2023 Consumer Confidence Report

Annual Water Quality Report
RAF Alconbury
United Kingdom

Delivering A Clean Water Supply

This is an annual report on the water quality delivered by Royal Air Force Alconbury (RAFA). 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 2023. Department of the Air Force Instruction 48-144, *Drinking Water Surveillance Program*, and the United States Environmental Protection Agency (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.

The Journey of Your Water

The RAF Alconbury drinking water system draws water from the local supplier, Anglian Water. Anglian Water supplies the water for both above ground and underground reservoirs, as well as providing the day to day water supply.

RAFA's water supply is chlorinated using a sodium hypochlorite solution. Chlorine is added to the water supply for disinfection purposes and prevents bacteriological growth in the distribution system.

As a water wholesaler, Anglian Water publishes annual Water Quality Reports as well, which are located at:
http://www.anglianwater.co.uk/about-us/annual-reports/

WATER SAMPLING FOR COMPLIANCE

Sources of Drinking Water

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 info about contaminants and potential health effects can be obtained from the US EPA's Safe Drinking Water Information website at **https://www.epa.gov/ground-water-and-drinking-water/safe-drinking-water-information.**

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, and 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 US EPA and the Final Governing Standards for the United Kingdom (FGS-UK) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. Department regulations also establish limits for contaminants in bottled water that provide the same protection for public health.

Tables 1 – 8 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 JAN – 31 DEC 2023

Parameter 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 a 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
AUGUST 2023
(LEAD AND COPPER SAMPLING REQUIRED EVERY 3 YEARS)

Parameter and Units of Measure	Samples Collected	90th% Level Found	Sites Exceeding MCL	MCL	PHG (MCLG)	Typical source of Contaminant
Lead (mg/L)	24	0.0009	0	0.015	0	Internal corrosion of household water plumbing systems; discharges from industrial manufacturers; erosion of natural deposits.
Copper (mg/L)	24	0.66	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 JAN – 31 DEC 2023

Parameter and Units of Measure	Highest Level Detected	Range of Levels Detected	MCL	PHG (MCLG)	Major Sources in Drinking Water
Antimony (ppb)	0.46	0.11—0.46	5	5	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder
Arsenic (ppb)	0.37	0.14—0.37	10	0	Erosion of natural deposits; runoff from orchards; glass and electronics production wastes
Barium (ppb)	0.024	0.01—0.024	20	20	Naturally occurring, discharged from industrial processes.
Boron (ppm)	0.086	0.012—0.086	1	N/A	Released from rocks and soils through weathering
Bromate (ppb)	2.4	2.1—2.4	10	0	By-product of drinking water disinfection
Cadmium (ppb)	0.023	0.023	5	5	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints
Chromium (ppb)	0.69	<0.17—0.69	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)	0.27	0.06—0.27	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) (ppm)	0.31	0.10—0.31	10	10	Runoff and leaching from fertilizer use; leaching from septic tanks and sewage; erosion of natural deposits
Nitrite (as N) (ppm)	0.12	<0.0035—0.12	0.15	0.15	Runoff and leaching from fertilizer use; leaching from septic tanks and sewage; erosion of natural deposits
Selenium (ppb)	<0.83	<0.83	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 JAN – 31 DEC 2023

Parameter and Units of Measure	Highest Level Detected	Range of Levels Detected	MCL	PHG (MCLG)	Major Sources in Drinking Water
Benzene (ppm)	<0.030	<0.030	5	0	Discharge from factories; leaching from gas storage tanks and landfills
1-2-Dichloroethane (ppb)	<0.010	<0.010	3	0	Discharge from industrial chemical factories
TTHMs [Total trihalome-thanes] (ppb)	47	14—47	80	N/A	By-product of drinking water disinfection
HAA5 [Haloacetic Acids] (ppb)	7.2	7.2	60	60	By-product of drinking water disinfection
1, 1, 1-Trichloroethane (ppb)	<0.010	<0.010	0.2	0.2	Discharge from metal degreasing sites and other factories
1,1,2-Trichloroethane (ppb)	<0.010	<0.010	0.005	0.003	Discharge from industrial chemical factories
Chlorobenzene (ppb)	<0.010	<0.010	0.1	0.1	Discharge from chemical and agricul-tural chemical factories
Dichloromethane (ppb)	<0.010	<0.010	0.005	0	Discharge from drug and chemical fac-tories
Styrene (ppb)	<0.010	<0.010	0.1	0.1	Discharge from rubber and plastic fac-tories; leaching from landfills
Toluene (ppb)	<0.010	<0.010	1	1	Discharge from petroleum factories
Vinyl Chloride (ppb)	<0.130	<0.130	0.002	0	Leaching from petroleum factories; discharge from chemical factories

TABLE 4
VOLATILE ORGANIC COMPOUNDS
1 JAN – 31 DEC 2023

Parameter and Units of Measure	Highest Level Detected	Range of Levels Detected	MCL	PHG (MCLG)	Major Sources in Drinking Water
Ethylbenzene (ppb)	<0.010	<0.030	0.7	0.7	Discharge from petroleum refineries
1,2,4-trichloroethane (ppb)	<0.010	<0.010	0.7	0.7	Discharge from textile finishing facto-ries
Carbon Tetrachloride (ppb)	<0.010	<0.010	0.005	0	Discharge from chemical plants and other industrial activities
Cis-1,2-dichloroethene (ppb)	<0.010	<0.010	0.07	0.07	Discharge from industrial chemical factories

TABLE 5
RADIOACTIVE CONTAMINANTS
1 JAN – 31 DEC 2023

Parameter and Units of Measure	Highest Level Detected	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)	0.22	0.17—0.22	1.85	0	Erosion of natural deposits

TABLE 6
SYNTHETIC ORGANIC CONTAMINANTS
1 JAN – 31 DEC 2023

Parameter and Units of Measure	Highest Level Detected	Range of Levels Detected	MCL	PHG (MCLG)	Major Sources in Drinking Water
Benzo(a)pyrene (ppb)	<0.00013	<0.00013	0.01	0	Leaching from linings of water storage tanks and distribution lines
Pesticides, total (calculated) (ppb)	0.046	0.026—0.046	0.5	0	Leeching from farm land

TABLE 7
PER- AND POLYFLUOROALKYL SUBSTANCES
1 JAN – 31 DEC 2023

Parameter and Units of Measure	Highest Level Detected	EPA HA	Major Sources in Drinking Water
Perfluorobutanesulfonic Acid (ppt)	10.1	70	Man-made chemicals used in various products and contained in foams for fighting petroleum fires.
Perfluoroheptanoic Acid (ppt)	3.28	70	Man-made chemicals used in various products and contained in foams for fighting petroleum fires.
Perfluorohexanesulfonic Acid (ppt)	3.77	70	Man-made chemicals used in various products and contained in foams for fighting petroleum fires.
Perfluorohexanoic Acid (ppt)	7.27	70	Man-made chemicals used in various products and contained in foams for fighting petroleum fires.
Perfluorooctanesulfonic Acid (ppt)	4.73	70	Man-made chemicals used in various products and contained in foams for fighting petroleum fires.
Perfluorooctanoic Acid (ppt)	5.02	70	Man-made chemicals used in various products and contained in foams for fighting petroleum fires.
Perfluorobutanoic acid (ppt)	8.14	70	Man-made chemicals used in various products and contained in foams for fighting petroleum fires.
Perfluoropentanoic acid	6.77	70	Man-made chemicals used in various products and contained in foams for fighting petroleum fires.

What are per- and polyfluoroalkyl substances and where do they come from?
Per- and polyfluoroalkyl substances (PFAS) are a group of thousands of man-made chemicals. PFAS have been used in a variety of industries and consumer products around the globe, including in the U.S., since the 1940s. PFAS have been used to make coatings and products that are used as oil and water repellents for carpets, clothing, paper packaging for food, and cookware. They are also contained in some foams such as aqueous film-forming foam, or AFFF, used for fighting petroleum fires at airfields and in industrial fire suppression processes. PFAS compounds are persistent in the environment and some are persistent in the human body – meaning they do not break down and they can accumulate over time.

Is there a federal regulation for PFAS in drinking water?
Yes. In May 2016, the Environmental Protection Agency (EPA) established a lifetime health advisory (LHA) level at 70 parts per trillion (ppt) for individual or combined concentrations of perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS). Both compounds are types of PFAS. On 10 April 2024, the EPA published new drinking water standards for certain PFAS under the Safe Drinking Water Act (SDWA). The Air Force is reviewing the EPA's new rule now, and will incorporate these standards into future sampling and analysis efforts.

Out of an abundance of caution, the DoD pursued PFAS testing and response actions beyond EPA SDWA requirements. In 2020, the DoD established a policy to monitor drinking water for 17 PFAS compounds at all service owned and operated water systems. If results confirmed the drinking water contained PFOA and PFOS at individual or combined concentrations greater than 70ppt, water systems quickly took action to reduce exposures. While not a SDWA requirement, in 2023, the DoD improved upon its 2020 PFAS drinking water monitoring policy by expanding the list of PFAS compounds monitored to 29, implementing continued monitoring of systems with detectable PFAS over the laboratory Method Reporting Limits (MRL), and requiring initial mitigation planning actions.

Has RAF Alconbury tested its water for PFAS?
Yes. In November 2023, samples were collected from the pump house. We are informing you that eight of the 29 PFAS compounds covered by the sampling method were detected above the Method Detection Limit (MDL). The results are provided in the Table above, and public notification of these sample results was initially provided on 4 January 2024 via the 501st Combat Support Wing web page and email distribution. PFOA and PFOS were detected but below 70ppt. As PFOA and PFOS were below the 70ppt, there is no immediate cause for concern, and we will continue to monitor the drinking water closely. In accordance with DoD policy, the Bioenvironmental Engineering Flight will collect semi-annual samples for PFAS, and periodic updates are available at 501csw.usafe.af.mil.

TABLE 8
SECONDARY DRINKING WATER STANDARDS
1 JAN – 31 DEC 2023

Parameter and Units of Measure	Highest Level Detected	Range of Levels Detected	MCL	PHG (MCLG)	Major Sources in Drinking Water
Chloride (ppm)	79	71—79	250	N/A	Runoff/leaching from natural deposits; seawater influence
Color (ppm Pt/Co scale)	1.5	<1.0-1.5	20	N/A	Naturally-occurring organic materials
Iron (ppb Fe)	13	13	200	N/A	Leaching from natural deposits; industrial wastes
Manganese (ppb)	0.29	<0.28—0.29	50	N/A	Leaching from natural deposits; industrial wastes
Odor	Acceptable to Consumers and no Abnormal Change				Naturally-occurring organic materials
Sulfate (ppm SO_4/L)	120	120	250	N/A	Runoff/leaching from natural deposits; industrial wastes
Taste	Acceptable to Consumers and no Abnormal Change				Naturally-occurring organic materials
Turbidity (NTU)	0.19	0.04—0.19	4	N/A	Soil runoff

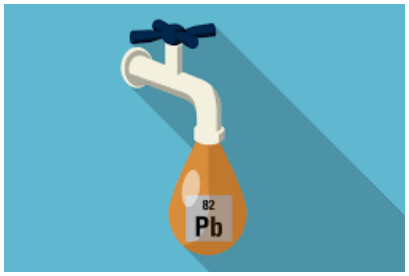
What Should You Know About Certain Contaminants?

Nitrate

Although the level of nitrate (refer to Table 3) is consistently not above 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 six 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 rain-fall 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 EPA at **https://www.epa.gov/ground-water-and-drinking-water/basic-information-about-lead-drinking-water.**

For 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.

Copies of this report can be requested via mail by sending a self-addressed stamped envelope to:
423 MDS/SGOJ
ATTN: 2023 RAFA Water Quality Report
Unit 5610
APO, AE 09470

For more information please contact the 423rd Medical Squadron,
Bioenvironmental Engineering Flight
(01480-84-4746)

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).

Method Reporting Limit (MRL): The lowest analyte concentration that can be reported with confidence for a specific method.

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)

ppt: parts per trillion or nanograms per liter (ng/L)

pCi/L: picocuries per liter (a measure of radiation)

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

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.

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

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

Health Advisory (HA): USEPA limit that establishes when actions should be taken to reduce exposure.