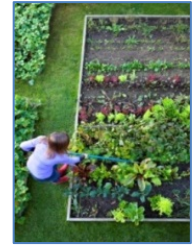


Gardening in Urban Soil

When choosing a space to grow food, it is important to consider what the land was used for in the past. This is not always easy to determine. Some soil may be unsuitable for gardening in both urban and rural areas. Land with prior industrial, commercial or agricultural uses and abandoned lots are types of potentially contaminated spaces.

If you suspect your soil may be contaminated, the information on this sheet provides practical, easy ways to get your garden ready to grow food that is healthy to eat while lowering your possible exposure to chemicals in urban soil.



What chemicals are found in the soil? Where did they come from?

- Chemicals that may be found in soil in higher concentrations include lead, cadmium, arsenic, polycyclic aromatic hydrocarbons, and petroleum related products. Some of these chemicals can be found naturally in soil at lower concentrations (commonly referred to as background levels).
- Some common sources of these chemicals include:
 - Spills from industrial or commercial facilities, farms, or residences.
 - Chemicals released into the air that fall back onto the soil.
 - Illegal dumping of chemicals.
 - Application of chemicals on farms or residential areas.
- For information about land use history and agricultural chemicals from the Minnesota Department of Agriculture, see <http://www.mda.state.mn.us/en/chemicals/spills/incidentresponse/neighborhood.aspx>
- For information about land use history from the Minnesota Pollution Control Site, see www.pca.state.mn.us/index.php/data/whats-in-my-neighborhood/index.html

If there are chemicals in the soil, are they in the produce?

The accumulation of chemicals in produce grown in soil is currently being investigated. Research has shown that some chemicals do accumulate in produce but at lower levels than found in soil. If you follow the practices in this information sheet, it is not likely that chemicals will significantly accumulate in produce grown in your garden.

When planning and preparing your garden...

- Locate produce gardens away from places where chemicals may collect in soil like busy streets, house foundations and eaves.
- Call before you dig to check for buried power, gas, and water lines. Gopher State One Call 1-800-252-1166.
- Use topsoil obtained from a reputable source in the garden area to a depth that can accommodate the roots of all the plants you have chosen. Using a liner under the new topsoil after removing the old soil will reduce the risk of plant roots taking up chemicals. Cover exposed soil near and around the garden with wood chips or ground cover plants to prevent erosion, minimize weeds, and lower your contact with the soil.
- Use raised bed gardens with liners under the new topsoil and/or container gardens for gardening in areas where digging is not possible. Avoid treated lumber such as railroad ties or pressure treated wood. Consider using other materials such as bricks or untreated lumber.
- Consider using containers for deep rooted plants such as tomatoes and rhubarb. The long roots of these plants can grow to a depth of 48 inches. Also, consider using dwarf varieties of deep rooted plants.
- Testing your soil for pH and nutrients will help you to understand what soil amendments, if any, are needed for your topsoil. Be cautious when using soil amendments, such as free composts, that may not be tested for chemicals. For more information about *Composting and Mulching*, see www.extension.umn.edu/distribution/horticulture/DG3296.html



Minnesota Pollution
Control Agency



To lower your chance of ingesting chemicals found in the soil...

- Wash hands well with a brush after gardening and avoid bringing soil on clothes and shoes into the house.
- Keep young children from playing in bare soil. Children often put their hands and/or toys in their mouths as they play introducing dirt into their mouths and into their bodies.
- Thoroughly wash all produce from the garden before eating.
- Discard the outer leaves of leafy produce and peel or thoroughly scrub root vegetables.

Ingestion of soil and dust
...the main way people take chemicals into their body while gardening.

How do I test soils for chemicals?

If you are considering gardening in an abandoned lot or past industrial site, test the soil before gardening and follow recommendations for this type of site. For more information, see the Environmental Protection Agency webpage *Growing Gardens in Urban Soils* at www.clu-in.org/ecotools/urbangardens.cfm

Not every garden needs to be tested. If you would like more information on when to test, what to test for and how to test, please see the University of Minnesota Extension Service document *Urban Gardens and Soil Contaminants* at www.misa.umn.edu/prod/groups/cfans/@pub/@cfans/@misa/documents/asset/cfans_asset_287228.pdf

More Resources:

Growing Gardens in Urban Soils:

Growing Gardens in Urban Soils at www.clu-in.org/ecotools/urbangardens.cfm

Vegetable Gardening: Handbook for Beginners at

<http://celosangeles.ucdavis.edu/files/97094.pdf>

Sustainable Urban Landscape Information Series at www.sustland.umn.edu/



Raised Bed Garden information:

Raised Bed Gardens at www.extension.umn.edu/distribution/horticulture/M1254.html

Container and Raised Bed Gardening at www.extension.purdue.edu/new/ho-200.pdf

Organic Pest Control:

Insects at www.extension.umn.edu/gardeninfo/components/info_insects.html#insectfruits

Organic Pest Control in the Vegetable Garden at

<http://county.wsu.edu/king/gardening/mg/factsheets/Fact%20Sheets/Organic%20Pest%20Control%20in%20the%20Vegetable%20Garden.pdf>

Topsoil and Compost:

Potting Mixes for Certified Organic Production at <https://attra.ncat.org/attra-pub/viewhtml.php?id=47>

Start Composting in Your Backyard at www.pca.state.mn.us/index.php/living-green/living-green-citizen/yard-and-garden/start-composting-in-your-backyard.html

Root Depth:

Vegetable Root Depth – To Gauge Watering Depth at <http://celosangeles.ucdavis.edu/files/121762.pdf>

For More Information:

Contact the Minnesota Department of Health, Site Assessment and Consultation Unit
Phone: 651-201-4897, or toll-free 1-800-657-3908 Email: health.hazard@state.mn.us



Minnesota Pollution
Control Agency



April 2014/English