

Executive Summary

The University of Washington based Northwest Pediatric Environmental Health Specialty Unit (NW PEHSU) reviewed the health implications of lead in school drinking water. This report describes our findings.

Recent district wide testing revealed that many schools have at least one drinking fountain with lead levels that exceed the US EPA guideline for lead in school drinking water (20 parts per billion or 20 ppb). There has been minimal public information describing the potential health implications of these exposures. NW PEHSU undertook this effort to help inform all interested parties regarding:

Will the level of lead found in Seattle Public School drinking water cause harm to the children who drink it?

Are special medical tests or treatments needed because of this lead exposure?

What can be done to ensure children are not harmed from lead exposure in school drinking water?

Will the level of lead found in Seattle Public School drinking water cause harm to the children who drink it?

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. We used a US EPA model to estimate what blood lead levels in Seattle school children might have been based on the concentrations of lead observed in the recent comprehensive sampling of school drinking fountains. We also reviewed blood lead levels measured in children in Washington DC who had high (over 300 ppb) levels of lead measured in their home water supply. **These sources of data suggest that the exposures typically experienced by Seattle School children would result in predicted blood lead levels in the range of 1-3 micrograms per deciliter (mcg/dL).** This is comparable to what has been observed in recent years when King County school aged children have had their blood lead level tested and recent data that determines the national average blood lead level among young school aged children. **It is extremely unlikely that any child will have a blood lead level exceeding the current CDC goal of identifying children with blood lead levels over 10 micrograms per deciliter (mcg/dL).** This is a level for which there are well established public health guidelines for follow up testing and evaluation of a child's environment to reduce ongoing exposure.

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. Those 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. (See Figure 1 for a graph of maximum standing

and running water levels observed in schools for which predicted blood lead levels using these maximum levels were over 5 mcg/dL.)

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 significant exposure sources (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, firing range or children whose parents have jobs that involve them accidentally bringing 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.

Are special medical tests or treatments needed because of this lead exposure?

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 determined that elevated blood lead levels that would prompt follow up testing or interventions are extremely unlikely (see question above). Blood lead testing is best when exposure is recent and ongoing. Based on this, NW PEHSU does not recommend comprehensive testing of all Seattle 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.

What can be done to ensure children are not harmed from lead exposure in school drinking water?

There has been a lot of attention to studying and preventing lead exposure in very young, pre- school aged children. This is because low level lead exposure can damage the developing brain and most brain development occurs in the fetus and young child. There is less known about how lead exposure in older children and adolescents may affect their brains or other aspects of their health.

The relative lack of information on lead exposure and health impacts on older school aged children warrants a cautious approach. NW PEHSU supports efforts to ensure that a child's blood lead is as low as possible.

Based on this NW PEHSU endorses the School District's adoption of the EPA guidelines (goal < 20 ppb) and recommends ongoing water testing and assurance that lead levels in school drinking water do not contribute to potentially harmful lead exposure in Seattle public school children. Building in future goals for reducing this level further are reasonable given the lack of a known threshold or safe level of exposure in children.

In the last decade, the lack of attention and public communication on this problem has fostered parental and community distrust and disgruntlement. Based on this, NW PEHSU also recommends that the School District form an independent Task Force charged with formulating a school lead and water policy. The process should be transparent to all interested parties. Task Force members should be selected by the interested parties including concerned parents, the PTSA, the School Board, local public health officials, and the District administration.