

Community Lead Safe Yards Program

U.S. EPA | SCIENCE AT THE EPA NEW ENGLAND REGIONAL OFFICE

SCIENCE lies at the heart of the mission of the U.S. Environmental Protection Agency (EPA). The Agency must rely on cutting edge research, accurate measurements and effective technology to implement its programs to protect the environment and human health. Without sound science and credible data, EPA can not wisely set environmental and health standards, clean up contaminated sites, measure ambient air and water quality conditions, or identify the new technologies or practices that will reduce releases to the environment. These fact sheets share with you some of our EPA New England's laboratory capabilities and exemplify some of the very best science we do to meet our agency mission.

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GOAL:

EPA New England scientists, in collaboration with the Boston University School of Public Health and the communities of Dorchester and Roxbury, Massachusetts, designed, developed and implemented a lead-free safe yards program. It enabled communities to build in preventative lead exposure methods in landscape architecture, resulting in a decrease in blood lead levels in children.

PROGRESS:

Exposure to lead in contaminated soils can result in very serious health impacts, especially in children under the age of six. Even so, lead-contaminated soil in older Boston neighborhoods remains a source of exposure that does not always receive the attention it should. Though many homes are delead on both the interior and exterior, their respective yards where children spend considerable time playing often go unsampled and untreated. The lead-free safe yards project developed an approach to help reduce this problem.



EPA chemist testing
soil for lead

Working with the neighborhood health centers, and with staff from Boston University and Housing and Urban Development (HUD), scientists from EPA's regional laboratory set up a study that allowed them to work in 100 neighborhood homes, evaluate exposure potential to lead in soils, and then develop remedial and preventative solutions to help children avoid exposure. Utilizing a hand-held instrument called a field portable x-ray fluorescence analyzer (FPXRF), EPA scientists were able to conduct real-time lead measurements in soils and map out the designated zones of exposure in each family yard. That data then allowed the landscape architects and community services to design play areas in the yard that were low in exposure,

install catch basins for high exposure areas, and place specific plants that bio-remediate (or clean) the lead hazard. For example, one of the most common places where lead in soil can be found is in soil within 3 feet of the side of homes where old lead paint chips typically fall from the home to the ground. These areas were turned into capture and trap basins using gravel that provided a dual purpose: retaining the lead chips and preventing children from playing in those areas. In addition, plants that are known to assist in the bioremediation of lead were planted, creating a further barrier to playing in that section of the yard.

BENEFITS:

Understanding the spatial distribution of lead in yard soils allowed homeowners to selectively remove any top soil contaminated with lead from vegetable gardens and focus on making play areas for children lead free. Knowing that this was a problem in older cities nationwide, the research group worked with EPA's Office of Research and Development (ORD) to publish a National Protocol for the Prevention of Lead Exposure in community neighborhoods. The community health services and Boston School of Public Health noted considerable reductions in blood lead levels in children after the work was completed.