



## RESIDENT SELF-TESTING PROTOCOL

Some areas of King County, including Maury and Vashon Islands, have elevated levels of arsenic, lead and cadmium. Additional information about those levels will be gathered during the 1999 summer sampling program on Vashon/Maury Islands and the Mainland; however, most *residential* properties will not be sampled during this process. This protocol has been developed to guide property owners and residents who would like to test their own soils.

### WHERE TO SAMPLE

Levels of contamination will probably be different from one place to another on a property depending on the original amount of contamination, and subsequent soil disturbance. Because of that expected variation, four to six soil samples, spaced some distance apart, will provide better information about an individual property than a single sample.

Your choices about where to sample depend on the questions most important to you. For example:

- If you want to know what the highest concentrations on your property are, sample in the areas where there has been the least animal, human or soil disturbance activity.
- If you want to know what the concentrations are in areas used by children, pets, or others, sample those areas, knowing that the soil disturbance may mean you will get less information about the highest levels of contamination.
- If these don't apply to your situation, you can sample from various well-spaced locations on your property.

Some areas should NOT be sampled because they may not give meaningful results. These would include:

- Soils within six feet of a building. They are likely to be too disturbed to provide useful information.
- Areas within 50 to 100 feet of heavily traveled roads.
- Areas where soil was recently brought in.

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#### MATERIALS NEEDED

- Make a simple drawing of where you're going to sample, and assign a unique code to each location to serve as an identifier. For example, you can devise your own code using letters, numbers, compass directions or any combination of these. Samples must be identified by this code. Distances can be estimated by pacing. Show relationships to buildings or other landmarks.
- Collection containers - clean self-sealing type bags such as ZipLoc® bags or carefully washed glass jars with screw-type lids. Labs may provide sampling containers if asked. Use two self-sealing bags or one glass jar for each sample taken.
- A clean spoon for each sample.
- Writing paper that will show your name, address, date and code/identification number for each soil sample taken.

#### SAMPLING METHOD

- Remove surface vegetation from an area two to four inches in diameter.
- Use a clean wooden, plastic or stainless steel spoon to take all the soil from the top two inches of the cleared area (use a separate spoon for each sample, or wash with soap and water between samples). Put four to eight ounces of soil in the sampling container chosen for the location. If using Zip-Loc® bags, double-bag by placing the filled bag into a second bag.
- Place the sample identification paper (name, address, date and Code number) between the inner and outer Zip-Loc® bag, or if using jars or bottles, tape the identification information to the outside.
- Carefully close sample containers and pack for shipping.

#### LABORATORY ANALYSES

If you are doing soil self-testing you will need to select an analytical laboratory to perform the chemical analyses. Commercial laboratories are listed in area telephone directories (see "Laboratories - Analytical"). In addition, the Washington State Department of Ecology maintains a list of accredited laboratories. Information is available on these laboratories by calling 360-895-4649.

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You can also find information on laboratories that have been used by other community residents, and whose performance has been deemed satisfactory, through the Vashon/Maury Island Community Council (contact information below). In selecting a lab, you may want to consider the following: location and convenience; responsiveness and willingness to talk with community clients; cost; how quickly they will complete the analyses; quality of analyses and extent of quality control analyses included; and experience and ability to adhere to defined protocols. The recommended analytical protocols are standard and should be available from many commercial labs.

Laboratory analyses will be out-of-pocket expenses to property owners. For the basic protocol described here, you should expect a maximum lab cost of about \$200. If you want expanded soil testing it will be more expensive and is discussed below.

You can take samples to the lab directly or send them via UPS, Federal Express or other carrier service. Sample containers should be carefully closed and packed for shipping. Check with the lab you are using about the best method of delivery or carrier.

The attached sheet (Attachment #A) can be used as direction to the lab for sample processing and what analyses you are requesting. Detailed information on how the laboratory should proceed with the analyses is extremely important. You should also request a written report from the lab. These instructions ask for arsenic analyses only to help hold down costs and because arsenic is a general indicator of the concentration of other metals of concern.

#### WHAT DO THE NUMBERS MEAN

Some useful ways to evaluate the soil sample test results you get back from the laboratory could include the following:

- Comparison of results to uncontaminated regional background levels;
- Comparison to regulatory cleanup standards for soil contamination such as the State Department of Ecology Model Toxic Control Act or the Federal Environmental Protection Agency Superfund Program;
- Comparison to exposures from other non-soil pathways such as from food (diet), drinking water, and air; and
- Comparison of results with other soil contamination levels reported in the region, such as the Tacoma-Ruston neighborhood or the City of Everett.

In addition, a report will be out following the Maury-Vashon Island and Mainland Soil Sample Study scheduled for July and August, 1999, and you could compare your levels with those test results. This study is designed to sample “undisturbed” areas, looking for the highest levels of metals originating from the smelter fallout.

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Finally, if your soil testing results from the lab can be shared with the Vashon/Maury Island Community Council and Public Health-Seattle & King County, an improved understanding of the overall pattern of soil contamination in the area will be possible (see the contact information on page 5).

#### COST

A typical range of costs for arsenic testing is about \$30 to \$50 per soil sample. This includes all related costs for sample preparation, processing, quality control and reporting. Limiting the analysis to only arsenic and 4 to 6 samples can keep the costs under \$200 if you collect the samples from your property. Costs may be up to twice as high for "rush" delivery schedules. Cost savings may be available if sampling is coordinated with neighbors so that the lab does analysis of a larger number of soil samples at one time.

#### EXPANDED SOIL TESTING (at greater cost).

The basic sampling and analysis protocol described above costs no more than about \$200. You can get more complete and reliable information on contamination levels at a property with expanded soil testing at a greater cost. An expanded soil testing protocol could include some combination of collecting surface soils at more locations, collecting deeper soils in addition to surface soils, and analyzing for additional metals besides arsenic. For example:

- More locations: collection and testing for arsenic of 0-to-2 inch deep soils at twelve locations would cost \$480, assuming \$40 per analysis. More sampling locations can better characterize the variability and maximum concentrations of soil contamination in surface soils.
- More depths: collection and testing of soils from six locations and two depth intervals, 0-to-2 inches and 2-to-6 inches, for arsenic would also cost \$480 at \$40 per analysis. (Alternatively, analysis of samples from 4 locations and three depth intervals, 0-to-2 inches, 2-to-6 inches, and 6-to-12 inches, would cost the same amount). Deeper soil samples, especially in areas where soils have been disturbed or may be disturbed by future activities, will tell you possible variations in contaminant depth profiles, where surface soil samples alone might underestimate contaminant levels.

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- More contaminants: testing for arsenic, plus lead, and cadmium in a soil sample should cost approximately \$40 to \$70 at a commercial analytical laboratory. Costs for processing the laboratory samples, as discussed in *Attachment A*, are already included in the arsenic-only costs. Assuming a cost per sample of \$60, collection and analysis of eight surface soil samples for arsenic, lead, and cadmium would cost \$480.
- The detection limits for lead and cadmium should be no greater than 10 parts per million (ppm) and 1 ppm, respectively. Testing for additional metals will give you results for their soil concentrations that are more accurate than estimates that you will get by using arsenic as an indicator contaminant.

#### FOR ADDITIONAL INFORMATION

Residents are encouraged to have direct contact with their selected analytical laboratory regarding sample analyses. More information is also available from the following contacts:

|   |  |
|---|--|
| Public Health - Seattle & King County:  | Wally Swofford, (206) 296-4784 or<br>Todd Yerkes, (206) 296-4767 |
| Washington State Department of Ecology: | Norm Peck, (425) 649-7000  |
| Vashon/Maury Community Council:         | Sharon Nelson, (206) 463-7296                                    |
| Vashon/Maury CC – Land Use Committee    | Laura Wishik (206) 463-4060                                      |

*The Seattle-King County Health Department and other Work Group participants are providing this information to Vashon/Maury Island residents to assist those persons interested in self-testing their soils. The recommended protocol for soil sampling and analysis is advisory and its use shall not create any legal liability for the Seattle-King County Department of Public Health or other Work Group members.*



# SPECTRA Laboratories, Inc.

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## CHAIN OF CUSTODY

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

\_\_\_\_\_

PHONE # \_\_\_\_\_ FAX # \_\_\_\_\_

| SAMPLE ID: | DATE | TIME | MATRIX | Arsenic \$37.00 | Arsenic & Lead \$44.00 |  |  | NORMAL | RUSH |
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