



## THE COLLABORATIVE ON HEALTH AND THE ENVIRONMENT - WASHINGTON



### RESEARCH AND INFORMATION WORKING GROUP

## CONTAMINATED SOIL

### FACT SHEETS ON HEALTH AND ENVIRONMENT IN WASHINGTON

#### INTRODUCTION

Soil can become contaminated when toxic chemicals are spilled on it, buried, deliberately applied to land, like pesticides, or deposited from the atmosphere. Also, some soil contaminants can migrate in groundwater.

Children's exposure to contaminated soil is a special concern because children often play in the dirt and put objects in their mouths. These activities can result in the ingestion of significant amounts of contaminated soil and dust. As well, because children are smaller than adults and they are closer to the ground, they can inhale more soil and dust particles.

Child or adult exposure can also occur from digging or inhaling contaminated dust, skin contacting soil, eating plants grown in contaminated soil, or consuming animals that have eaten contaminated plants or lived on contaminated land.

#### CONTAMINATED SOIL IN WASHINGTON STATE

- Approximately 487,000 acres in Washington state have been contaminated with lead and arsenic from metal smelters in Tacoma, Everett, Harbor Island and Northport, Washington and Trail, British Columbia. In addition, 187,500 acres of orchard land have been affected by pesticides containing arsenic and/or lead.
- Approximately one million Washington residents live in areas likely to have more than 20 parts per billion of arsenic in the soil. This is the Department of Ecology's health-based hazardous waste clean-up level.<sup>1</sup>
- Levels of metals are slightly higher in western Washington than in eastern parts of the state.<sup>2</sup>
- About 60% of the properties studied in the city of University Place had arsenic concentrations higher than 20 parts per million, the cleanup level for arsenic in residential areas. Properties with older houses were more likely to have arsenic concentrations above 20 parts per million.<sup>3</sup>

- Public Health—Seattle & King County, along with other local and state agencies, are testing soils in King County for arsenic and lead that probably came from the Asarco copper smelter in Ruston.
- A study of cancer on Vashon-Maury Island was conducted in 2001 because high levels of arsenic can cause cancer, particularly lung and bladder cancer. The study found that rates of cancer on Vashon-Maury Island did not differ significantly from rates in King County or Washington state.<sup>4</sup>
- About 10% of children's play areas (including parks, schools and child care centers) studied in mainland King County in 2004 had arsenic levels higher than the state arsenic standard, as shown in the table below.<sup>5</sup> The table also shows that average lead levels in King County were below the state standard.

Lead and Arsenic in Children's Play Areas in King County			
Metals	Highest Found	Range of Averages	State Standard
Arsenic	189 ppm*	3-41 ppm*	20 ppm*
Lead	699 ppm*	4-134 ppm*	250 ppm*

\*ppm =  
parts per  
million

- Children in agricultural families can be exposed to higher levels of organophosphorus pesticides than children in nonfarm families in eastern Washington. Most of this exposure occurs via contaminated soil and dust. Even children in nonfarm families are susceptible to pesticide exposure in the home if they live near farms where pesticides are used.<sup>6</sup>

## COMPARING WASHINGTON STATE NATIONALLY

Information on contaminated soil in Washington state shows that there are some significant problems associated with the metal smelters, but that overall, background levels of industrial contaminants in soils are probably less than or comparable with levels in other regions of the country.

## SOURCES

- 1 [http://www.ecy.wa.gov/programs/tcp/area\\_wide/Final-Report/PDF/TF-Report-final.pdf](http://www.ecy.wa.gov/programs/tcp/area_wide/Final-Report/PDF/TF-Report-final.pdf)
- 2 <http://www.ecy.wa.gov/pubs/94115.pdf>
- 3 [www.ecy.wa.gov/pubs/0103008.pdf](http://www.ecy.wa.gov/pubs/0103008.pdf)
- 4 <http://www.metrokc.gov/HEALTH/hazard/vmicancerreport.pdf>
- 5 [http://www.ecy.wa.gov/programs/tcp/sites/tacoma\\_smelter/tsp\\_King\\_county\\_studies/King\\_county\\_studies.htm](http://www.ecy.wa.gov/programs/tcp/sites/tacoma_smelter/tsp_King_county_studies/King_county_studies.htm)
- 6 <http://www.ehponline.org/members/1995/103-12/simcox-full.html>