University of Alaska Fairbanks
Facilities Services
Division of Utilities

2010 Annual Water Quality

June 2010

Points of Interest:

- Lead and Copper info
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- Nitrates
- Arsenic

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Korean

이 안내는 매우 중요합니다.
본인을 위해 번역인을 사용하십시요.

Japanese

この情報は重要です。
翻訳を依頼してください。

Your Water

This report is to inform the on-campus population about the safety and operation of the water facilities on the main campus of the University of Alaska Fairbanks. This is a snapshot of last year's water quality. Included are details about where your water comes from, what it contains, and how it compares to EPA and state standards.

UAF has two primary drinking water wells and a third emergency well. The wells are drilled to depths of 70 to 90 feet. The primary wells are located in heated, secure buildings with concrete floors. The buildings and pads are elevated to prevent runoff from entering the wells. The wells are located on University property.

Source Water Assessment

The ADEC has compiled a Source Water Assessment of our source of public drinking water. This assessment has defined an area around our wells that is critical to the preservation of the quality of our drinking water. Within this area, they have identified potential and existing sources of contamination. Based on the information gathered, ADEC has determined the overall vulnerability of our wells to contamination. The results are available at the following locations: Rasmuson Library, UAF Power Plant, and the Fairbanks North Star Borough Library.

From the Water Dept.

2010 was another exciting year in water for UAF Utilities. More students than ever toured the UAF Water Treatment Plant to better understand the challenges of operating a drinking water facility.

If you are interested in touring our facility, please use the contact information on page 4.

Spanish

Este informe contiene información muy importante sobre su agua potable. Tradúzcalo o hable con alguien que lo entienda bien.

Contaminant Sources

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's (EPA) Safe Drinking Water Hotline (800-426-4791).

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the round, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Microbial contaminants, such as viruses and bacteria, may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife. Inorganic contaminants, such as salts and metals, can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming. Pesticides and herbicides may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses. Organic Chemical Contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also, come from gas stations, urban stormwater runoff, and septic systems.

Mission Statement:

Our mission is to provide high quality uninterrupted service of water, power and heat and chilled water. This mission is accomplished through a commitment to preventative maintenance, planning and inspection.

cont. Contaminant Sources

Radioactive contaminants can be naturally-occurring or be the result of oil and gas production and mining activities. In order to ensure that tap water is safe to drink, EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

Arsenic

While your drinking water meets EPA's standard for arsenic, it does contain low levels of arsenic. EPA's standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. EPA continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

Arsenic has been a major concern of the University Water Plant for many years. Naturally occurring Arsenic is very plentiful in the Fairbanks area. In 2005, the UAF Water Plant was granted reduced monitoring status by the ADEC.

An arsenic sample was collected in December 2010. Results were 2.58 ppb (parts per billion). For comparison, the untreated, raw water had an arsenic level of 49.5 ppb. That's nearly a 95% removal of all incoming Arsenic.

Russian

Данный рапорт содержит важную информацию о вашей питьевой воде. Переведите его или проконсультируйтесь с тем, кто его понимает.

TTHM's

Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.

Total Trihalomethanes (TTHM) are a byproduct of chlorinating water that contains natural organics. The ground water used by the University Water Plant has always had these organics, derived, most likely, from decaying plant materials and thus, TTHM's have always been in the chlorinated water. An EPA survey discovered that trihalomethanes are present in virtually all chlorinated water supplies. In an effort to lower TTHM levels, EPA required large towns and cities to reduce TTHM levels in potable water. However, recent changes in national drinking water quality standards now require that all water treatment systems, regardless of size, reduce TTHM's.

For 2010, the University Water system was in compliance for TTHM's all four quarters of the year. Our final average was well below the MCL established by ADEC. Compliance with TTHM's is determined by a running annual average based on quarterly averages of all the samples collected within that quarter.

The University Water Plant will continue to look for ways to reduce spikes of TTHM levels in the distribution system to stay within all EPA and ADEC regulations regarding disinfection by-products.

Late in 2009, the water plant installed new chlorine injection pumps that more accurately dosed chlorine into the drinking water. This help to limit excess chlorine, that promotes the formation of TTHM's in our water. We are currently testing various types of Granular Activated Carbon to focus on TTHM precursor removal.

2010 Monthly Analysis Performed at the UAF Water Plant

Analyte	MCL	Units	Annual Avg	Frequency
Iron	0.03	ppm	0.01	Daily
Manganese	0.05	ppm	0.14	Daily
Chlorine	4.0	ppm	0.64	Daily
Hardness	NA	ppm	348	Monthly
pH	6.5-8.5	pH	7.43	Monthly

UAF In-House Analysis

The table to the left indicates average results for monthly testing performed at the UAF Water Plant. These tests and others provide water plant personnel with vital performance data on chemical treatment and efficiency of the overall treatment process.

Most of the parameters within the table are considered Secondary Contaminants. Secondary's are usually non-enforceable guidelines that may cause cosmetic or aesthetic effects to the finished treated water. Alaska DEC may enforce Secondary standards if public health is at risk.

The 2010 averages for UAF drinking water indicated a higher than normal Manganese level. This does not pose a heath risk, but may cause discolored water. Manganese is naturally occurring in the groundwater and varies in concentration throughout the year.

Disinfection By-Product and Inorganic Analysis Results

Contaminant	TTHM	HAA	Nitrate	Barium	Fluoride
Date	Monthly	Monthly	Annually	9yr Cycle	9yr Cycle
Units	ppb	ppb	ppm	ppm	ppm
MCL	80	60	10	2	4
MCLG	None	None	10	2	4
Results	57.2	16.2	1.80	0.169	0.152
Range	7.3 –133.0	ND– 73.7	NA	NA	NA
Source	By-product of chlorination	By-product of chlorination	Runoff from fertilizer use; Leaching from septic tanks, sewage; Leaching from natural deposits	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits	Water additive which promotes strong teeth; erosion of natural deposits; discharge from fertilizer and aluminum factories
Violation	No	No	No	No	No

What are Nitrates?

Short-term: Excessive levels of nitrate in drinking water have caused serious illness and sometimes death. The serious illness in infants is due to the conversion of nitrate to nitrite by the body, which can interfere with the oxygen-carrying capacity of the childs blood. This can be an acute condition in which health deteriorates rapidly over a period of days. Symptoms include shortness of breath and blueness of the skin.

Long-term: Nitrates and nitrites have the potential to cause the following effects from a lifetime exposure at levels above the MCL: diuresis, increased starchy deposits and hemorrhaging of the spleen.

Disinfection By-Products

Disinfection byproducts form when disinfectants added to drinking water to kill germs react with naturally occuring organic matter in water.

Total Trihalomethanes. Some people who drink water containing trihalomethanes in excess of EPA's standard over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.

Haloacetic Acids. Some people who drink water containing haloacetic acids in excess of EPA's standard over many years may have an increased risk of getting cancer.

Radioactive Contaminants

Certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Some people who drink water containing alpha emitters in excess of the MCL over many years may have an increased risk of getting cancer.

The UAF Water Plant complied with the Radionuclide Rule during the '05 monitoring event. Future sampling has yet to be determined.

Important Drinking Water Definitions

MCLG: Maximum Contaminant Level Goal: The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLG's allow for a margin of safety.

MCL: Maximum Contaminant Level: The highest level of a contaminant that is allowed in drinking water. MCL's are set as close to the MCLG's as feasible using the best available treatment technology.

ppb: parts per billion, one part in one billion parts

ppm: parts per million, one part in one million parts, equivalent to milligrams per liter

ND: Non-detect: sample result was below the lowest method detection limit.
RAA: Running Annual Average: computed quarterly, is the average of the quarterly averages for all samples taken during the previous four calendar quarters.

UAF Utilities
Division of Facilities Services

802 Alumni Dr
Fairbanks, AK 99775

Phone: 907-474-7351
Fax: 907-474-5478
E-mail: bastacy@alaska.edu

The University of Alaska Fairbanks, the nation's northernmost Land, Sea and Space Grant university and international research center, advances and disseminates knowledge through teaching, research and public service with an emphasis on Alaska, the circumpolar North and their diverse peoples. UAF--America's arctic university--promotes academic excellence, student success and lifelong learning.

Lead and Copper

Infants and young children are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing. If you are concerned about elevated lead levels in your home's water, you may wish to have your water tested and flush your tap for 30 seconds to 2 minutes before using tap water. Additional information is available from Safe Drinking Water Hotline (800-426-4791).

The Division of Utilities performed its three year Lead and Copper testing in December 2010. The 90th percentile compliance samples were 2.24 ppm for Copper and 19.20 ppb for Lead.

The Action Level for Lead is 15 ppb and Copper is 1.3ppm. As soon as these results were received, the Water Plant began to investigate why the Lead and Copper concentrations exceeded the ADEC Action levels.

It was determined that the chemical used to prevent lead and copper leaching had dropped below the outlet port on the holding tank. Chemical levels were re-established and more samples were collected to ensure lead and copper concentrations were within regulatory guidelines.

ADEC instructed the water treatment plant to increase lead and copper sample volume and frequency until they are satisfied with the Water Plant's Corrosion Control Program.

Lead and copper compliance is determined by the 90th percentile sample of all samples collected when arranged from lowest concentration to highest concentration.

December 2010 Pb & Cu

Sample	Location	LEAD (ppb)	Location	COPPER (ppm)	Action Level
20	SAC 105	125.00	SAC 205	2.690	
19	Eielson Bldg	22.70	SAC 105	2.460	
18	SAC 609	19.20	SAC 309	2.240	**90th percentile**
17	SAC 205	8.25	SAC 609	1.650	
16	SAC 411	6.14	SAC 213	1.650	
15	Gruening Bldg	5.70	SAC 302	1.640	
14	SAC 302	4.13	SAC 202	1.620	
13	Rasmuson Lib	3.24	SAC 217	1.540	
12	SAC 602	3.12	SAC 407	1.400	
11	Lola Tilley	2.86	SAC 411	1.390	
10	SAC 606	2.64	SAC 606	1.390	
9	SAC 402	2.49	SAC 602	1.360	
8	SAC 407	1.94	Rasmuson Lib	1.280	
7	SAC 502	1.91	SAC 502	0.980	
6	SAC 213	1.81	SAC 402	0.852	
5	SAC 202	1.76	Lola Tilley	0.776	
4	SAC 309	1.72	Gruening Bldg	0.670	
3	Power Plant	1.59	Eielson Bldg	0.403	
2	SAC 217	1.05	Wood Center	0.165	
1	Wood Center	<0.10	Power Plant	0.109	

Follow-Up 2010 Pb & Cu

Sample	Location	LEAD (ppb)	Location	COPPER (ppm)	Action Level
20	SAC 105	6.310	SAC 205	1.290	
19	Rasmuson Lib.	6.050	SAC 302	0.943	
18	SAC 302	1.610	Lola Tilley	0.791	**90th percentile**
17	Eielson Bldg	1.390	SAC 606	0.782	
16	Gruening Bldg	1.330	SAC 609	0.711	
15	SAC 411	1.150	SAC 502	0.614	
14	SAC 309	1.130	SAC 309	0.608	
13	SAC 407	0.961	SAC 602	0.601	
12	SAC 205	0.955	SAC 407	0.583	
11	SAC 609	0.948	SAC 105	0.571	
10	SAC 606	0.888	Rasmuson Lib.	0.565	
9	SAC 202	0.875	SAC 411	0.539	
8	SAC 402	0.868	SAC 202	0.442	
7	SAC 502	0.685	SAC 217	0.378	
6	SAC 213	0.630	SAC 402	0.373	
5	SAC 602	0.620	SAC 213	0.330	
4	Power Plant	0.615	Eielson Bldg	0.195	
3	Wood Center	0.601	Wood Center	0.161	
2	Lola Tilley	0.600	Gruening Bldg	0.158	
1	SAC 217	0.425	Power Plant	0.051	