

Urban farms and personal gardens provide insight into lead contamination in Philadelphia soils

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Philadelphia, PA is similar to most urban centers across the globe in that it has a problem with lead (Pb) contamination. Pb was deposited onto surface soils through the combustion of leaded gasoline until its use was banned in 1996. Philadelphia also has a relatively high concentration of homes built prior to 1960, which increases the risk of lead-based paint on the exterior of the home. Lastly, Philadelphia had the most Pb smelters of any city in the US during the height of Pb production. Therefore, Philadelphia is among the cities that have increased exposure through various sources. Surveys conducted throughout the city reveal elevated concentrations of Pb in surface soils in parts of the city where the Pb smelters were located. This is the aspect of Pb contamination that has recently received media attention in the local Philadelphia press. The work presented here highlights community workshops that were conducted at urban farms throughout the city where residents could bring soil samples to be analyzed using a portable X-Ray Fluorescence Analyzer. Data analyzed from private residences revealed that Pb is ubiquitous throughout the city. Further analyses using Scanning Electron Microscopy reveal that Pb is concentrated in the finest size fraction of particles analyzed, on the order of 1 μm . Analyses of these private residences is critical to understanding the problem of Pb contamination in urban areas. Studies that are supported by state and federal agencies are often conducted on public sites, which is important, but lack the spatial resolution required to inform residents throughout the city of the impact of Pb contamination in their neighborhoods and at their homes. These workshops also allow residents, most of whom would not be able to afford expensive soil tests, to have access to this information at no cost to them. Typically, urban residents only receive this type of information and data after an environmental catastrophe has occurred.