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# Tacoma Smelter Plume

## Mainland King County Preliminary Study



### Introduction

The Department of Ecology is in the early stages of the Model Toxics Control Act (MTCA) site evaluation process for the Tacoma Smelter Plume Site. To date, five assessment studies are complete, with results listed below. These studies seek to determine: levels of contamination (compared to MTCA cleanup levels), which areas are most affected, and how far soil contamination may extend from the former smelter location in Ruston.

### Summary of Previous Tacoma Smelter Plume Studies

*For comparison, the Washington State unrestricted land use cleanup levels are 20 parts per million for arsenic, and 250 parts per million for lead:*

Location	Arsenic (maximum)	Lead (maximum)
Pierce County - University Place Undeveloped Property Study	281 ppm	1175 ppm
King County - Vashon-Maury Island Undeveloped Property Study	460 ppm	1300 ppm
King County - Vashon-Maury Island Child Use Areas	130 ppm	900 ppm
Pierce County - University Place Residential Property Study*	163 ppm	227 ppm
<b>King County- Mainland Undeveloped Property Study</b>	<b>260 ppm</b>	<b>790 ppm</b>

\*This study based on composite samples; *not* discrete samples, as is true for other studies noted here.

### Summary of Mainland King County Study Results

- Soil contaminated with arsenic and lead, has been documented over a large area of southwestern King County. Sampling was in forested areas where soils are least disturbed and concentrations are likely to be highest. Arsenic levels range from 2 to 260 parts per million. 62 of 75 sampled locations had a maximum arsenic concentration above 20 ppm. Only 12 of 75 sampling locations had a maximum lead concentration above 250 parts per million.
- Contaminant levels are generally lower than undisturbed property levels on southern Vashon-Maury Island
- Contaminant concentration declines with distance from the smelter. The patterns of contamination also match wind direction frequencies. Arsenic and lead, both emitted by the smelter in significant quantities, are strongly correlated. (See Figures 3 & 4)
- These evaluations identify the former Tacoma Smelter as the dominant source for arsenic and an important source for lead. Some additional sources for lead on the mainland are also indicated.
- The data provide a reasonable magnitude of the plume, although potentially biased low due to sparse sampling. More extensive sampling could show higher levels of contamination.

### ***Messages that Carry Forward with Earlier Study Messages***

- This is not an emergency, but is a long-term health concern; Community Protection Measures are recommended to reduce risk of exposure to arsenic and lead.
- The contaminant pattern is highly variable over small distances. You can't tell what your yard (school, playground) is like by looking at the results from your neighbor's property.
- Arsenic in forest soils is mostly concentrated within the top 6 inches of the soil. (Although below 6 inches occasionally shows elevated levels). Developed properties with a history of soil disturbance can have more complex depth profiles, with contamination extending deeper.

### ***What these results mean***

- The documented soil concentrations could pose some level of health threat to exposed individuals, where protective measures are not practiced.
- The levels of soil contamination found do not appear to pose significant risks for contamination of ground water resources.
- The local variability in results indicates that one, or a few, soil samples probably would not be enough to accurately characterize soil contamination on a single property.
- We expect to see the highest concentrations in forested areas. Developed areas usually have lower concentrations, where grading, soil tilling, or exchanging property soils may moderate the degree of contamination. Developed properties that have been undisturbed for a long time (50 years or more) may have contaminant levels approaching or exceeding forested areas. Only property specific sampling will verify contamination at any particular property.
- Limited Child Use area sampling is planned for Fiscal Year '03. Concentration levels requiring immediate action are not anticipated. This rationale is based on much lower levels of arsenic seen generally on the Mainland than on Vashon Maury Island. There could be exceptions, due to the high variability in concentrations.

The footprint of soil contamination is very large and will require several decades to fully address. For the near term, citizens and communities can reduce potential exposures and health risks by 1) recognizing the potential for soil contamination to exist and 2) applying simple protective measures, with attention to protecting children, and adults working in soils.

### ***What Ecology/Local Governments are Doing Right Now***

- Public Health Departments in King and Pierce Counties are working with schools and local community groups focused on health protection, to educate children and parents about possible soil contamination.
- The Area-Wide Soil Contamination Project Task Force is researching numerous property related issues for contaminated properties statewide. Soil sampling protocol to assist property owners from small to large scale, and alternative types of remediation are being identified. For more information see the website at [http://www.ecy.wa.gov/forms/area\\_wide/area\\_wide\\_hp.html](http://www.ecy.wa.gov/forms/area_wide/area_wide_hp.html).
- Ecology encourages local governments to apply for Remediation Action grants, 50% funding sources for sampling or remediation. Funding will be available for the '03-'05 biennium.
  - A Real Estate Advisory Group is forming to identify concerns and recommendations for Tacoma Smelter Plume technical staff as they look ahead to managing residential property notification. Watch the TSP website for updates.

## King County Information Centers for Tacoma Smelter Plume

(360) 407-61

### [Algona-Pacific Library](#)

255 Ellingson Road \* Pacific 98047 \* 253-833-3554  
Mon.-Thurs. 11am-9pm ^ Fri. and Sat. 11am-5pm

### [Auburn Library](#)

1102 Auburn Way South \* Auburn 98002 \* 253- 931-3018  
Mon.-Thurs. 10am-9pm ^ Friday-10am-6pm ^ Sat. 10am-5pm  
Sunday 1pm-5pm

### [Bellevue Regional Library](#)

1111 110th Avenue NE \* Bellevue 98004 \* 425-450-1765  
Monday-Thursday 10am-9pm ^ Friday 10am-6pm ^ Sat. 10am-5pm  
Sunday 1pm-9pm

### [Burien Library](#)

14700 Sixth SW \* Burien 98166 \* 206-243-3490  
Monday - Thurs. 10am-9pm ^ Friday 10am-6pm ^ Sat. 10am-5pm  
Sunday 1pm-5pm

### [Des Moines Library](#)

21620 11th Avenue S. \* Des Moines 98198 \* 206-824-6066  
Monday - Thursday 11am-9pm ^ Friday 11am-6pm ^ Sat. 10am-5pm  
Sunday 1pm-5pm

### [Federal Way Regional Library](#)

34200 1st Way S. \* Federal Way 98003 \* 253-838-3668  
Monday - Thursday 10am-9pm ^ Friday 10am-6pm ^ Sat. 10am-5pm  
Sunday 1pm-9pm

### [Kent Regional Library](#)

212 2nd Avenue N. \* Kent 98032 \* 253-859-3330 TTY 253-854-1050  
Monday - Thursday 10am-9pm ^ Friday 10am-6pm ^ Sat. 10am-5pm  
Sunday 1pm-9pm

### [Mercer Island Library](#)

4400 88th Ave. S.E. \* Mercer Island 98040 \* 206-236-3537  
Mon. - Thurs. 11am-9pm ^ Fri. 11am-6pm ^ Sat. 10am-5pm  
Sun. 1pm-5pm

### [Muckleshoot Library](#)

38811 172nd Ave. S.E. \* Auburn 98002 \* (253)-931-6779  
Tues., Wed. and Thurs. 10am-6pm ^ Mon. and Fri. 1pm-5pm

### [Tukwila Library](#)

14475 59th S. \* Tukwila 98168 \* 206-244-5140  
Mon. and Wed. 1pm-8:30pm ^ Tuesday and Thursday  
10am-5pm ^ Saturday 10am-5pm

### [Vashon Library](#)

17210 Vashon Hwy. S.W. \* Vashon Island 98070 \* 206-463-2069  
Monday - Thursday 11am-8:30pm ^ Friday 11am-6pm  
Saturday 10am-5pm ^ Sunday 1pm-5pm

### [TSP Website address](#)

[http://www.ecy.wa.gov/programs/tcp/sites/Tacoma\\_smelter/ts\\_hp.htm](http://www.ecy.wa.gov/programs/tcp/sites/Tacoma_smelter/ts_hp.htm)

## **Fact Sheet: April, 2002**

### **Document Locations:**

Department of Ecology  
Southwest Regional  
Office  
PO Box 47775  
Olympia, WA 98504-  
7775

### **Sampling Results, Technical Questions**

#### **Contact:**

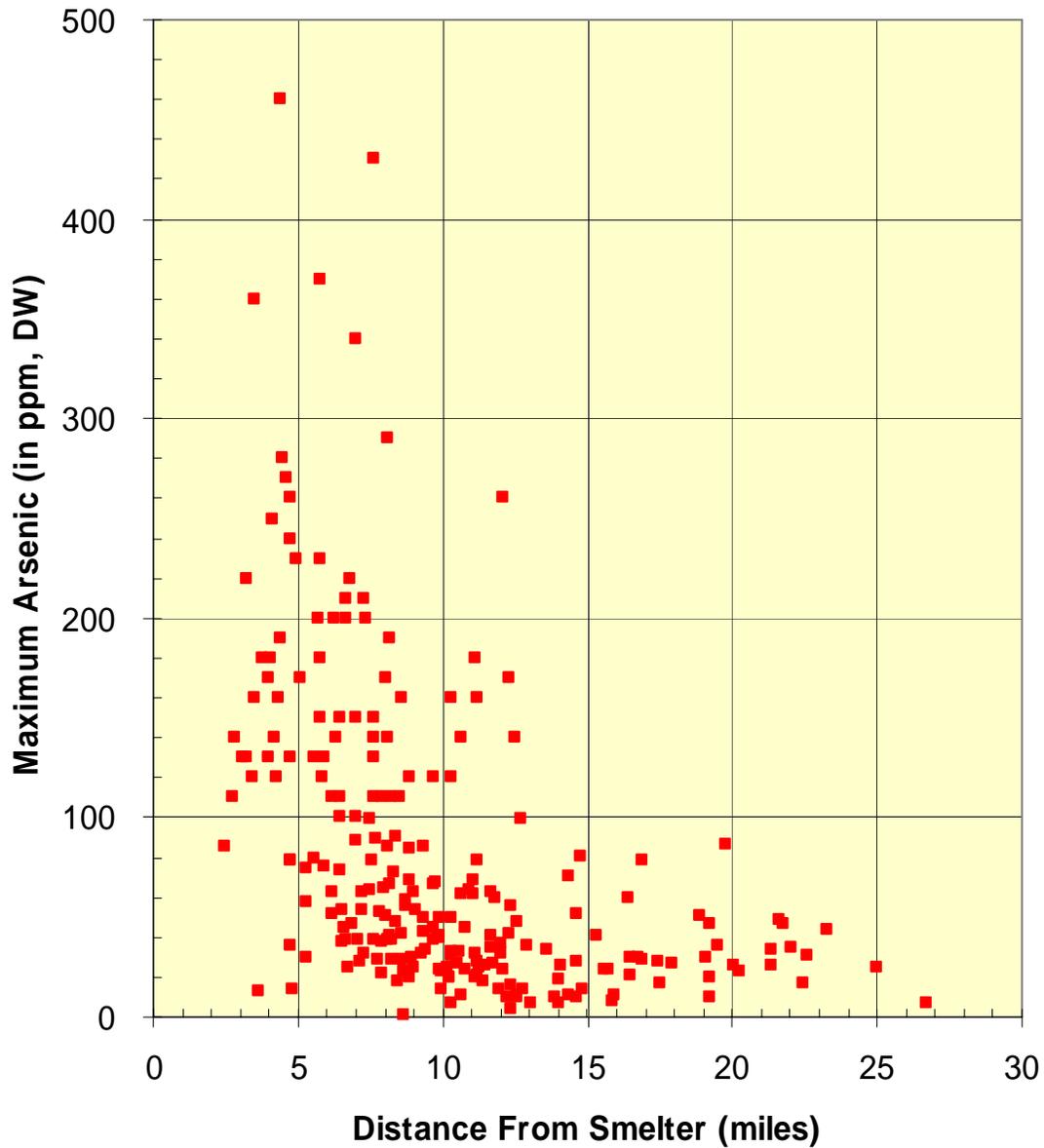
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**Figure 3**  
**Vashon Island and King County Mainland**  
**Maximum Arsenic Versus Distance**



**Figure 4**  
**Vashon Island and King County Mainland**  
**Maximum Lead Versus Distance**

