

Soil Nutrient Analysis Laboratory

Soil Nutrient Analysis Laboratory; 6 Sherman Place, Unit 5102, Storrs, CT 06269-5102 • Phone: 860-486-4274
Fax: 860-486-4562 Location: Union Cottage, Depot Campus, Mansfield

SOIL LEAD INTERPRETATION SHEET

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Lead occurs naturally in soils but areas impacted by human activities often have significantly elevated levels of lead. The most common sources of lead pollution were lead-based paints, leaded gasoline emissions and lead-arsenate insecticides. While these products have been taken off the market decades ago, their toxic legacy still remains.



No federal standard for soil lead has been determined for soils where vegetables will be grown. It is well known that plants vary in their uptake of soil lead but generally lead will accumulate in green leafy tissues and in plant roots. The University of Connecticut Soil Nutrient Analysis Laboratory strongly recommends that soils containing 400 ppm total lead or greater should not be used for growing vegetables, herbs and other food crops.

In certain situations, lead contaminated soil poses a risk to human health. It may not be realistic to remove or replace contaminated soil but if the level of contamination is known, measures can be taken to reduce the risk of exposure.

Use the following guidelines to interpret the estimated total lead level on your soil test report:

The University of Connecticut Soil Nutrient Analysis

Laboratory performs soil fertility analyses on more than 10,000 soil samples each year. Recently, our standard nutrient analysis was expanded to screen all samples for lead. The amount of lead measured by this analysis is a reflection of the total soil lead level. It is based on a laboratory determined relationship between the extractable lead measured using our standard nutrient analysis procedure, and the more rigorous EPA approved testing. The estimated concentration of lead in your soil will be listed on the soil analysis report. Estimated lead values that are greater than average background levels indicate the need for further lead testing.

The U. S. Environmental Protection Agency established new standards for lead in soils in 2001. The standards consider lead to be a hazard to human health if there are greater than 400 parts per million (ppm) of lead in bare soil in children's play areas or 1200 ppm average lead for bare soil in the rest of the yard.

Table 1. Interpretation of Estimated Total Lead in

Estimated Total Lead mg/kg (ppm)	Suggested Action
100 or less, low	Soil lead is within typical background levels. No precautions are necessary.
101 - 299	Soil lead levels are elevated relative to background levels. Follow best management practices for garden soils containing lead (see Table 2). It is suggested that blood lead levels of children 6 and under be tested.
300 - 400	Soil lead levels suggest significant contamination. Do not grow green leafy vegetables or root crops. Follow best management practices for garden soils containing lead (see Table 2). Further more conclusive testing is recommended.* It is recommended that blood lead levels of children 6 and under be tested and children should not play in areas of bare soil.
> 400	Soil lead levels are above the EPA level of concern. This soil should not be used for growing food plants. Children should not play in this soil. It is strongly recommended that blood lead levels of children 6 and under be tested. Further more conclusive testing is recommended.*

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Table 2. Best Management Practices for Garden Soils Containing Lead

1. Gardens should be located away from older, painted structures and heavily traveled roads.
2. Give planting preference to fruiting crops like tomatoes, squash and peppers on soils with elevated lead levels.
3. Remove outside leaves of green leafy vegetables, peel root crops, and wash all vegetables thoroughly to remove soil particles.
4. Maintain the soil pH at 6.5 to 7.0 by applying limestone at recommended rates to reduce the availability of lead uptake by plants.
5. Maintain soil organic matter levels between 5 and 10 percent. Organic particles will bind with lead making it less available for plant uptake.
6. Maintain soil phosphorus levels by applying the recommended amounts of fertilizer to garden plots.
 1. Phosphorus can reduce lead uptake by plants.
 7. Minimize dust and exposure to bare soil through use of mulches.
 8. Wash hands thoroughly after contact with lead contaminated soil.
 9. Do not bring food or drinks into areas of contaminated soil.
 10. Soil on tools, gloves and shoes will have elevated levels of lead also. Clean before storing or bringing indoors.
 11. Consider raised beds or containerized plantings in soils with elevated lead levels.

* More extensive lead testing can be performed by environmental testing laboratories. A list of these laboratories can be found at the CT Department of Public Health's website, www.dph.state.ct.us/, or by calling (860) 509-8000.

* More information on lead and health risks can be found at www.nelcc.uconn.edu.

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