WASHINGTON STATE DEPARTMENT OF ECOLOGY

Focus

Arsenic and lead soil contamination in King County

Background

In 1999, soil samples collected at the Lone Star Northwest gravel mine site located on Maury Island showed elevated levels of arsenic and lead. This finding raised new questions about soil contamination on the islands. Residents of Vashon-Maury Island, Public Health — Seattle & King County, and the state departments of Ecology and Health are interested in the extent of arsenic and lead contamination and potential exposure to residents, especially children.

Last year, a more in-depth soil study conducted by Seattle & King Co. Public Health and funded by Ecology found elevated levels of arsenic and lead in surface soils throughout Vashon-Maury Island. The study also revealed contamination in 44 soil samples taken along the mainland shoreline between West Seattle and the south King County line. All 417 samples were taken from undisturbed surface soil in forested areas where the concentrations of arsenic and lead were likely to be highest. In nearly 75 percent of the samples, the levels of arsenic and lead exceeded the residential soil cleanup level of 20 parts per million (ppm) and 250 ppm respectively, set by Ecology under the state Model Toxics Control Act.

Historic copper smelter likely source

Arsenic occurs naturally in many kinds of rock, especially in ores that contain copper or lead. According to recent studies conducted by Ecology and the U.S. Geological Survey, the natural background level of arsenic in Puget Sound is typically below 7 ppm.

The probable source of much of the surface soil contamination now being detected in portions of King County is from the now-closed Asarco (American Smelting and Refining Co.) copper smelter plant that operated at Ruston near Tacoma. Arsenic and lead contamination, by-products of the smelter operation, was likely carried by wind into King County. The concentrations of arsenic and lead in surface soil generally decrease as we sample farther away from the old smelter facility. The Ruston Asarco smelter, which operated from 1905 to 1985, was listed as an EPA Superfund site in 1983.

Not a public health emergency

Ecology and Public Health have entered into a partnership to address the soil contamination issue. Although soil arsenic and lead levels are elevated, it is important to recognize that although the contamination exceeds state soil cleanup levels, it does not indicate an immediate health hazard exists to residents or workers. Rather, the agencies are concerned about the public's persistent exposure to low levels of arsenic- and lead-contaminated soils over a long period of time. Arsenic is a known human carcinogen and lead can lead to developmental disabilities.

January 2001

Ecology is an equal-opportunity employer

Publication No. 01-09-032 *printed on recycled paper*

Lead blood level tests on Vashon-Maury Island

Within a week after the preliminary results of the soil study were released in April 2000, local Public Health officials tested nearly 100 children living on Vashon-Maury Island to determine if any youngsters had elevated levels of lead in their blood. Children are especially at risk from lead. Long-term, low-level exposure may reduce intelligence, delay motor development, impair memory, and cause hearing problems and troubles in balance. None of the children tested were found with elevated blood lead levels.

Soil testing in child sensitive areas

Young children, especially between 0-6 years old, tend to be the population most at risk for exposure to arsenic- and lead-contaminated soils. They often play directly in dirt areas where they can ingest contaminated soil through their mouths and inhale dust through their noses.

Previous soil samples were collected from wooded, undisturbed areas — so Vashon-Maury Island residents and local and state agencies identified a need to get more data from child sensitive areas. Working together with residents, Public Health and Ecology began taking soil samples at places on the island where children gather and play: schools, camps, parks, day care centers and beaches. Sampling was completed in December 2000 and test results should be ready this spring.

Next steps: Mainland King County — and beyond

Normally, Ecology works on cleanup sites that normally measured in square feet, yards or acres — not miles. This is the first time that local and state authorities have addressed soil contamination covering such a broad area, involving multiple residential neighborhoods. Ecology and Public Health want to proceed quickly and carefully, making sure the best possible steps are taken to protect human health and the environment.

Public Health and Ecology are currently in the process of finding out just how far the contamination footprint may extend inland from Vashon-Maury Island and coastal King County. In addition, Ecology is considering working with health jurisdictions in Pierce, Kitsap and Thurston counties to determine the extent of contamination in those counties

The agencies are also working to determine how to best approach cleaning up the contamination. This is going to be a complex undertaking that will extend over many years. Ecology and Public Health will keep the public informed as the study data is interpreted to determine the full impact of the soil contamination.

For more information, contact Marian Abbett, Department of Ecology, P.O. Box 47600, Olympia, WA 98504-7600; phone, 360-407-6257; or e-mail, mabb461@ecy.wa.gov.