Behaviors to Reduce Exposure to Heavy Metals in Community Gardens

Adapted from the 2018 dissertation of Candis M. Hunter, a trainee of the HERCULES Exposome Research Center.

Introduction and Purpose

Urban agriculture and community gardens are popular activities, with around 800 million people involved in some type of urban agriculture around the world. **Community gardens** are a popular form of urban agriculture, and in the United States there are around 18,000 community gardens, used by 4 million urban gardeners.

- In Atlanta, there are an estimated 300+ community gardens, and this number continues to grow due to the local food movement and the many benefits associated with community gardens.
- Research has shown that community gardens provide many benefits, but can also present some risks such as potential exposure to dangerous **heavy metals**.
- **Heavy metals** in the soil may come from being close to older structures, heavy trafficked roadways, or industry, or from runoff from nearby areas.

Health behavior theory informed this study, which explored the attitudes, perceived social pressures and risk, and barriers/facilitators that affect community gardeners' behaviors to reduce heavy metal exposures (soil testing, composting, handwashing, and mulching). The study also examined demographic and other factors that could contribute to increased exposures such as site history and children's access to the garden.

How the Study Was Done (Methods)

The study used two different methods to understand the behaviors, attitudes, and perceptions that may lead to community gardeners' exposure:

- Focus groups with 26 leaders from Atlanta community gardens
- Survey of 500 community gardeners across the U.S., recruited with help from the American Community Gardening Association

Results of Study

- Only one focus group participant reported previous testing of their soil for heavy metals. Awareness, cost, accessibility, skepticism, liability, and interpretation of results were barriers to heavy metal soil testing.
- Many gardeners did not think of heavy metals as a garden hazard, and did not think of compost and mulch as a way to reduce exposure.
- Only 11% of survey respondents used pesticides in their community garden. Over half said their children are often present in the garden. About half did not know if their garden was near older structures with lead paint.
- Survey results showed that attitudes, social pressure, perceived control, and education were shown to influence intentions to test soil and wash hands.

Limitations (Why we can't draw stronger conclusions)

This study focused primarily on individual factors, without considering factors at the social, community, and policy levels. Also, the participants of the study may not be representative of the wider population of community gardeners.

What does this mean?

While it is hard to draw strong conclusions from one study, the results provide insight into community gardeners' thoughts and feelings about soil contamination and what might cause them to be exposed to contaminated soil. There are many barriers to reducing potential exposure to heavy metals, such as the cost of soil testing and liability concerns. However, there are some steps that can be taken to reduce exposures.

Key Words

Urban Agriculture: The practice of growing, processing, and distributing food in and around urban areas

Community Garden: Land that is used for growing food and that is shared between a group of people.

Health Behavior Theory: Health Behavior Theories study what personal and social factors influence a person's behavior such as perceptions, attitudes, social norms and pressures, relationships, built environments, and policies.

Heavy Metals: Metals that can cause harm when they enter the body in large quantities, such as lead and arsenic.

Tips

- Know the site history of your garden and get your soil tested for heavy metals.
- Consider using gloves when gardening. Either way, be sure to wash hands and leave shoes by the door after gardening.
- Wash produce before eating.
- Organizations that provide services to community gardens should consider offering free or low-cost heavy metal soil testing and advice on next steps if levels are high.
- If heavy metals are present in garden soil, add clean soil and tested compost or mulch, use raised beds, or plant certain flowers such as sunflowers.

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