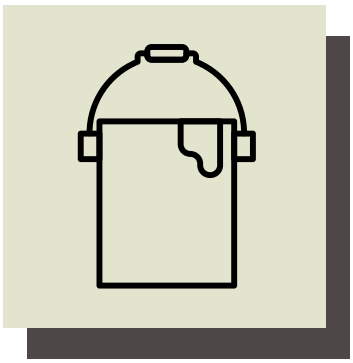
SOIL TOXICITY IN ST. LOUIS

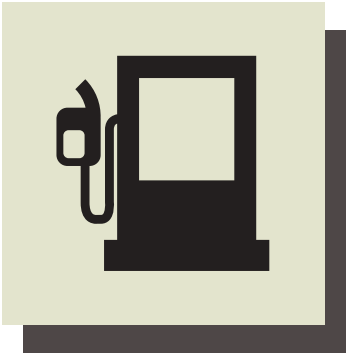
Due to St. Louis' industrial history, there is a high chance that your soil may contain toxic substances. Healthy soil is incredibly important for urban agriculture since plants take up particles from the ground and can pass on harmful elements when they are eaten.

COMMON CONTAMINANTS



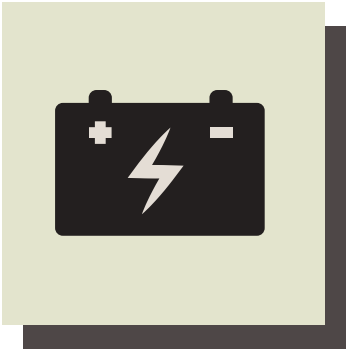
Lead

This is the most common contaminant found in St. Louis soil. Particles may be left over from old paint, pipes, gasoline, or pesticides. It is not uncommon in St. Louis for houses with lead paint to be demolished and buried in the soil. Although the risk of lead poisoning through urban agriculture is generally fairly low, you should take precautions. If the concentration is over 300 ppb (parts per billion), you should not use the soil to grow.



Petroleum

If your site used to contain a gas station, gasoline storage, or is located near a high-traffic area, there is a good chance that there is petroleum in the soil. Petroleum contains toxic chemicals such as PAHs, benzene, toluene, xylene, and ethyl benzene. Phytotechnolgy (the use of plants and bacteria to clean up contaminants) has been shown to effectively treat this contaminant.



Other Heavy Metals

Sewage treatment, pesticides, and industrial activities can leave behind harmful heavy metals such as arsenic, nickel, cadmium, and chromium. These substances are highly toxic when ingested, but phytotechnology can be used to effectively remove them from the soil.

For more information on the health effects of specific substances, visit:
https://www.atsdr.cdc.gov/substances/index.asp

WHAT YOU CAN DO

ON YOUR OWN

Build Raised Beds

To avoid contact with contaminated soil completely, you can build raised beds and fill them with clean soil. Heavy metals such as lead do not move around in the soil, so your plants will not be in any danger. This approach is a short-term solution, since it does not do anything to remediate the soil, so the contaminants will continue exist and potentially cause problems in the future.
For more information on raised beds, refer to Gateway Greening's Raised Bed Guide.

Add Soil Amendments

Adding compost dilutes the concentration of toxic substances, and bind to metals, making them less bioavailable. To learn more visit EPA's Soil Remediation Guide to learn more about types of soil amendments and this article explaining the process. For more information on compost, refer to MCE's Compost Guide.

Another alternative treatment is biochar which is the by-product of incomplete burning of biomass. Research is still being conducted by around the world but it has already proven promising soil benefits and has gained increasing momentum in the past few years. To learn more, click here.

CALL A PROFESSIONAL

Replace Soil

If your soil is badly contaminated, you might have to remove it and replace it with clean soil. This can be expensive, but may be the safest option since none of the original soil or contaminants will remain. For more information on soil removal, visit: Citizen Guide to Excavation of Contaminated Soil.

Phytotechnology

Some substances, such as petroleum products and arsenic, can be removed from the soil using various phytotechnologies. This process can be slow but is less intrusive and often less expensive than other remediation processes. For more information on phytotechnology, refer to EPA's Phytotechnologies for Site Cleanup factsheet.

Sources: https://www.epa.gov/sites/production/files/2014-03/documents/urban_gardening_fina_fact_sheet.pdf
http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/help-for-the-home-gardener/advice-tips-resources/gardening-help-faqs/questionid/276/afmid/4462.aspx
https://clu-in.org/download/remed/phytotechnologies-factsheet.pdf

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