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Lead and Historic Smelters in Oklahoma

This is one of a series of fact sheets that the Department of Environmental Quality (DEQ) is making available to provide information on the investigation and cleanup of historical smelters in Oklahoma. This fact sheet will tell you about lead in soils.

Lead is a naturally occurring element that is present in rocks. As these rocks erode and become soil, lead gets into soil, water and plants. Some lead contamination above naturally occurring levels can be attributed to former industrial or private practices. The United States Geological Survey reports an average lead concentration of 13 parts per million (ppm) in soils for central Oklahoma ⁽¹⁾ and it reports an average lead concentration of 18 parts per million for the Western United States. ⁽²⁾

Lead was once commonly used in paint and in plumbing. Lead was an additive to gasoline for many years and has also been found in ceramics, mini-blinds and other products. The use of lead in products in the United States has phased out over the years but is still used in some industrial applications. It is not uncommon to find lead in urban settings from a variety of sources.

Homes built before 1970 commonly have lead-based paint. Renovation activities and peeling or flaking paint can release lead inside the home. Identification and clean up of lead-based paint and dust associated with lead-based paint in the home are the responsibility of the homeowner.

The historical smelters in Oklahoma are potential sources of lead, arsenic and cadmium in local soils. These metals can get into the soil from historical air emissions and from the use of

residue and smelter debris as fill material, for driveways, and other uses. Other sources of lead, such as lead-based paint, historical emissions from leaded gasoline and other products are also present in the environment.

Lead can get into the body by swallowing lead-containing particles in paint, soil, dust, food or similar sources. The only way to detect lead exposure is to have a blood lead test. The Centers for Disease Control have set a level of concern for levels of lead in blood for children under 6 years old. The Oklahoma State Department of Health (OSDH) can provide information on the health effects of lead in children and how to have your child tested for lead. You can contact the OSDH Oklahoma Childhood Lead Poisoning Prevention Program at (405) 271-6617.

There is no established regulatory clean up standard for lead in soils by the Environmental Protection Agency (EPA) or the DEQ in Oklahoma. However, the EPA develops screening numbers for contaminants in soil, including lead. These screening levels are concentrations that correspond to very low levels of risk. Screening levels are not cleanup levels, but they are used as indicators of potential problems that generally require further investigation. EPA sets cleanup numbers based on site specific modeling to be protective of human health.

References:

1. USGS, 1991, Open File Report 91-442A, "Elemental Composition of Surficial Materials from Central Oklahoma", Mosier et al.
2. USGS, 1975, Professional Paper 574, "Geochemistry of Some Rocks, Soils, Plants and Vegetables in the Conterminous United States."



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