2023 Consumer Confidence Report (CCR)

Annual Water Quality Report
RAF Mildenhall
United Kingdom

Introduction

This is an annual report detailing aspects of the water quality delivered to Royal Air Force Mildenhall (RAFM). The 48th Medical Group Bioenvironmental Engineering Flight tests the drinking water quality for many constituents as required by the U.S. Department of Defense Environmental Final Governing Standards for the United Kingdom. This report shows the results of our monitoring for the period of 1 January 2023 through 31 December 2023. Department of the Air Force Instruction 48-144, *Drinking Water Surveillance Program* requires all Department of the Air Force owned or operated systems to provide their consumers an annual water quality report. This following report is to 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?

The RAFM drinking water system draws water from one source, an on-base groundwater borehole (well), that is re-charged from groundwater obtained from the Chalk aquifer. RAF Mildenhall's water supply is prepared for use using a Granular Activated Carbon system with natural salt and air strippers. Additionally, the water supply is disinfected using chlorine to prevent bacteriological growth in the distribution system.

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Drinking Water Sources

Drinking water, including bottled water, may contain at least small amounts of some contaminants. The presence of these contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained through the U.S. EPA's National Primary Drinking Water Regulations page:

https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations

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 human activity.

Contaminants which 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. **Turbidity and Total Organic Carbon are mentioned within this report. According to the EPA, neither have health effects but they can interfere with disinfection and provide mediums for microbial growth and the formation of disinfection by products such as trihalomethanes and haloacetic acids, respectively. Turbidity may indicate the presence of disease-causing organisms.**
- ***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 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 – 8 list all of the primary drinking water standard contaminants that were detected during the most recent sampling events. 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 due to the belief 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
Synthetic Organic Contaminants

Parameter and Units of Measure	Highest Level Detected	Range of Levels Detected	MCL	MCLG	Major Sources in Drinking Water
Pesticides, total (calculated) (ppt)	0.03	0.01 – 0.03	500	0	Leaching from farm land

Table 2
Inorganic Contaminants

Parameter and Units of Measure	Highest Level Detected	Range of Levels Detected	MCL	MCLG	Major Sources in Drinking Water
Antimony (ppb)	< 0.16	< 0.16	5	5	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder
Arsenic (ppb)	0.29	0.21 - 0.29	10	0	Erosion of natural deposits in soil; runoff from orchards; glass and electronics production wastes
Barium (ppm)	0.017	0.014 - 0.017	2	2	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits in soil
Beryllium (ppb)	< 0.22	< 0.22	40	40	Discharge from coal burning factories; erosion of natural deposits in soil
Chromium (ppb)	0.75	0.19 - 0.75	50	50	Discharge from steel and pulp mills; erosion of natural deposits in soil
Fluoride (ppm)	0.15	0 - 0.15	4	2	Erosion of natural deposits in soil; water additive; discharge from fertilizer and aluminum plants
Mercury (ppb)	< 0.022	< 0.022	1	1	Erosion of natural deposits in soil; discharge from refineries and factories; runoff from landfills; Runoff from crop land
Nitrate (as N) (mg/L)	5.85	5.62 - 5.85	10	10	Runoff and leaching from fertilizer use; leaching from septic tanks and sewage; erosion of natural deposits
Selenium (ppb)	0.85	0.85	10	10	Discharge from petroleum, glass, and metal refineries; erosion of natural deposits in soil; discharge from mines and chemical manufacturers; runoff from livestock lots (feed additive)
Thallium (ppb)	< 0.18	< 0.18	2	0.5	Leaching from ore-processing sites; discharge from electronics, glass, and drug factories

Table 3
Lead and Copper

Parameter and Units of Measure	Samples Collected	90th% Level Found	AL	MCLG	Typical Source of Contaminant
Copper (ppm)	32	0.13	1.3	1.3	Internal corrosion of household water plumbing systems; discharges from industrial manufacturers; erosion of natural deposits in soil
Lead (ppb)	28	3.23	10	0	Internal corrosion of household water plumbing systems; discharges from industrial manufacturers; erosion of natural deposits in soil

Table 4
Volatile Organic Compounds

Parameter and Units of Measure	Detected range of constituents	MCL	MCLG	Major Sources in Drinking Water
Benzene (ppb)	<0.03	1	0	Discharge from factories; leaching from gas storage tanks and landfills
Vinyl Chloride (ppb)	<0.043	2	0	Discharge from manufacturing or processing plants

Table 5
Disinfection By-Product Compounds

Parameter and Units of Measure	Highest Level Detected and range of constituents	MCL	MCLG	Major Sources in Drinking Water
Bromate (ppb)	1.09	10	0	Discharge from factories; leaching from gas storage tanks and landfills
Haloacetic Acids (HAA5) (ppb)	2.6 (1.6 - 2.6)	80	N/A	By-product of drinking water disinfection
Total trihalomethanes (TTHMs) (ppb)	6.6 (1.5 - 6.6)	60	N/A	By-product of drinking water disinfection

Table 6 Microbiological Contaminants					
Parameter and Units of Measure	**Highest Level Detected**	**Range of Levels Detected**	**MCL**	**MCLG**	**Major Sources in Drinking Water**
Total Organic Carbon (ppm)	0.85	0.82 - 0.88	TT	TT	Naturally present in the environment
Turbidity (NTU)	0.2	0 - 0.2	N/A	N/A	Soil Runoff

Table 7 Radioactive Contaminants				
Parameter and Units of Measure	**Highest Level Detected**	**MCL**	**MCLG**	**Major Sources in Drinking Water**
Gross Alpha (pCi/L)	1.08	15	0	Erosion of natural deposits in soil
Gross Beta (pCi/L)	1.35	27	0	Erosion of natural deposits in soil
Uranium (µg/L)	0.19	30	0	Erosion of natural deposits in soil

Table 8 Unregulated Contaminants: Per and Polyfluoroalkyl Substances (PFAS)			
Parameter and Units of Measure	**Highest Level Detected**	**MCL**	**Major Sources in Drinking Water**
Perfluorooctanoic Acid (PFOA) (ppt)	6.65	70	Aqueous Film-Forming Foam (AFFF)
Perfluoroctane Sulfonate (PFOS) (ppt)	2.50	70	Aqueous Film-Forming Foam (AFFF)
Perfluorobutanesulfonic acid (PFBS) (ppt)	3.38	N/A	Aqueous Film-Forming Foam (AFFF)
Perfluorohexanoic acid (PFHxA) (ppt)	11.5	N/A	Aqueous Film-Forming Foam (AFFF)
Perfluoroheptanoic acid (PFHpA) (ppt)	2.63	N/A	Aqueous Film-Forming Foam (AFFF)
Perfluorohexanesulfonic acid (PFHxS) (ppt)	14.1	N/A	Aqueous Film-Forming Foam (AFFF)
Perfluorobutanoic acid (PFBA) (ppt)	6.24	N/A	Aqueous Film-Forming Foam (AFFF)
Perfluoropentanoic acid (PFPeA) (ppt)	15.0	N/A	Aqueous Film-Forming Foam (AFFF)
Perfluoropentanesulfonic acid (PFPeS) (ppt)	2.02	N/A	Aqueous Film-Forming Foam (AFFF)

Additional Information

PFOS PFOA

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 regulation for PFAS in drinking water?

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). AF 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, 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, 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, and requiring initial mitigation planning actions.

Has RAF Mildenhall tested its water for PFAS?

Yes. In November 2023, samples were collected from RAF Mildenhall. We are informing you that 12 of the 29 PFAS compounds covered by the sampling method were detected above the Method Detection Limit (MDL). The results are provided in Table 8, and public notification of these sample results was initially provided on 15 December 2023 via posting to the RAF Mildenhall public webpage. PFOA and PFOS were detected but below 70 ppt. As PFOA and PFOS were below the 70 ppt, there is no immediate cause for concern and we will continue to monitor the drinking water closely. In accordance with DoD policy, RAFM will collect semi-annual samples for PFAS, and periodic updates will be provided on the RAF Mildenhall public website at https://www.mildenhall.af.mil.

Additional Information

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. Lead and Copper sampling is conducted every 3 years by regulation. 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.

Nitrate

Although the level of nitrate (refer to Table 2) is consistently not above the health effect level, the US 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 rainfall or agricultural activity. If you are caring for an infant, you should ask advice from your health care provider."

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 Center for Disease Control and Prevention guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available on the Safe Drinking Water Hotline or on the U.S. EPA's website, http://www.epa.gov.

This report is available online at: http://www.mildenhall.af.mil/. For more information or questions about this CCR please contact the 48th Operational Medical Readiness Squadron, Bioenvironmental Engineering Flight at 01638-528047 .

Terms Used in This Report

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.

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.

Level Detected: Laboratory analytical result for a contaminant; this value is evaluated against an MCL or AL to determine compliance.

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.

Maximum residual disinfectant level (MRDL): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum residual disinfectant level goal (MRDLG): The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

Method Detection Limit (MDL): refers to the lowest concentration of a substance that can be reliably detected by a specific analytical method.

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

pCi/L: picocuries per liter

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

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

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

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

Range: The range of the highest and lowest analytical values of a reported contaminant.

TT: Treatment Technique– required procedure or level of technological performance set when there is no reliable method to measure a contaminant at very low levels.