

Healthy Urban Gardening

This handout provides advice for gardening in urban areas where there may be concerns about environmental contamination.

Urban gardening provides many economic, environmental, social, and health benefits. It promotes food security, increases physical activity, brings communities together and makes good use of unused or abandoned land. However, due to the nature of urban and industrial activities in cities, environmental contaminants are sometimes found in urban soil.

Where do I Start?

Do you know what your garden plot was used for in the past? Is it near heavy traffic, old painted structures or industrial facilities? Do you know anything about the soil? Answers to these questions will help you decide whether to test your soil for environmental contaminants, and what to test it for. When creating a garden with an industrial or commercial history, it is important to consider the site's land use history and test the soil accordingly for potential contamination. Understanding of soil quality and potential contamination are keys to helping communities identify and correct problems to ensure safe and productive urban gardens.

What are Soil Contaminants?

A soil contaminant is an element or chemical present in the soil at a level that could possibly pose health risks. While some contaminants are naturally-occurring, in many cases, human activities have increased the levels of many elements and chemicals in soil. Lead, cadmium, arsenic, zinc, and polycyclic aromatic hydrocarbons (PAHs) are examples of contaminants commonly found in any urban environment.



Food Well Alliance Annual Soil Festival

Exposure to Soil Contaminants

Human exposure to contaminants in soil can occur from direct contact (e.g., ingestion, dermal) or indirect from transfer and subsequent contact with other media (e.g., uptake from soil into vegetation and subsequent ingestion). The greatest risk of exposure to contaminants while gardening is from contaminated soil entering the mouth or by breathing in contaminated dust. For example, children may indirectly consume soil through hand-to-mouth contact during play, or individuals may eat plants without washing them to remove contaminated soil and dust. Skin contact with soils containing contaminants such as PAHs, chromium and TCE (trichloroethylene) can also pose health risks.



While some edible plants do take up and accumulate contaminants, most garden fruits and vegetables do not easily absorb chemicals. A plant's uptake of contaminants depends on soil type and pH, types of and concentrations of chemicals, organic matter in the soil, levels of nutrients (like calcium), plant type and plant growth stage. Some produce, such as tubers and root vegetables (e.g., carrots, potatoes and onions), are more likely to absorb chemicals into the edible portions, but most plants do not absorb chemicals into

the fruits or leaves. Careful planning and following best practices can reduce the exposure to and uptake of many chemicals by plants in areas of past industrial and commercial use.

Best Practices for Urban Gardening

- Build 12-inch deep raised beds or use container gardens.
- Improve soil quality by adding compost, organic matter (grass clippings, mulch, leaves) free of pesticides and fertilizers, or soil amendments intended for food crops. Adding a thick layer of organic matter to your soil provides a physical barrier to contamination. Soil amendments have also been used to bind contaminants so that they are no longer mobile or bioavailable.
- Remove all contaminated soil and replace it with clean soil. Make sure the replacement soil has been tested and is contaminant-free.
- Consider phytoremediation, which utilizes plants to degrade, contain or immobilize contaminants in soil. Despite its usability for cleanup of contaminants, phytoremediation is not effective for every contaminant and generally requires special handling for the disposal of plants used. In addition, phytoremediation can take many years to achieve desired effect.



Treated wood and railroad ties:

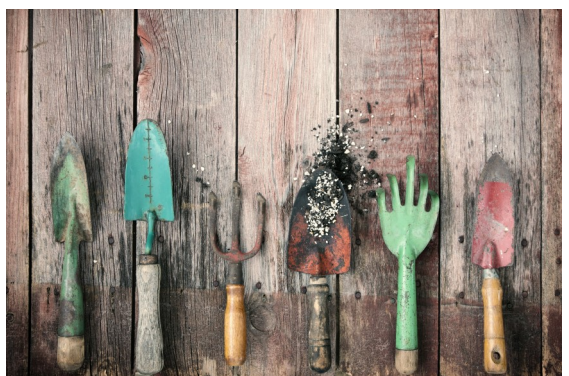
Treated wood and railroad ties are not a good choice to place near food crops because they contain chemicals that make them resistant to rot. Over time, these chemicals can leach into the soil. Consider removing this type of wood if it is already in place. If that is not practical, plant crops at least a foot away from the edge of the wood. As an alternative, you can use a plastic liner to create a barrier between the wood and the garden soil.

Rain barrel water:

If using rain water collected from your roof, consider what your roofing materials are made of. Many standard roofing shingles are made of asphalt and now contain flame retardants and mildew resistant chemicals, in addition to petroleum products. This may be okay for your flower garden, but not for your food crops.

Tips to Remember:

- Test your soil if you have concerns about contaminants.
- Wash and peel all vegetables and root crops that are in direct contact with soil.
- Discard the outer leaves of greens before washing.
- Wash produce under running water.
- Clean tools, gloves and shoes before bringing them indoors.
- Remove and place heavily soiled clothing in a bag before bringing them indoors, and wash them promptly.
- Bathe pets that go outside regularly.
- Wash hands after gardening (even if gloves are used).
- Wash children's hands and feet after they have been playing outside.
- Watch small children to prevent them from ingesting soil via hand-to-mouth contact.
- Locate gardens away from old, painted houses, buildings and roads with heavy traffic.
- Plant gardens at least a foot away from the "drip line" of a house or building to keep food crops away from roof runoff that may contain chemical residues.



HEALTHY URBAN GARDENING



How to Start a Community Garden

1. Form a garden planning committee
2. Identify resources (funds, people, equipment)
3. Approach potential sponsors
4. Choose a site
5. Prepare and develop the site
 - Research property history
 - Analyze soil samples
 - Determine site clean-up and garden design
 - Plan the garden design for children, other sensitive groups, and those with special needs
6. Decide on membership, identify management, roles, and responsibilities
7. Prepare volunteer crews and gather needed materials and equipment
8. Write garden rules and bylaws
9. Establish communication network for members

Resources

UGA Cooperative Extension

www.extension.uga.edu
(800) ASK-UGA1

UGA Agriculture Testing Laboratory

www.aesl.ces.uga.edu

Environmental Protection Agency

www.epa.gov/brownfields

Georgia Environmental Protection Division

www.gaepd.org/brownfields

American Community Garden Association

www.communitygarden.org
(877) ASK-ACGA

Agency for Toxic Substances and Disease Registry

www.atsdr.cdc.gov/sites/brownfields
(800) CDC-INFO



Chemical Hazards Program

Environmental Health Section
Phone: (404) 657-6534
Fax: (404) 657-6533

Visit us at:

www.dph.georgia.gov/chemical-hazards