



Lead in Soil

FACT SHEET

A & L GREAT LAKES
LABORATORIES, INC.

3505 Conestoga Drive
Fort Wayne, IN
46808

Phone: 260-483-4759
Fax: 260-483-5274
lab@algreatlakes.com
www.algreatlakes.com

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Sources of Lead in The Environment

At high concentrations, lead is a potentially toxic element to humans. However, lead is a naturally occurring element in soil. Background concentrations of lead that occur naturally in surface soils in the United States average 10 milligrams per kilogram (mg/kg), with a range of 7 to 20 mg/kg.

There are two major sources of lead contamination:

1. Lead based paint chips from old buildings mixed with the soil.
2. Auto emissions.

Studies conducted in urban areas have shown that soil lead levels are highest around building foundations and within a few feet of busy streets.

Lead in Garden Soils and Plants

The most serious source of exposure to soil lead is through direct ingestion (eating) of contaminated soil or dust. In general, plants do not absorb or accumulate lead. However, it is possible for some lead to be taken up into the plant if the soil tests high for lead. Studies have shown that lead does not readily accumulate in the fruiting parts of vegetable and fruit crops (e.g. corn, beans, squash, tomatoes, etc.). Higher concentrations are more likely to be found in leafy vegetables and on the surface of root crops.

There is more concern about lead contamination from external lead on unwashed produce than from actual uptake by the plant itself. If your garden is close to busy streets or highways, remove outer leaves of leafy crops, peel all root crops, and thoroughly wash the remaining produce in water containing vinegar (1 percent) or soap (0.5 percent).

Soil Test for Lead

The soil should be sampled by taking 6 to 12 sub-samples from the area of concern. For play areas, sample to the depth to which the child has been exposed, usually one half to one inch depth. For garden soils, the sampling depth should be from the surface 3 to 4 inches. Lead does not move to any great extent in soils and unless mixing occurs, it generally stays concentrated near the surface. Mix the sub-samples thoroughly in a clean plastic pail, remove about one cup, and submit to the laboratory in a clean container.

Interpreting Lead Tests

If soil exposure to children is not of concern, then plants can be safely eaten from soils with lead levels of up to 300 mg/kg for leafy and root type vegetables, and 500 mg/kg for fruits and vegetables where the fruiting parts are eaten.

If young children play in the area of concern and your soil test is higher than 100 mg/kg, it is suggested that the children have a blood test for lead. Contact your local health department or private physician for additional information.

Precautions for garden soils

To minimize absorption of lead by plants, a number of control measures may be taken:

1. Maintain soil pH levels above 6.5 by liming when necessary. Lead is less available to plants at higher pH levels.
2. Add organic matter (e.g. compost, manure, etc.) to your soil. Organic compounds bind lead and make it less available to the plant.
3. Locate your garden away from busy streets and older buildings.

Source: Minnesota Extension Publication FO-2543-B