



Fact Sheet

HOUSING FAUCET REPLACEMENT

The purpose of this fact sheet is to provide information to the residents of Adak on the Navy's decision to replace faucets in Sandy Cove and Quarters A, B and C units in order to reduce lead and copper levels in the drinking water system.

Regulation History

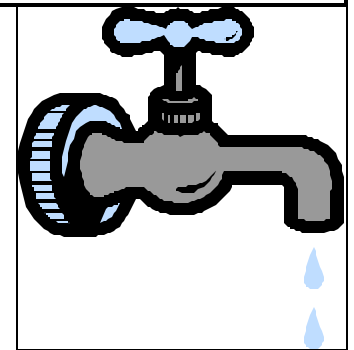
The National Primary Drinking Water Regulations for Lead and Copper (also known as the Lead and Copper Rule), 40 CFR Parts 141 and 142, promulgated in 1991, established an action level of 15 micrograms per liter (ug/L) for lead and 1300 ug/L for copper in drinking water. The State of Alaska regulates the Lead and Copper Rule as it pertains to Adak. The Lead and Copper Rule required the Navy to complete an evaluation of the Adak distribution system and review other information to sample representative homes on Adak. The rule required water samples to be collected from buildings that are used as single-family homes, constructed after 1982.

The Navy studies showed that if water has been standing undisturbed in the housing distribution system for 8 hours or more, a resident can experience elevated levels of lead and copper in water first drawn from the tap. The studies also show that lead and copper concentrations are reduced to safe levels if the tap is flushed 30 seconds or more. **Adak residents can eliminate concerns about their drinking water by running each cold water tap used for drinking or cooking for 30 seconds or more in the morning and afternoon.**

Health Effects of Lead and Copper

Lead can cause a variety of adverse health effects when people are exposed to it at levels above the drinking water level for relatively short periods of time. These effects may include: interference with red blood cell chemistry; delays in normal physical and mental development in babies and young children; slight deficits in the attention span, hearing, and learning abilities of children; and slight increases in the blood pressure of some adults. Lifetime exposure to drinking water containing elevated lead levels may contribute to heart and kidney problems, and cancer.

Copper is an essential nutrient, required by the body in very small amounts. However, copper may potentially cause the following health effects when people are exposed to it at levels above the action level. Short periods of exposure can cause gastrointestinal disturbance, including nausea and vomiting. Use of water that exceeds the action level over many years could cause liver or kidney damage. People with Wilson's disease, a genetic disorder that causes excessive copper accumulation in the liver or brain, may be more sensitive than others to the effect of copper contamination and should consult their health care provider.

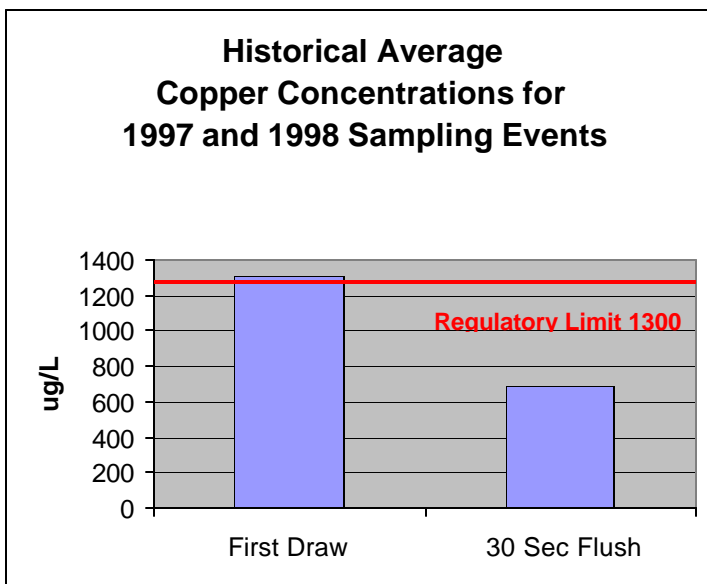


Lead and copper issues are not unique to Adak. According to the Alaska State Compliance Report for 2000, 259 public water systems (or about 16% of 1500 public systems) have difficulty complying with the Lead and Copper Rule.

Navy Studies

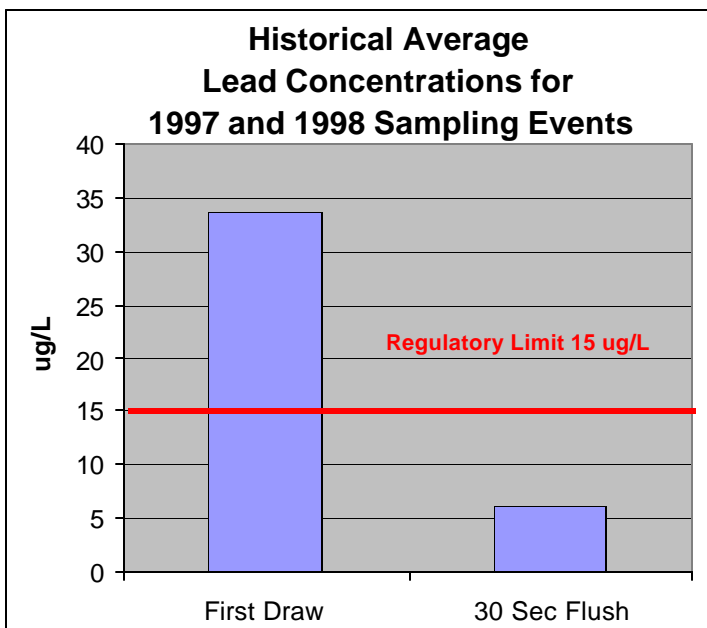
In early 1993, the Navy sampled the primary source of the drinking water on Adak, Lake Bonnie Rose, and the analytical results showed the levels were below the regulatory levels. The Navy also investigated other potential sources of lead and copper within the distribution system such as interior household plumbing, fixtures, and solder.

In March 1993, the Navy collected the first set of water samples from housing units. Some of those samples were found to be above State Regulatory Level for lead and copper. A public education program was implemented that included notices in housing units' packets, articles in the base newspaper, and posted notices on the Command Television channel.



In October 1993 and subsequently, the Navy sampled various locations along the distribution system, to determine if it was the source of lead that was detected above regulatory levels. Sampling data collected during 1997 and 1998 confirmed that the elevated levels of metals originated from the individual housing units, not the main drinking water distribution system.

The 1997 and 1998 sampling regimen was conducted in two phases. The first phase measured metal concentrations from water left stagnant within the housing unit for 8 hours prior to sampling. The second phase measured water collected after the fixture was flushed for 30 to 180 seconds. This allowed the stagnant water to be removed from the piping system, and water from the mains to enter the housing unit.



The results of the sampling indicated that the stagnant water leached metal from the plumbing system, resulting in elevated levels of both lead and copper. Once the stagnant water was flushed from the system, the concentration of metals dropped below regulatory levels.

The two figures to the left show the average lead and copper concentrations that were recorded during the two separate sampling events conducted in 1997 and 1998. As the two figures illustrate, the water leaches metal from the interior components of the plumbing system, when left standing for a period of time, and not from the distribution system.

Following the sampling results, the Navy then studied alternative system-wide corrosion control methods, prescribed by ADEC regulations, to reduce lead corrosion. The Navy evaluated source water treatment using various chemicals to reduce pipe corrosion and associated metal levels. The chemical treatment that showed the most promise, calcium phosphate, lowered lead levels in a laboratory setting; however, it did not reduce lead concentrations to the regulatory level of 15 ug/L. The study also showed that the installation of calcium phosphate treatment would significantly increase future long-term operation and maintenance costs to the Adak community, resulting from system personnel distributing the chemical, as well as the need for additional system operator certifications.

The Navy corrosion control study also recommended that plumbing fixtures, specifically faucets, be further examined as a possible significant source of lead and copper in residential drinking water. In 2001, the Navy conducted a study that evaluated the effects of replacing existing faucets with lead-free fixtures in Sandy Cove housing units. Based upon ADEC regulations for a water system that serves 101-500 people, a sample size of 10 housing units was used.

The results of the 2001 faucet study showed a greater reduction of lead and copper was achieved by replacing fixtures than by source treatment. The study showed that replacing faucets lowered copper and lead levels by 67% and 86%, respectively. In addition to a greater reduction in lead levels, replacing faucet fixtures was determined to be superior to chemical treatment because fixture replacement produces an immediate reduction in metal concentrations and results in no additional operation and maintenance costs to the community of Adak. The Navy is confident that the results of the faucet study are truly representative of the conditions on Adak, since the study was performed at the facility, in contrast with the source treatment study, which was conducted in a laboratory.

On the basis of this information, Navy concluded that residential faucet replacement was the best approach to reduce elevated lead and copper levels. The Navy notified the State of Alaska, the City of Adak, The Aleut Corporation (TAC), and Adak Reuse Corporation (ARC) of this conclusion, and is proceeding to complete the work.

Frequently Asked Questions

The following questions and answers are intended to address issues raised by RAB members and others in discussing this subject.

Question: Why are industrial area buildings not receiving faucet replacements?

Answer: Evaluating exposure within industrial areas is not required under the Lead and Copper Rule. The regulatory limits are based upon residential exposure, since the majority of water that an individual consumes is normally from their home, and because infants and pregnant women are the most sensitive to the health effects of consuming water containing elevated levels of these metals.

Question: What about facilities used for school or daycare purposes?

Answer: As with industrial areas, evaluating exposure in these facilities is not required under the Lead and Copper Rule. Therefore, the replacement of fixtures has not been evaluated. It should be noted that metal concentrations would probably be lower since the level of activity, and associated pipe flushing, in these structures would be higher than in a residential building.

The EPA has a web site about lead in drinking water in school and day care facilities that may be of interest at: <http://www.epa.gov/safewater/lead/schoolanddccc.htm>.

Question: Could this issue cause elevated levels of lead in fish processed in the fish plant?

Answer: No. Elevated lead concentration in the water only occurs when water has been stagnant in an interior plumbing system for an extended period. The water is not stagnant for extended periods during normal operation of the fish plant.

Question: Why are the faucet replacements only occurring in Sandy Cove and Quarters A, B, and C? Why not all the rest of the housing units?

Answer: Navy is addressing lead and copper levels in Sandy Cove and Quarters A, B, and C because they are currently in residential use. The appropriate water quality remedy, if any, for other residential uses that may occur at some future date should be determined in the context of facility and infrastructure conditions and applicable regulations that exist at that future date.

If you have questions please feel free to contact us via our web page at www.adakupdate.com or the Adak toll-free number at 1-866-239-1219. The referenced documents below are available in the Adak City office.

References

Mitigating Elevated Levels of Lead and Copper in Adak's Drinking Water System by Replacing Residential Faucets, April, 2002

Corrosion Control Study Report, Public Water System No: 260595, Former Naval Air Facility Adak, Alaska, December 19, 2000

Commanding Officer, N05ER2
Engineering Field Activity, Northwest
19917 7th Avenue NE
Poulsbo, WA 98370