

# INTERPRETING TESTING RESULTS FOR BACKYARD SOILS

Metal in your soil	NC “Safe” Level*	NC Background Level (ppm)	Notes
Lead	200 ppm	150 ppm (in urban soils)	Health professionals, scientists, and the US EPA generally agree that lead levels below 200 ppm in soil are lower risk. The average level of lead in urban soils is 150 ppm.  Lead exposure is linked with reduced IQ, learning disabilities, and other serious health problems. Pregnant women and their developing fetus, as well as young children, are especially at risk.
Arsenic	8 ppm	5-7 ppm	NC soil scientists generally use 5-7 ppm as the background level for urban soils in central NC and would not flag arsenic as a concern until it is greater than 8 ppm.
Cadmium	2.5 ppm	0.16 ppm	Elevated cadmium levels can be found in blood and are often found in people who also have elevated lead levels. Scientists have a hard time detecting cadmium below 2 ppm with an XRF so 2.5 ppm is often used as the “safe” limit.

Note: Labs will report the amount of each chemical contaminant in mg/kg or parts per million (ppm) and these units are the same.

\*Using a combination of EPA, DEQ, and DHHS recommended safety levels, our reference levels were chosen to reflect local concerns, geology, previous land use, and human health considerations. In this factsheet, we use the term “NC ”Safe” Level” but this level is also called a screening level, reference level, or threshold. We put “safe” in quotations because environmental health data show that risk is reduced below this level but not eliminated.

## REDUCING EXPOSURE

We recognize that learning about contaminated soil can cause stress and concern. If your test results come back with high levels, there are many actions you can take to protect your family.

People generally come into contact with soil by tracking dust on their shoes, ingesting soil, eating fruits and vegetables grown in contaminated soil, or by breathing in soil particles. So consider:

- **handwashing with soap and water,**
- **leaving shoes at the door,**
- **using floor mats at all entrances,**
- **adopting safer gardening practices,**
- **using a vacuum with a HEPA filter and wet dusting, &**
- **getting young children tested for high levels of lead.**



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# SHOULD I BE WORRIED ABOUT MY SOIL?

Exposure to chemical contaminants in soil can have a variety of health impacts. In most cases, we are concerned about long-term health effects caused by continued exposure to soil contaminants, even at low levels. These long-term health effects may impact a fetus or child's development or may contribute to long-term illnesses or impairments. Children and pregnant women are more sensitive to chemical exposures.

- **During pregnancy, chemical contaminants can impact the developing fetus.**
- **Chemical contaminants are especially harmful for young children, whose brains and development can be harmed even at low exposure levels.**
- **Lead exposure, for example, is linked with reduced IQ, learning disabilities, and other serious health problems.**



## SHOULD I RETEST MY SOIL WITH A LAB?

The values measured by pXRF, the equipment used to provide the results you received, are considered screening values. These results tell you if metals are present and if additional testing may be necessary. You may want to consider additional testing if the amounts of chemical contaminants detected were above the NC "Safe" Level and:

- **you grow food in your garden;**
- **children or pets play in your yard and come in contact with soil;**
- **soil is tracked inside where it could be inhaled or ingested as house dust; and/or**
- **your household has children or women who are or may later be pregnant.**



There is **no free service for testing your soil for heavy metals and other chemical contaminants**. Some private labs that offer soil testing include the following. Contact the lab to ask about their testing procedure.

- |                              |                   |  |
|------------------------------|-------------------|--|
| • Alfa Chemistry Testing Lab | • ENCO Labs       | • TPS Lab                                |
| • Meritech Labs              | • SimpleLab, Inc. | • Waters Agricultural Laboratories, Inc. |

We do not endorse any particular lab. Durham County Cooperative Extension is a great resource for pH and nutrient soil testing but is **not** able to test for chemical soil contaminants. More information available at <https://durham.ces.ncsu.edu/2020/05/nows-the-perfect-time-to-test-your-soil/>.

## DO I HAVE TO DISCLOSE MY RESULTS?

North Carolina law N.C.G.S. Chapter 47E, also known as the Residential Property Disclosure Act, requires residential property owners to complete a disclosure statement and provide information about the results of any testing for environmental hazards that has been done, including soil contamination at any level, to a buyer. **Scan the QR code for more information.**



For rental properties, landlords should disclose the results of soil testing to their tenants.