Lead in water and soil: Education and assessment involving Vermont Middle and High School students

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Lead contamination is a prevailing environmental justice and public health issue in US cities where legacy paint on aging housing stock, gasoline inputs and aging plumbing have contributed to widespread residential soil and some water Pb levels above EPA regulatory thresholds. Lead contamination typically affects disproportionately low-income populations often of foreign origin. Within these communities, children are at the greatest risk of lead poisoning, leading to deleterious health effects such as developmental delays and behavioral issues.

In order to obtain a comprehensive geographical dataset on local lead contamination and sources, and inform populations and stakeholders, we designed a project seeking to equip Vermont students with the tools and background to perform citizen science investigations targeted at identifying Pb contamination in residential soils and tap water. Through collaboration between the University of Vermont and 7th–12th grade teachers from six Burlington and Winooski Vermont schools, over 1,000 students will participate as citizen scientists. The direct involvment of impacted "citizens" for mass sampling in areas of concern and identification of the implications for regulations, helps provide a pathway for awareness of environmental implications to the community.

This project, funded by EPA and involving local government partners, is designed to produce a replicable sample collection and pedagogical protocol, sensitive to the variable resources available to participating students. Midway through the project, we present the state of the project and provide a template for replication of this citizen science framework to other cities in the US, where lead contamination may be an issue.