

Frequently Asked Questions About
Lead in Seattle School Drinking Water: A Review of the Health
Implications

A Report by the Northwest Pediatric Environmental Health Specialty Unit (NW PEHSU)

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Who is the NW PEHSU and why are they involved?

The Northwest Pediatric Environmental Health Specialty Unit (NW PEHSU) is a University of Washington (UW) based center of experts on children and environmental health. It includes both physician (MD) and non-physician (PhD) expert scientists at the UW. It is one of 10 centers in the United States and is supported through a grant from the Agency for Toxic Substances and Disease Registry. Since 1998, the NW PEHSU has been providing special expertise to medical professionals, public health officials, families, and communities regarding environmental health problems that affect children in Washington, Oregon, Idaho, and Alaska.

In 2004, NW PEHSU became aware of concerns regarding lead in school drinking water through local media coverage. NW PEHSU felt their unique expertise in assessing the risk of low level exposure to environmental toxicants in children could provide important and useful information for all of the affected parties. NW PEHSU reviewed the available information on lead in school water supplies and evaluated the potential health implications in a report entitled, *Lead in Seattle School Drinking Water: A Review of the Health Implications*.

NW PEHSU is a free consultative service. They can be reached at 1-877-KID CHEM for questions and/or a copy of the report. The report is also available on NW PEHSU's web page at <http://depts.washington.edu/pehsu/>.

Why is lead in the drinking water?

Most lead in drinking water comes from lead-based plumbing materials in the water distribution system. This includes pipes, caulking compounds, bubbler heads, and water main joints. Lead from these materials can dissolve in the water as it sits in the pipes. Old pipes and small lead-based components associated with drinking fountains are likely the biggest contributors to the amount of lead in Seattle school drinking water.

What is known about how much lead is in the school's drinking water?

The report describes the most recent and comprehensive effort to monitor the amount of lead in school drinking water. The Seattle School District collected drinking water samples from 97 school buildings during April – June 2004. All of the results are available on their webpage.

(http://www.seattleschools.org/area/facilities/WaterQuality/water_quality_reports.htm)

They measured lead in water sitting overnight (standing water samples) and water that had been running for 30 seconds. Usually water that has been sitting in contact with the pipes and fixtures for a long time will have more lead than water that has been running. The EPA recommends that the school water supply does not have more than 20 parts per billion of lead (20 ppb). The recent testing showed that many schools had at least one fountain that was above this level in the standing samples (81% of schools) or running samples (43% of schools).

What are the health concerns associated with lead exposure in children?

Lead is a well-described environmental poison. Lead can be found in the air, soil, food, and water. Whether or not exposure to lead causes health problems depends upon how much lead exposure occurs and the susceptibility of the person who is exposed. There has been a lot of attention to studying and preventing lead exposure in very young children. This is because low level lead exposure can damage the developing brain and most brain development occurs in the fetus and young preschool aged child. There is less known about how lead exposure in older children and adolescents may affect their brains or other aspects of their health.

Most of what is known about health problems and lead exposure come from studies where the level of lead in a person's blood has been related to symptoms and health problems. When the blood lead level is very high, around 100 micrograms per deciliter (mcg/dL) children have seizures, may go into a coma, and die. With blood lead levels over 25 mcg/dL more subtle symptoms such as decreased appetite, nausea, vomiting, stomach pain and constipation may occur. At these levels, children may also have behavioral problems, learning problems, and be more irritable.

Fortunately, high level exposure to lead causing these high blood lead levels is rare today. However, even lower blood lead levels have been associated with subtle effects on brain function based on studies of exposure in young children (pre-school age). There is no threshold or clear safe level of exposure to lead and the public health goal is to ensure that a child's blood lead is as low as possible. To identify children most at risk, the CDC (Centers for Disease Control and Prevention) and the American Academy of Pediatrics have specified a blood lead level over 10 mcg/dL as a level of concern for children's health that should prompt specific follow-up and interventions.

Is the lead level in my child's school likely to cause health problems?

NW PESHU used a US EPA model to estimate what the blood lead levels in Seattle school children might be based on the concentrations of lead observed in the recent comprehensive sampling of school drinking fountains. The model considered the youngest (most at risk) age group of school children (age 6-7 years) and considered the combined exposure to lead that may occur from school water, water at home, the air, and through the diet. This modeling suggests that it is extremely unlikely that any child exposed to lead in Seattle school drinking water will have a blood lead level exceeding the current CDC goal of identifying children with blood lead levels over 10 mcg/dL. Based on the most typical scenario for each school, predicted blood lead levels were in the range of 1 – 3 mcg/dL, which is similar to the national average blood lead level in school aged children.

The children at highest risk would be:

Children less than 6 years of age who drink from school water that is *consistently* exceeding a lead level of 200-300 ppb.

Children less than 6 years of age with medical conditions such as nutritional deficiencies – anemia, iron deficiency, calcium deficiency, vitamin D deficiency which may increase their absorption of lead.

Children with pre-existing neurological problems (e.g. autism, seizure disorders, ADHD) may be more vulnerable to the toxic effects of lead but there is currently no clear evidence to support or refute this.

Children with pre-existing blood lead levels that are higher than expected due to other important sources of exposure (e.g. children with a history of an elevated blood lead test, children who have work or hobbies that involve lead exposure such as stained glass, pottery with lead based glaze, radiator repair, firearm firing range or children whose parents, as a result of their employment, accidentally bring home lead dust on their shoes and clothing). The additional exposure from lead in the school drinking water may boost these children's already elevated lead burden to a more concerning level.

Should I have a medical test to find out if my child has been exposed to lead?

The most appropriate medical test to determine if lead exposure has occurred that is likely to cause health problems is a blood lead test. Other types of tests including hair tests and urine tests are not recommended. Blood lead testing is readily available from doctors and clinics.

NW PEHSU evaluated the risk of elevated blood lead levels based on what is known about lead levels in Seattle Public School water. We determined that significantly elevated blood lead levels are extremely unlikely (see question above) and have not recommended comprehensive testing of all Seattle Public School children.

Individual families may have special and unique concerns regarding their child's lead exposure. They may request blood lead testing for their children. These needs should be addressed and can be met on an individual basis with their health care providers and/or NW PEHSU.

Where can I get more information about my child and lead exposure?

- NW Pediatric Environmental Health Specialty Unit
1-877-KID CHEM
<http://depts.washington.edu/pehsu/>
- Your health care provider
- The Washington State Department of Health
<http://www.doh.wa.gov/ehp/dw/Programs/lead.htm>
- EPA website – Protecting your family from lead hazards
http://www.pueblo.gsa.gov/cic_text/housing/finlead/leadhelp.html
- Seattle Public Schools Water Quality Website
http://www.seattleschools.org/area/facilities/WaterQuality/water_quality_update_sept30.htm
- CDC website with links to lead related health information
<http://www.cdc.gov/health/lead.htm>