

Urban gardeners beware: There may be lead in your soil and food

27 September 2010

Not since victory gardens helped World War II era Americans on the home front survive food shortages have urban gardens been as necessary and popular as they are today. With more food production in cities, the safety of the produce grown there becomes increasingly important.

As city dwellers across the country are harvesting fruits and vegetables for family consumption and planning ahead for the next planting season, geochemist Gabriel Filippelli, Ph.D., professor of earth sciences at the School of Science at Indiana University-Purdue University Indianapolis, warns that urban soil may be contaminated with lead. He advises investigating the legacy of contamination in soil before planting and eating.

"Most surface contamination in urban settings like Baltimore, Brooklyn, Detroit or Indianapolis is from harmful metals, especially lead, and tends to be found near roadways, older homes or lead smelters. Sources of contamination can be automobile exhaust, degraded paint, tire and vehicle debris, industrial emissions or other products of human technology," said Filippelli, who is an international leader in the emerging field of medical geology.

He encourages urban gardeners to study a map of their metropolitan area and determine potential soil contamination risk by proximity to busy streets, major roadways, freeways, dilapidated painted structures or older industrial facilities.

Gardens with no or low levels of lead contamination as determined by location or with test results of less than 200 parts per million (ppm) can be abundantly planted, but may benefit from high phosphate fertilizer which immobilizes metals like lead.

For gardens at medium risk based on location or soil tested at 200-500 ppm, he recommends covering the soil, planting in raised bed settings,

and mulching between beds to reduce the risks of tracking lead-rich soil onto the plots or into the home.

For gardens at high lead risk or found to have lead levels of over 500 ppm, he counsels proceeding with caution as contamination could be coming from the soil below and the air above. While taller [fruit](#) plants are probably safe to consume, root [vegetables](#) and leafy greens like lettuce and kale are not, mainly because of the difficulties of cleaning this produce thoroughly before consumption. In this setting, raised-bed planting is critical, as is ensuring mulch or ground cover between beds and extending for 10 feet around the perimeter of the garden.

The produce of all urban gardens, even those at low risk of contamination, should be washed carefully.

"Urban gardens are powerful tools for personal health and for neighborhood revitalization. These plots should be encouraged but need to be tended with special care to ensure that lead does not adhere to the food children and adults are consuming," said Filippelli.

This season, Filippelli and School of Science students are analyzing lead levels in multiple soil samples from an initial 25 urban gardens. They hope to acquire funding to test many more urban plots beginning this autumn to inform urban dwellers, policy makers and researchers.

"Environmental awareness can ensure that a garden is a healthy place to work and that food is safe to eat and share," said Filippelli who has studied [lead](#) contamination in urban [soil](#) for almost a decade.

Provided by Indiana University School of Medicine

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