



City of Pittsburgh - Soil Policy

WHY SOIL TEST?

Soil is an environmental building block that supports plant life, influences the water cycle, and provides habitat. As such, the health of soil on a vacant lot plays a critical role in health, especially if the lot will be in direct contact with community members whether through physical contact or through food consumption. Soil sampling is a tool used to identify the health of the soil on a particular lot. The results will give you baseline information on nutrient levels, pH levels, and certain possible contaminants on a given lot. Knowing this information is highly important for anyone looking to use a vacant lot for green space and to do so with health and safety in mind.

The City of Pittsburgh requires a test for lead levels on all public parcels before use by residents for community green space. We recommend a test for nutrients but require a test for lead and other heavy metals as well.

WHY TEST FOR LEAD?

The most common toxic substance found in our urban soils is lead. Lead occurs naturally in soil in the range 10-50 mg/kg with levels around 20 mg/kg quite common. Due to a variety of health concerns, vacant lot parcels need to be tested for lead. Lead binds with the soil at a molecular level and can be ingested or inhaled, exposing the individual to a toxic level of lead. This is particularly important if children will be in contact with the soil. These microscopic particles of lead can also cause problems with ingestion of fruits and vegetables since they can be taken up into various plants, especially leafy green vegetables such as spinach, kale, and lettuce. Some other plants could be safe, provided they aren't grown in heavily contaminated soil and are washed before eating. As for arsenic, it is absorbed by plants but rarely has it been a human health concern except with rice. Other contaminants, like zinc, kill plants before they reach concentrations dangerous to people.

LET LAYING LEAD LIE

Areas with bare soil and heavy traffic are the biggest concern. Increased suspension and movement of small soil particles means the contaminated dust can be accidentally ingested or inhaled, and it can be tracked home on clothing, shoes and tools. The biggest concern is for small children who are most at risk. If a site has elevated lead, and there is currently grass growing on the site, the best thing to do is leave it. Don't dig or plant without taking proper precautions.

TESTING

Soil test should be done with gloves and all care should be taken to not inhale the soil dust. Unless the lot is noticeably different in two areas (rocky and bare in one area and lush and green in another) one soil test should be sufficient for a standard city lot (25' X 100'). Soil test kits will describe the manner of collecting samples. This is usually done by collecting 10 – 12 random samples and then mixing them together. Sample areas of suspected contamination separately, use shallow samples (2" depth) from undisturbed areas, deeper samples (6") from disturbed or garden bed areas.

You'll want 1-2 cups of soil for your test, so get more to account for rocks and other debris. You can use a core sampler, bulb planter, trowel, or shovel to dig the sample and a clean container for holding the samples. To dry the sample, spread the soil onto newspaper, remove all sticks, rocks, and other debris. Once dry (3 -7 days) place at least one cup of soil into a plastic bag. Seal, label, and mail it with the appropriate form and payment.

NOTE: If this is a high-risk area where there was likely dumping or other potentially dangerous contaminants, please write in the notes section of the form "questionable urban soil" so the lab workers can take the appropriate precautions.

SOIL STANDARDS – Lead testing results¹

The City of Pittsburgh follows these guidelines when allowing use of city land:

- 0 - 150 ppm – May be used without restrictions.
- 151 – 400 ppm - Enforce "Clean Hands" policy – washing hands immediately after leaving the parcel.
- Paths must be covered with grass or mulched to a depth of 3 – 4 inches.
- 401 – 1,000 ppm - Modified use* or find another lot.
- Over 1,000 ppm - No use allowed; find another lot.

*Modified use requirements. For vegetables 8" – 10" raised beds lined with geotextile barriers, or other solid containers with clean soil for planting. All areas not covered with raised beds must be grass covered or covered with garden cloth and topped with 3 – 4 inches of mulch. No digging is permitted anywhere on the lot.

Currently, the best ways of dealing with moderate to high lead levels in soils are to: 1) immobilize the lead by adding 3 inches of soil and planting grass as a cover, 2) mix or cover the lead soil with clean (low lead) soil to a lead level below 150ppm, or 3) eliminate the lead by physically removing the soil and disposing of it in a certified manner.

For more information on soil and soil testing guidelines, see the following sources:

Soil tests are available at the office of Penn State Extension of Allegheny County at the Penn State Center Pittsburgh, Energy Innovation Center, 1435 Bedford Avenue, Suite A, Pittsburgh, PA, 15219.

<http://extension.psu.edu/allegheny/news/spotlight/penn-state-analytical-laboratories-test-your-soil-and-water>

<http://www.growpittsburgh.org/start-a-garden/growers-resources/soil-compost/>

¹ *Lead in Residential Soils: Sources, Testing, and Reducing Exposure*; Penn State College of Agricultural Sciences; Richard Stehouwer; 5M999PS30750.