2022 Consumer Confidence Report (CCR)

Annual Water Quality Report

RAF Fairford

United Kingdom

Introduction

We are pleased to deliver our 2022 Consumer Confidence Report, which shows your water meets or exceeds all of the Final Governing Standards for UK (FGS-UK) and United States Environmental Protection Agency (US EPA) health standards and all drinking water requirements outlined by USAF standards. The Bioenvironmental Engineering Flight tests the drinking water quality for many constituents as required by federal and United Kingdom regulations. This report shows the results of our monitoring for the period of 1 January – 31 December 2022.

Air Force Instruction 48-144, *Drinking Water Surveillance Program*, and the US EPA require all community water systems to provide their consumers an annual water quality report. This report will help you understand where your drinking water comes from and what is in it. It will also help you to make informed choices that affect your family's health and help you understand the importance of protecting our drinking water sources.

Where does our water come from?

RAF Fairford draws water from two boreholes (wells) connected to a deep aquifer located within site. Raw water from the boreholes (wells) are pumped to the water treatment unit for filtration thus reducing iron and turbidity levels. Sodium hypochlorite is added to the water supply by the 420th Air Base Squadron/CE Flight for disinfection purposes and prevents bacteriological growth. The treated water is then stored into a reservoir and high level storage tanks to maintain adequate pressure for the water distribution system.

Drinking Water 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 the water poses a health risk. More information about contaminants and potential health effects can be obtained by the US EPA's Safe Drinking Water Hotline (1-800-426-4791).

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 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:

- ***Microbial contaminants,*** such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- ***Inorganic contaminants***, such as salts and metals, which can be naturally-occurring or resulting from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- ***Pesticides and herbicides*** that may come from a variety of sources such as agriculture, urban storm water runoff, and septic systems.
- ***Organic chemical contaminants,*** including synthetic and volatile organic chemicals that are byproducts of industrial processes and petroleum production. These can also come from gas stations, urban storm water runoff, and septic systems.
- ***Radioactive contaminants,*** which can be naturally occurring or resulting from oil and gas production and mining activities.

Water Monitoring Results Summary

In order to ensure that tap water is safe to drink, the U.S. Environmental Protection Agency (US EPA) and the Final Governing Standard for United Kingdom (FGS-UK) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems.

Tables 1 – 6 list all of the primary drinking water standard contaminants that were detected during the most recent sampling for the constituent. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. The FGS-UK requires us to monitor certain contaminants less than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year. Some of the data, though representative of the water quality, is more than one-year old.

NOTE: Terms and abbreviations used in this report are located on the final page of this report.

Table 1:
Detection of Coliform Bacteria
1 January – 31 December 2022

Parameters and Units of Measure	Highest No. of Detection	MCL	PHG (MCLG)	Typical source of Bacteria
Coliform, Total	0	No more than 1 positive monthly sample	0	Naturally present in the environment
Coliform, Fecal or *E.Coli*	0	A routine sample and repeat sample are total coliform positive and one of these is also fecal coliform or *E. Coli* positive	0	Human and animal fecal waste

Table 2:
Lead and Copper
1 January – 31 December 2022

Parameters and Units of Measure	Samples Collected	90th% Level Found	Sites Exceeding AL	AL	PHG	Typical Source of Containment
Lead (ppb)	10	0.35	0	10	0	Internal corrosion of household water plumbing systems; discharges from industrial manufacturers; erosion of natural deposits
Copper (mg/L)	10	0.031	0	1.3	1.3	Internal corrosion of household water plumbing systems; discharges from industrial manufacturers; erosion of natural deposits

Table 3:
Inorganic Contaminants
1 January– 31 December 2022

Parameter and Units of Measure	Highest Level Detected	Range of Levels Detected	MCL	PHG MCLG	Major Sources in Drinking Water
Antimony (ppb)	< 0.16	< 0.16	5	5	Discharge from petroleum refineries; fire retardants; ceramics; electronics and solder
Arsenic (ppb)	0.29	< 0.046 - 0.29	10	0	Erosion of natural deposits; runoff from orchards; glass and electronics production wastes
Boron (ppm)	0.16	0.15 - 0.16	1	N/A	Released from rocks and soils through weathering
Bromate (ppb)	< 0.99	0.93 - < 0.99	10	0	By-product of drinking water disinfection
Cadmium (ppb)	0.089	< 0.018 - 0.089	5	5	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints
Chromium (ppb)	< 0.17	< 0.17	50	50	Discharge from steel and pulp mills; erosion of natural deposits
Cyanide (ppb)	< 5.5	< 5.5	50	50	Discharge from steel/metal factories; discharge from plastic and fertilizer factories
Fluoride (ppm)	1.1	1 - 1.1	1.5	1.5	Erosion of natural deposits; water additive; discharge from fertilizer and aluminum plants
Mercury (ppb)	< 0.022	< 0.022	1	1	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills; runoff from cropland
Nitrate (as N) (mg/L)	< 0.34	< 0.21 - < 0.34	10	10	Runoff and leaching from fertilizer use; leaching from septic tanks and sewage; erosion of natural deposits
Nitrite (as N) (mg/L)	< 0.015	< 0.014 - < 0.015	0.15	0.15	Runoff and leaching from fertilizer use; leaching from septic tanks and sewage; erosion of natural deposits
Selenium (ppb)	2	< 0.83 - 2	10	10	Discharge from petroleum, glass, and metal refineries; erosion of natural deposits; discharge from mines and chemical manufacturers; runoff from livestock lots (feed additive)

Table 4:
Volatile Organic Compounds
1 January – 31 December 2022

Parameters and Units of Measure	Highest No. of Detection	Range of Levels Detected	MCL	PHG (MCLG)	Major Sources in Drinking Water
Benzene (ppb)	< 0.030	< 0.030	1	0	Discharge from factories; leaching from gas storage tanks and landfills
1-2-Dichloroethane (ppb)	< 0.2	< 0.2	3	0	Discharge from industrial chemical factories
TTHMs [Total tri-halomethanes] (ppb)	22	22	80	N/A	By-product of drinking water disinfection (2018)
HAA5 [Haloacetic acids] (ppb)	7.9	7.9	60	60	By-product of drinking water disinfection (2018)

Table 5:
Radioactive Contaminants
1 January – 31 December 2022

Parameters and Units of Measure	Highest No. of Detection	Range of Levels Detected	MCL	PHG (MCLG)	Major Sources in Drinking Water
Gross Alpha (Bq/L)	< 0.04	< 0.04	0.555	0	Erosion of natural deposits
Gross Beta (Bq/L)	0.07	0.03 - 0.06	1.85	0	Erosion of natural deposits

Table 6:
Synthetic Organic Compounds
1 January – 31 December 2022

Parameters and Units of Measure	Highest No. of Detection	Range of Levels Detected	MCL	PHG (MCLG)	Major Sources in Drinking Water
Benzo(a)pyrene (ppb)	< 0.0013	< 0.0013	0.01	0	Leaching from linings of water storage tanks and distribution lines
Pesticides, total (calculated) (ppb)	0	0	0.5	0	Leeching from farm land

Table 7:
Secondary Drinking Water Standards
1 January – 31 December 2022

Parameters and Units of Measure	Highest No. of Detection	Range of Levels Detected	MCL	PHG (MCLG)	Major Sources in Drinking Water
Chloride (ppm)	24	23 - 24	250	N/A	Runoff/leaching from natural deposits; seawater influence
Color (ppm)	0.81	0.81	20	N/A	Naturally-occurring organic materials
Iron (ppb)	16	< 5.2 - 16	200	N/A	Leaching from natural deposits; industrial wastes
Manganese (ppb)	0.35	< 0.28 - 0.35	50	N/A	Leaching from natural deposits; industrial wastes
Odor	Acceptable to Consumers and no Abnormal Change				Naturally-occurring organic materials
Sulfate (ppm)	61	55 - 61	250	N/A	Runoff/leaching from natural deposits; industrial wastes
Taste	Acceptable to Consumers and no Abnormal Change				Naturally-occurring organic materials
Turbidity (NTU)	< 0.2	< 0.2	4	N/A	Soil runoff

Additional Information

Nitrate

Although the level of nitrate (refer to table 3 on water quality data, p. 4) is consistently below the health effect level, the EPA requires the following information be included in this report: "Nitrate in drinking water at levels above 10 ppm is a health risk for infants of less than 6 months of age. High nitrate levels in drinking water can cause blue-baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant, you should ask advice from your health care provider."

Lead

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline at: 1-800-426-4791 or at http://www.epa.gov/safewater/lead.

Customers with Special Health Concerns

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as those with cancer undergoing chemotherapy, those who have undergone organ transplants, those 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. The EPA and Centers 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 or on the US EPA's website, http://www.epa.gov.

Copies of this report can be requested via mail by sending a self-addressed stamped envelope to:

ATTN: 2022 RAF Fairford Water Quality Report
422 MDS/SGOJ, Unit 4628
APO, AE 09494

For more information please contact the 422d Medical Squadron, Bioenvironmental Engineering. At DSN 314-236-8838/8083 or by email at usaf.croughton.422-abg.mbx.sgoj@health.mil.

TERMS USED IN THIS REPORT

Public Health Goal (PHG): The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the United States Environmental Protection Agency.

Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technologically feasible. Secondary MCLs are set to protect the odor, taste, and appearance of drinking water.

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 are set by the U.S. Environmental Protection Agency (USEPA).

ND: not detectable at testing limit

ppm: parts per million or milligrams per liter (mg/L)

ppb: parts per billion or micrograms per liter (ug/L)

Bq/L: Becquerel per liter

Action Level (AL): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

FGS-UK: Final Governing Standards for the United Kingdom - The governing environmental regulation for US military bases in the UK.

Primary Drinking Water Standards (PDWS): MCLs and MRDLs for contaminants that affect health along with their monitoring and reporting requirements, and water treatment requirements.

Secondary Drinking Water Standards (SDWS): MCLs for contaminants that affect taste, odor, or appearance of the drinking water. Contaminants with SDWSs do not affect the health at the MCL levels.

90th Percentile Level: The level of lead and copper at which 90% of drinking water samples taken in a system are below. This level is compared with the MCL for lead and copper to determine system compliance.

Level Detected: 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.

mg/L: milligrams per liters

NTU: Nephelolometric Turbidity Units. A unit used to describe the clarity of water. Higher numbers relates to more cloudy water.