-exposure problem because some changes take a long time to develop.



## How are workers exposed to lead?

Lead has been commonly used in paints and coatings and can still be found in many old homes and work sites. Removing lead-based paint, or demolishing walls coated with it, can release lead dust into the air.

Lead, especially lead paint, is found on many local plant sites in painted piping or equipment, some galvanized surfaces, and the lining of some vessels or equipment. Lead is also used in things like pipe, solders, lead sheets for x-ray protection, etc. The dust from this metal can be transported off the worksite if it becomes lodged in a worker's hair or clothing such as cuffs, collars, and folds.

Exposure to this hazard is most likely to occur during sanding, soldering, welding, torch cutting, grinding, and abrasive blasting. The most common activities that expose workers to lead are:

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| **Manufacturing** | • Making or using products that contain lead (paint, plastics, ammunition, ceramics)<br>• Can be found where lead was previously used in a manufacturing process. |
| **Construction** | • Found in construction materials, such as paints, coatings, mortar, concrete, solder, and sheet metal.<br>• Present at a construction site in existing structures and building components |
| **Metalwork** | • Smelting, casting, and refining<br>• Welding, brazing, and soldering where lead is in the metal, on the metal, or in the solder or braze<br>• Radiator manufacture and repair |
| **Demolition and abatement** | • Renovating or tearing down any structure that has lead-based paints or coatings<br>• Abrasive blasting of structures coated with lead-based paints<br>• Salvaging or recycling scrap metal |

## How to reduce the risk of lead exposures?


**Elimination**: Workers should substitute a safer process or material where possible (such as a lead-free alternative like using lead-free paint).

**Substitution**: Physical modifications should be made to facilities, equipment, and processes such as making enclosures away from lead-generating processes for workers to reduce exposure.

**Administration**: Awareness tools and training should be provided, as well as changing work practices and work policies, to limit the risk of lead exposure. This includes having shower and change facilities provided that separate areas for work and street clothes.

**PPE:** Workers should wear proper personal protective equipment such as gloves, non-permeable clothing and approved respirators if lead exposure is possible. Workers should wash their hands before eating, drinking, and smoking, and while working should also avoid chewing gum, biting their fingernails, and chewing on pencils. Workers should leave their work clothes at work to avoid lead dust exposure to others, which is especially dangerous for children and for pregnant women.