

2003

Annual Consumer Report on the Quality of Tap Water

Naval Air Station Keflavik

Introduction

This is an annual report on the quality of water delivered by the Naval Air Station Keflavik (NASKEF). Under the "Consumer Confidence Reporting Rule" of the federal Safe Drinking Water Act (SDWA), community water systems are required to report this water quality information to the consuming public. Presented in this report is information on the source of our water, its constituents and the health risks associated with any contaminants.

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 ground, 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. Contaminants that may be present in source water include: (A) Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife. (B) Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming. (C) Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses. (D) 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 storm water runoff, and septic systems. (E) Radioactive contaminants, which 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 (Environmental Protection Agency)

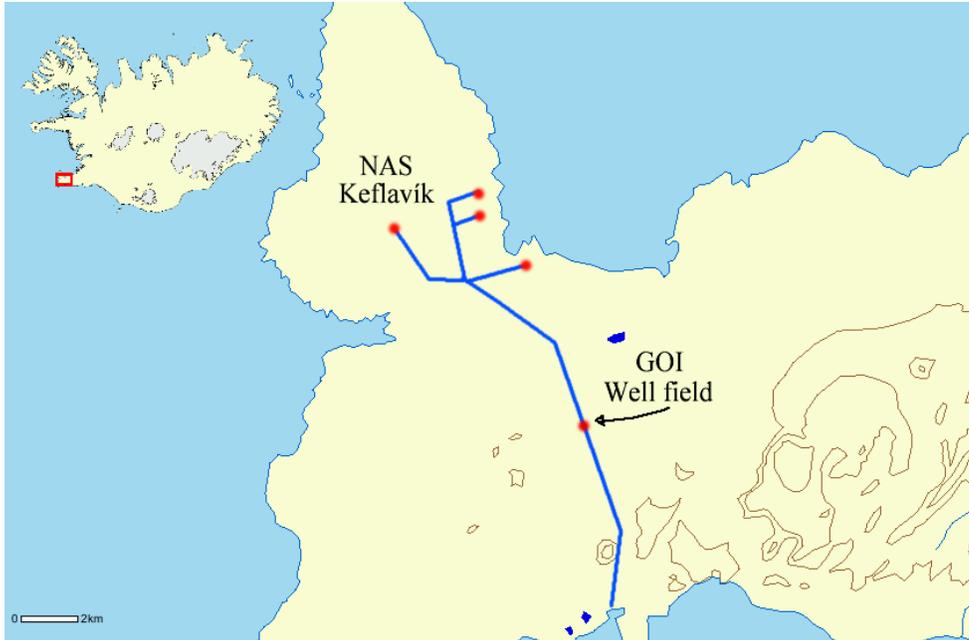
prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. FDA (Food and Drug Administration) regulations establish limits for contaminants in bottled water, which must provide the same protection for public health. Drinking water, including bottled 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 Safe Drinking Water Hotline (800-426-4791).

We continually monitor the drinking water for contaminants. Our water is safe to drink; however, some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC (Center for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at 800-426-4791.

As with many island and coastal regions, the shallow aquifer system on the Reykjanes Peninsula of Iceland, where NASKEF is located, consists of an unconfined freshwater lens that overlies the saline water of the ocean. The high permeability of the fractured basalt allows rapid infiltration of precipitation, which maintains the lens. Due to the high permeability of the underlying bedrock, it is estimated that more than 90% of the precipitation infiltrates the ground surface; hence natural surface drainage

systems are absent on the Reykjanes Peninsula. The primary water supply system for the Naval Air Station comes from the Sudurnes Water Works (GOI) operated wellfield, located about 5 miles south-southeast of the base. Because the

Reykjanes Peninsula is a seismically active region there is a potential for disruption of the water supply to the Station. For this reason the Station maintains an on-base emergency well field that serves as a backup supply.



Prior to entering the NASKEF potable water distribution system the water is chemically treated with calcium hypochlorite for disinfection, sodium fluoride for fluoridation, sodium carbonate (soda ash) for pH control, and zinc orthophosphate (ZOP) for corrosion control.

inorganics in the water by drawing samples at various locations in the distribution system and sending them to qualified laboratories for analysis. The Naval Hospital Keflavik's Preventive Medicine Department monitors for coliforms and analyzes the samples with laboratory equipment.

Monitoring of Your Drinking Water

The Public Works Department's Water Plant monitors general water quality parameters and chemical dosage daily. The Public Works Department's Environmental Division monitors for trihalomethanes, radiological contaminants, volatile organic carbon, pesticides, polychlorinated biphenyls (PCBs), and

At NASKEF, we monitor for the contaminant groups listed in Column 1 of the following table using EPA-approved methods. Column 2 of the table specifies the monitoring frequency for these contaminant groups.

Analyte Groups and Monitoring Frequency Table

Analyte/Contaminant Group	Monitoring Frequency
Total Coliforms	Monthly
Total Trihalomethanes	Annually
Radiological contaminants	Every four years
Volatile Organic Carbon	Every four years
Pesticides/PCBs	Annually
Inorganics	Every three years/ Annually (Nitrate, Nitrite)
Alkalinity/Calcium/Conductivity	Annually
Fluoride/pH/Chlorine/Temperature	Daily

Definitions of Key Terms

To gain a better understanding of the content of this report, several key terms must be defined. They are as follows:

Total Coliforms: Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, may be present.

Maximum Contaminant Level (MCL):- The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

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

Treatment Technique - A required process intended to reduce the level of a contaminant in drinking water.

Action Level - The concentration of a contaminant, which, if exceeded, triggers treatment or other requirements, which a water system must follow.

Additional Acronyms/Terms Used In This Report

Below is a listing of acronyms and terms (with explanations) used in this Consumer Confidence Report.

MCL	Maximum Contaminant Level; the highest level of a contaminant that is allowed in drinking water
MCLG	Maximum Contaminant Level Goal; the level of a contaminant in drinking water below which there is no known or expected health risk
TT	Treatment Technique; a required process intended to reduce the level of a contaminant in drinking water
AL	Action Level; the concentration of a contaminant, which, if exceeded, trigger treatment or other requirements, which a water system must follow
ppm	parts per million; a unit of measure equivalent to a single penny in \$10,000

ppb	parts per billion; a unit of measure equivalent to a single penny in \$10,000,000
ppt	parts per trillion; a unit of measure equivalent to a single penny in \$10,000,000,000
ppq	parts per quadrillion; a unit of measure equivalent to a single penny in \$10,000,000,000,000
mg/kg	milligrams per kilogram; a unit of measure equivalent to part per million (ppm)
µg/L	micrograms per liter; a unit of measure equivalent to part per billion (ppb)
mrem/yr	millirem per year; a measure of radioactivity in water
mg/L	milligrams per liter; a unit of measure equivalent to part per million (ppm)
MFL	million fibers per liter; a measure of asbestos in water
CCR	Consumer Confidence Report
SDWA	Safe Drinking Water Act; Federal law which sets forth drinking water regulations
pCi/L	picocuries per liter; a measure of radioactivity in water
NTU	nephelometric turbidity unit; a measure of turbidity in water
TTHMs	total trihalomethanes; byproducts of drinking water disinfection
Level Found	laboratory analytical result for a contaminant; this value is evaluated against an MCL or AL to determine compliance.
Range	the range of the highest and lowest analytical values of a reported contaminant. For example, the range of reported analytical detections for an unregulated contaminant may be 10.1 ppm (lowest value) to 13.4 ppm (highest value). EPA requires this range to be reported.

Results Table. Detected Contaminants

The following table presents the results of our monitoring for the reporting period of the year 2003.

The Navy allows us to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of our data, though representative, are more than one year old.

Results Table - Detected Contaminants

Contaminant	MCLG	MCL	Highest Level Found	Range of detections	Sample Date	Exceeded Standard?	Likely Source of Contaminant
Gross alpha activities	0 pCi/L	15 pCi/L	1.38 pCi/L	0.16-1.38 pCi/L	2 Oct 00	No	Erosion of natural deposits.
Gross beta activities	0 pCi/L	50 pCi/L	1.96 pCi/L	0.32-1.96 pCi/L	2 Oct 00	No	Decay of natural and man-made deposits
Fluoride	4 ppm	4 ppm	0.76 ppm	0.74-0.76 ppm	17 Oct 01	No	Water additive, which promotes strong teeth.
Sodium	N/A	N/A	34.3 ppm	33-34.3 ppm	17 Oct 01	No	Erosion of natural deposits Water additive.
Alkalinity	N/A	N/A	17 mg/l as CaCO ₃	16.8-17 mg/l as CaCO ₃	7 Nov 02	No	The capacity of bases to neutralize acids. An example is lime added to lakes to decrease acidity.
Nitrate	10 ppm	10 ppm	0.30 ppm	0.29-0.30 ppm	7 Nov 02	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.
TTHMs Total TriHaloMethanes	None ***	80 ppb	2.5 ppb	2.4-2.5 ppb	7 Nov 02	No	By-product of drinking water chlorination
Lead	0	AL=15 ppb	2 ppb *	0**	17 May 02	No	Corrosion of housing plumbing systems.
Copper	1.3 ppm	AL=1.3 ppm	0.084 ppm*	0**	17 May 02	No	Corrosion of household plumbing systems.

*This value represents the 90th percentile value of the most recent round of sampling.

** This value represents the total number of sampling sites, which exceed the action level.

*** Although there is no collective MCLG for this contaminant group, there are individual MCLGs for some of the individual contaminants

Detected Contaminants

We constantly monitor for various contaminants in the water supply to meet all regulatory requirements. The table lists only those contaminants that had some level of detection. Many other contaminants have been analyzed also, but were not present or were below the detection limits of the lab equipment.

EPA requires different reporting methodologies for different contaminants. A brief explanation of our reporting methodologies for each detected contaminant is provided below:

Gross alpha activities: EPA requires us to report the highest level of gross alpha activities detected (1.38 pCi/L), and the range of all detected values for this contaminant (0.16 – 1.38 pCi/L, for all samples since 1 Jan 2000). 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.

Gross beta activities: EPA requires us to report the highest level of gross alpha activities detected (1.96 pCi/L), and the range of all detected values for this contaminant (0.32 – 1.96 pCi/L, for all samples since 1 Jan 2000). Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Some people who drink water containing beta and photon emitters in excess of the MCL over many years may have an increased risk of getting cancer.

Fluoride: EPA requires us to report the highest level of fluoride detected (0.76 ppm), and the range of all detected values for this contaminant (0.74-0.76 ppm). Some people who drink water containing fluoride in excess of the federal MCL of 4 ppm over many years may get bone disease, including pain and tenderness of the bones. Children who drink water containing fluoride in excess of the state MCL of 2 ppm may get mottled teeth.

Sodium: is included on the Environmental Protection Agency (EPA) Drinking Water Contaminant Candidate List (CCL). The CCL is

a list of contaminants which, at the time of publication, are not subject to any proposed or promulgated national primary drinking regulation

There is not a state or federal MCL for sodium. Sodium level information is mainly reported for consumers and health officials that are concerned about sodium intake due to dietary precautions. Since the sodium level in the water here is greater than 20ppm, and if you are on a sodium restricted diet, you should consult your physician or registered dietitian to plan a healthy diet that reduces the sodium content in your total food intake.

Nitrate: EPA requires us to report the highest level of nitrate detected (0.30 ppm), and the range of all detected values for this contaminant (0.29 – 0.30 ppm, for all samples since 7 Nov 2002).

Infants below the age of six months who drink water containing nitrate in excess of the MCL (10 ppm) may quickly become seriously ill and, if untreated, may die because high nitrate levels can interfere with the capacity of the infant's blood to carry oxygen. Symptoms include shortness of breath and blueness of the skin. High nitrate levels may also affect the oxygen-carrying ability of the blood of pregnant women.

TTHMs Total TriHaloMethanes: EPA requires us to report the highest level of TTHMs detected (2.5 ppb), and the range of all detected values for this contaminant (2.4-2.5 ppb, for all samples on the 7. of Nov 2002). The MCL for TTHMs is 80 ppb.

Some people who use water containing trihalomethanes in excess of the MCL over many years may experience liver, kidney, or central nervous system problems, and may have an increased risk of getting cancer.

Lead: EPA requires us to report 90th percentile value of the most recent round of sampling, as well as the total number of sampling sites exceeding the action level. As presented in the Results Table, we reported 2 ppb as the 90th percentile value of the most recent round of sampling (performed in May, 2002). In the "Range" column, we reported that none of the sampling sites exceeded the action level for lead. Infants and children who drink water containing lead in excess of the action level may experience delays in their physical or mental development. Children may show slight deficits in attention span and learning abilities. Adults who drink this

water over many years may develop kidney problems or high blood pressure.

Copper: EPA requires us to report 90th percentile value of the most recent round of sampling, as well as the total number of sampling sites exceeding the action level. As presented in the Results Table, we reported 0.084 ppm as the 90th percentile value of the most recent round of sampling (performed in May, 2002). In the "Range" column, we reported that none of the sampling sites exceeded the action level for copper.

Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time may experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years may suffer liver or kidney damage. People with Wilson's Disease should consult their personal doctor.

Information on Lead

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 the Safe Drinking Water Hotline (800-426-4791).

Public Involvement

Mr. Gudmundur Orn Jonsson of the Public Works Environmental Division prepared this Consumer Confidence Report. For additional information regarding this report or the water quality on base, please contact the Environmental Division Officer, LT James Ekberg at ext. 6404 or the Deputy Environmental Director, Ms. Johanna Turner at ext. 7740.