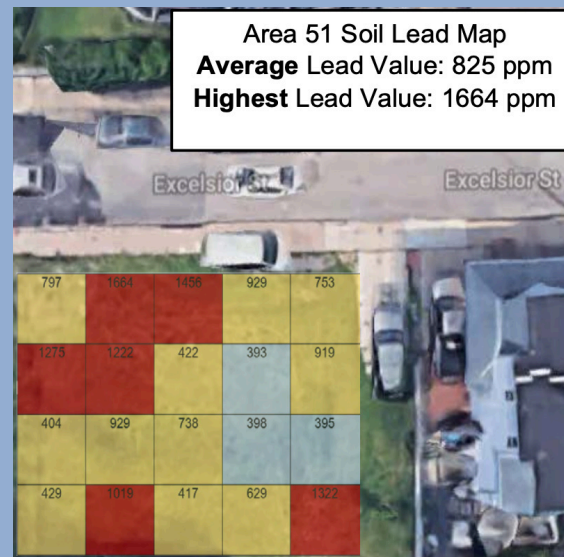


Pb&g Developing Low-Cost Solutions to Industrial Legacy Contaminants on Vacant Land

The Pittsburgh area's industrial past all but guarantees the presence of some form of soil contamination. One very common pollutant that can be difficult to remove is lead (Pb). **There is no known safe level of lead within the human body:** even low blood lead levels can result in serious health consequences for adults (including neurological, gastrointestinal, and reproductive effects). **Children** are at an even greater risk of exposure (partly due to differences in behavior, which can be modified, and partly due to differences in physiology, which cannot). A vacant lot in Pittsburgh's Allentown neighborhood which is known to contain high levels of Pb in its soil is pictured at right. The test results shown are fairly typical for urban lots in this region. Grounded hopes to alert you to the risks that exist in your everyday environment, and offer actionable strategies through which you can improve the safety of your loved ones.



Steps you can take to reduce your risk of exposure:

Get your soil tested! - The first step in understanding your risk of lead exposure on your property is to get your soil analyzed. Penn State Extension (<https://extension.psu.edu>) offers a great deal of information about how and why you should get your soil tested.

Keep your soil pH near neutral - If the results of your soil test indicate that your soil's pH is less than 6.0, add amendments to increase this value. The results of your soil test should include recommendations about amendment types and application rates to adjust this value. By staying away from acid soil conditions, you will reduce the amount of lead that can be readily absorbed by your body, lowering your exposure risk.

Add organic matter - Increasing the amount of organic material in your soil can help to bind soil lead into forms which are less available to plants and animals, thus improving site safety. Organic matter can be added to the soil in the form of finished compost, or as a top-dressing of mulch, manure, coffee grounds, grass clippings, etc.

Amend soil with Phosphorus, Iron, and Manganese - Amendments containing these elements have been shown to reduce lead mobility in soils. Slow release types such as bone char, bone meal, and rock phosphate are recommended for their ease of use.

Keep the soil covered - In addition to the mulching strategy described above, it's helpful to keep a variety of plants growing on top of the soil. By holding soil particles tightly together, plants reduce the threat of dust inhalation, as well as reducing the chance that lead contaminated soil will splash above ground level during rain events. Some plants, such as tussock grass (*Deschampsia cespitosa*), can absorb and bind soil lead in their bodies, making it unavailable for human consumption. Plants that perform this sort of function can be employed in phytoremediation (see diagram above). However, each plant that does this completes the task in a slightly different manner, so it's important to understand where the species you intend to use might store any contaminants they extract.

Build raised beds - If you wish to cultivate edible plants, taking the time to construct raised beds filled with contaminant-free soil will help to protect you from ingesting lead along with the food you grow.

Wash, wash, WASH! - When you get done having fun outdoors, make sure to wash your hands. Thoroughly wash any plants that you plan to eat, making sure to remove any soil particles. It is also advisable to peel root vegetables (beets, carrots, radishes, etc.) prior to consumption.

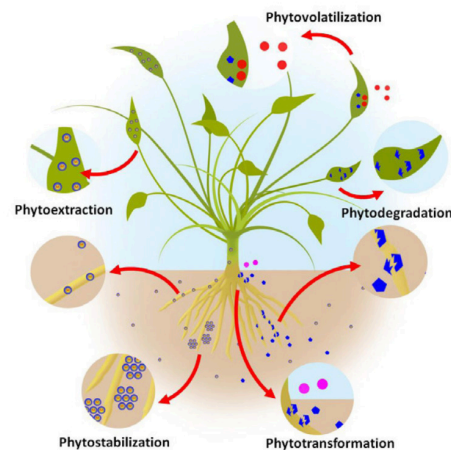


Image Credit: <http://www.opensciencepublications.com/wp-content/uploads/JPSR-2349-2805-2-135.pdf>

Environmental contamination is a reality of urban life. Though it is doubtful that you have personally or intentionally polluted the parcel on which your home sits, it is equally doubtful that the parties responsible for that pollution will remedy the issue on your behalf. Therefore, Grounded believes that a multi-pronged strategy will be most effective in reducing the risk of Pb transmission from urban soils. By employing some of the methods listed above, you can take steps to improve the world we share so that our descendants aren't troubled by our legacy. **Remember, heavy metals are incredibly persistent in the environment: without direct intervention to remove them or render them inert, they will continue to poison those who live nearby.**