Frequently Asked Questions:
Vashon-Maury Island Child-Use Area Sample Results

Q: *Why are the Department of Ecology and Public Health — Seattle & King County concerned about soil contamination on Vashon-Maury Island?*

A: The Department of Ecology and Public Health — Seattle & King County are concerned about arsenic and lead contaminated soil because arsenic and lead can cause health problems in children and adults, as well as plants and wildlife. Recent scientific investigations have revealed that air emissions from Washington's copper smelters have caused widespread arsenic and lead contamination in soils in various locations in central Puget Sound. A study released in April 2000 by Public Health — Seattle & King County confirmed elevated levels of these contaminants in relatively undisturbed soils throughout Vashon-Maury Island as well as in eight parks in southwest mainland King County. An Ecology study released in March 2001 found elevated levels of arsenic in residential soils in the city of University Place located in Pierce County.

Q: *Why did you sample child-use areas on Vashon-Maury Island?*

A: In fall 2000, Ecology and Public Health in response to community requests, agreed to analyze additional soil samples from areas where children visit or play on a regular basis. Children are considered to be at greatest risk for exposure. This current study generated information to help us evaluate the potential health hazard for 34 different child-use areas on Vashon-Maury Island including schools, parks, camps, beaches and daycare centers.

Q: *How can arsenic and lead affect someone's health?*

A: More than 30 different health effects have been linked to arsenic exposure. These include skin cancer, bladder cancer, lung cancer, nerve damage, damage to the blood vessels, elevated blood pressure, diabetes mellitus and gastrointestinal problems such as nausea, diarrhea and stomach pain. Exposure to lead has been linked to problems in mental development in children and to kidney problems and elevated blood pressure in adults.

Q: *What is the health risk from the contaminated soil?*

A: The risk of developing health problems from the contaminated soil is different for each person and depends on three things:

- How sensitive the person is to the arsenic and lead.
- How much exposure the person has to contaminated soil.
- How much arsenic and lead are in the soil to which the person is exposed.

Although we expect the risk to be small for most people, those who are more sensitive to arsenic and lead or have a greater than normal exposure may have a significantly greater risk. Unfortunately, it is difficult to predict someone's risk because there is no practical way to adequately measure individual sensitivity or exposure. Therefore, we suggest people take steps to minimize their exposure to the contaminated soil.

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Q: *How might someone be exposed to contaminated soil?*

A: Health effects will only occur if someone is exposed to the contaminated soil. Simply getting contaminated soil on the skin is not a big problem, since arsenic and lead in the soil are not absorbed very well through the skin. The main route of exposure is by swallowing contaminated soil. The biggest concern is young children who are unaware of the hazards and are likely to be exposed to the contaminated soil through normal play activities. Most young children put their hands, toys, or other objects in their mouths, and these often have small amounts of soil and dust on them that the child swallows. Some children have been found to ingest large amounts of soil, at least every once in a while. Older children and adults can also swallow small amounts of soil that is on hands, food, or objects that are placed in their mouths. Also, contaminated dirt or dust that is suspended by the wind, lawn mowers, leaf blowers, vacuum cleaners, and other means can get into a person's nose or mouth and be swallowed.

Q: *How big is this problem?*

A: Although arsenic and lead occur naturally in soil, the amount of these elements at many locations on Vashon-Maury Island is higher than normal. Most of the soil contamination probably came from the copper smelter owned by ASARCO (American Smelting and Refining Co.) that operated at Ruston near Tacoma from 1890 to 1986. Contaminants from the smelter smokestack were spread by wind and deposited over a large area, including Vashon-Maury Island. The area affected by smelter emissions has become known as the "Tacoma Smelter Plume" site.

The exact size and shape of the plume site is still under investigation but likely extends over wide areas of both King and Pierce counties. Local, state and federal agencies believe that people deserve to have a clean, safe environment and should be aware of possible hazards that exist. Ecology and Public Health — Seattle & King County are informing people that exposure to the contaminated soil could increase a person's risk of health problems.

Q: *What can people do to reduce their risk?*

A: The best way to reduce risk is to minimize exposure to contaminated soil. Ecology has developed a focus sheet that outlines community protection measures. This information is also available at the Vashon Library in the government documents/reference collection, and on the Internet at:
http://www.metrokc.gov/health/hazard/soilsamples.htm#arseniclead

Q: *What other soil sampling have you done on Vashon-Maury Island?*

A: The first arsenic and lead study was conducted at the Glacier Northwest gravel pit on Maury Island in 1999. In 1999 and early 2000, Ecology and Public Health took soil samples in undisturbed areas of Vashon-Maury Island and at specific locations along the coast in southwest King County. More than 415 samples were collected 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 state residential cleanup levels, set by Ecology under the state Model Toxics Control Act. The residential soil cleanup standard for arsenic is 20 parts per million (ppm) and the cleanup standard for lead is 250 ppm.

Q: *What did you find in the child-use area sampling?*

A: The highest concentration of arsenic found in the study was 130 ppm. Average arsenic concentrations in the top six inches of soil for the 34 child-use areas tended to be much lower — ranging between 4 to 50 ppm. The state cleanup standard for arsenic in residential soils is 20 ppm. The highest concentration of lead found in the study was 900 ppm. Again, average lead concentrations in the top six inches of soil for the 34 child-use areas tended to be much lower — ranging between 8 to 180 ppm. The state cleanup standard for lead in residential soils is 250 ppm.

Due to data variability, four of the 34 child-use areas will need to be resampled to obtain the most accurate picture of potential arsenic contamination. While some of the other 30 properties have average levels of arsenic above the state cleanup standard, it appears none will need to take immediate short-term actions to reduce risks beyond undertaking community protection measures. Ecology and Public Health will evaluate the sampling data from the resampled properties to assure that this is the case.

Q: *What do the results mean?*

A: It is unlikely that people will get sick from short-term exposure to the contaminants at the concentrations found in this study, especially if they follow the community protection measures that can reduce exposure. However, arsenic and lead is expected to remain in the soil for hundreds of thousands of years. If it is not addressed, more and more people will be exposed to the contaminants over time, increasing the likelihood of health problems among islanders.

The arsenic results can be compared to two numbers, an Interim Action Level developed by Ecology specifically for child-use areas and the state cleanup level for residential soils, which is 20 ppm as set by state cleanup law. The Interim Action Levels are:

- 100 ppm for schools and daycare centers
- 200 ppm for parks, camps and beaches

Ecology has determined that areas exceeding 100 ppm are high enough to warrant short-term action to reduce risk at these areas. Areas with average arsenic concentrations between 20 ppm and 100 ppm will be addressed as part of the long-term cleanup plan. Community protection measures should be followed in these areas to help reduce exposure.

Interim Action Levels

Type of area	Arsenic action level	Lead action level
Schools & daycare centers	100 ppm	700 ppm
Parks, camps and beaches	200 ppm	1,000 ppm

Q: *What does the cleanup standard mean?*

A: Regulations adopted by Ecology under a state law called the Model Toxics Control Act sets cleanup standards for a wide variety of contaminants for residential and industrial properties. These cleanup standards are selected to be protective of human health and the environment. Residential soil cleanup standards for arsenic and lead are 20 and 250 ppm respectively; any contamination above these levels is a cleanup concern for the state.

Q: *Do the Interim Action Levels translate to safe short-term contaminant levels for the yard at my home?*

A: While the basis for the Interim Action Levels were not specifically created to evaluate potential home exposures, the exposure and risk values for homes, schools and daycare facilities are similar. The Interim Action Levels may be used to identify residential properties requiring short-term action to reduce risk. Residential properties with concentrations below the Interim Action Level, but exceeding the state cleanup standard are still of concern, and will need to be addressed as part of the long-term cleanup plan.

Q: *Aren't there more than 34 child-use areas on Vashon-Maury Island? Why didn't you sample every potential child-use area?*

A: The soil sampling that was undertaken was done on a voluntary basis. Some property owners chose not to have their properties sampled. In addition, some parks were previously sampled in the undisturbed area sampling.

Q: *What are Ecology and Public Health going to do next?*

A: Ecology plans to make sure that interim cleanup actions are conducted at properties that have average soil concentrations exceeding the Interim Action Levels in the top six inches of soil. No child-use areas were found in this study that requires interim actions. Properties that are between state cleanup standards and the Interim Action Levels will be addressed in Ecology's "Remedial Investigation and Feasibility Study" (RI/FS) that will start in the future. After conducting the RI/FS, we will develop a cleanup action plan for the entire site or contaminated area, which includes Vashon-Maury Island. In the meantime, the agencies are continuing to define the footprint of the contaminated area with sampling efforts in mainland King County and Pierce County.

Q: *Did you sample for other contaminants besides arsenic and lead in this sampling program?*

A: No. When Public Health — Seattle & King Co. conducted the first round of soil testing on Vashon-Maury Island in 2000, cadmium was sampled and the concentrations evaluated. However, the levels did not exceed state cleanup standards. These earlier tests were conducted in generally undisturbed areas on the island. Since contaminant levels in general are lower in disturbed areas like schools and day care facilities and homes, we don't believe the levels of cadmium there are a significant problem compared to lead and arsenic. Any remedy needed for lead and arsenic will also reduce risk from cadmium, even if it is below the cleanup standards.

Q: *Where should I go for more information?*

A: There are several sources where you can get more information. The Vashon Library has information about arsenic and lead soil contamination in government documents/reference collection. Public Health has similar information posted on the Internet (http://www.metrokc.gov/health/hazard/soilsamples.htm#arseniclead), and you may also contact any of the Ecology and Public Health staff listed below:

Norm Peck, Tacoma Smelter Plume Site Manager, Department of Ecology's Northwest Regional Office; (425) 649-7047 (e-mail: nope461@ecy.wa.gov)
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Marian Abbett, Tacoma Smelter Plume Project Manager, Department of Ecology's Southwest Regional Office (360) 407-6257 (e-mail: mabb461@ecy.wa.gov)
Molly Gibbs, Public Involvement Coordinator, Ecology's Southwest Regional Office (360) 407-6179 (e-mail: mgib461@ecy.wa.gov)

Q: *What are the risks to my pets?*

A: Ecology and Public Health-Seattle and King County have not evaluated risk to pets and livestock. The focus of the current studies is the extent and levels of contamination at child-use areas.

Q: *What are the risks to wildlife?*

A: A terrestrial ecological risk evaluation will be conducted as part of the RI/FS in the future. The most immediate concern is for human health, particularly that of children.