

USING CITIZEN SCIENCE AND URBAN GARDENING TO TRANSFORM LANDSCAPES OF DESPAIR INTO FIELDS OF PROSPERITY—A LESSON FROM LEAD

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An interesting phenomenon has occurred in many larger U.S. cities over the past decade—an explosion of urban agriculture and a new awareness of sustainable urban food systems. This movement likely has several contributing factors, including newer availability of large tracts of property in cities after the global recession of 2008-2010, a shift in perception of cities as desirable places to live and work, and the influx of creative, innovative, and sustainability-focused young people to cities. For example, the number of registered urban farms has increased from 20 to 110 in Indianapolis (Indiana, USA) over the past five years. Growing food in cities and distributing that food locally has a number of benefits, including enhanced access to fresh and nutritious food, employment of local farmers and distributors, reuse of otherwise vacant land, and generally decreased carbon footprint of food. But urban soils have environmental legacies, not least of which is lead (Pb). Given its geochemistry and past sources, Pb is most enriched in surface soils, exactly where gardeners work and where plants grow.

In an effort to both inform the public and to provide opportunities for citizen scientists, we launched the Safe Urban Gardening Initiative in Indianapolis. This initiative calls on citizens to collect samples of soils from several locations in their yards (under the roof dripline, near a roadway, in the garden or potential garden sites) and deliver these samples to our laboratory for geochemical analysis for Pb. The citizens are provided with instructions, and sometimes sampling kits. Gardening recommendations are provided to participants based on the levels of Pb found, along with a guide to safe urban gardening. The citizens receive data and solutions, and we receive geolocated samples from a broad expanse of neighborhoods. We have analyzed over 3,000 samples and have provided that data back to citizens. We have targeted areas with low SES, high rates of violence, and low school achievement scores to provide ways for those people living in these landscapes of despair to transform them through environmental health education and action, including the development of a number of commercial community gardens that have the power to convert these neighborhoods into green, healthy, and profitable landscapes to benefit the community.