

Chemicals of Concern and Sampling Considerations at Urban Gardens



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Chemicals of Concern (COCs) in Urban Gardens

- Primary Contaminants of Concern:
 - Metals (lead and arsenic)
 - Polynuclear Aromatic Hydrocarbons (PAHs/PNAs)
- Secondary Contaminants of Concern :
 - Volatile Organic Compounds (VOCs)
 - Polychlorinated Biphenyls (PCBs)
 - Other Metals, Herbicides, Pesticides, Dioxins, and other Semivolatile Organic Compounds
 - Site specific

So, what COCs do you look for?

- Almost always lead
- For Other COCs Must Consider:
 - Site history
 - as determined through an environmental site assessment
 - Planned Use
 - surface planting, raised beds, orchard, greenhouse
 - Who will be exposed?
 - community garden vs. commercial garden

One size does NOT fit all.

Sampling Strategy

- Discrete Samples or Composite Samples?
- Depth of Samples?
- Number of Samples?
 - Depend upon:
 - Budgetary constraints
 - Size of the site
 - Expected contaminant distribution
 - Expected chemicals of concern
 - Personal preference

Be Prepared for Surprises!

- Basements filled with garbage
- Buried foundations
- Unexpected contaminants and contamination patterns
- Underground Storage Tanks



Example Case Study

Background

- Vacant formerly residential property with adjacent commercial and light industrial (dry cleaner, auto repair shop, bakery)
- Proposed use as an educational garden for urban teens
- Tight Budget



Example Case Study

Sampling Strategy

- Started with a combination of composite sampling (for metals, PAHs, PCBs, herbicides, and pesticides) and discrete sampling (for VOCs)
- Utilized multi-incremental composite sampling

Example Case Study

Findings

- Elevated lead and arsenic in one composite
- Re-sampled for lead with discrete samples
- Isolated hot spots were identified
- Hot spots were removed
- Garden planted and is thriving



Summary

- Sampling strategy should be tailored to the specific history and proposed use of each site.
- Do not recommend a policy of 'one size fits all' (unless you have a boatload of money).
- Be realistic going into the process.
- May need to walk away from an unsuitable property.