Consumer Confidence Report

Spangdahlem Air Base, Germany 2023

We are pleased to present the 2023 Annual Water Quality Report (Consumer Confidence Report) as required by the Safe Drinking Water Act. The 52nd Operational Medical Readiness Squadron, Bioenvironmental Engineering (BE) Flight, informs consumers annually about the quality of their Spangdahlem AB drinking water in the previous year (2023). This report is designed to provide details about where your water comes from, what it contains, and how it compares to standards set by regulatory agencies. We are committed to providing you with information because informed customers are our best allies.

Frequently Asked Questions

Where does my water come from?

Spangdahlem AB has five groundwater wells, two water treatment plants, and four storage reservoirs which supply our potable water system. All five wells extract water from the same partially confined aquifer which meets the demand requirements for the entire installation. The water treatment plants use a filtration system followed by chlorination for disinfection. Filtration removes particles suspended in the source water. Particles typically include clays and silts, natural organic matter, iron and manganese, and microorganisms. Disinfection involves the addition of chlorine or other disinfectants to kill bacteria and other microorganisms (viruses, cysts, etc.) that may be in the water. Fluoride is also added to the water during this process to help maintain healthy teeth. The water treatment plant personnel, along with the BE flight, ensure compliance with Final Governing Standards for Germany (FGS-G). The FGS-G standards are a compilation of the most stringent standards published by the United States Environmental Protection Agency (EPA) and European Union.

Why are there contaminants in my 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 water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA 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: 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 result from urban stormwater runoff, industrial, or domestic wastewater discharges, oil and gas production, mining, or farming; pesticides and herbicides, which 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; and 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 prescribes regulations that limit the levels of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

Do I need to take special precautions?

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised 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/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection from microbial contaminants are available from the Safe Water Drinking Hotline (+1- 800-426-4791).

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). The USAF 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 over the laboratory Method Reporting Limits (MRL), and requiring initial mitigation planning actions.

Has Spangdahlem AB tested its water for PFAS?

Yes. In September 2023, samples were collected from our primary water storage buildings. We are informing you that PFAS was reported at <1.82 ng/L, well below the 2024 EPA Health Advisory level. Full results may be found in Table 2. PFAS Sampling Results (page 10). In accordance with current DoD policy, Spangdahlem AB will collect samples for PFAS every three years, if the results are below the 2024 EPA Health Advisory. BE is due for PFAS sampling in August of 2026.

Has Spangdahlem AB tested its water for Lead?

Yes. Lead levels at Spangdahlem AB are very low and pose very minimal risk to health. The sampling frequency established by the FGS-G for Lead is once every three years. Our last sampling event for Lead was completed in 2021. The next scheduled sampling will be in the summer of 2024.

The 2021 Lead sampling event concluded that the 90th percentile of samples collected for Lead were below the Action Level. The 90th percentile sample is required by the EPA to be compared to the Action Level for Lead samples. These results are within the FGS-G and EPA Lead and Copper Rule requirements.

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. The Spangdahlem water distribution system is responsible for providing high quality drinking water but cannot control the variety of materials used in plumbing components. Spangdahlem is required, per the FGS-G, to use only Lead-free solder, flux, and fittings in the installation or repair of drinking water systems. Small traces of Lead may still be present in the above-mentioned components; therefore, Lead samples are still taken to ensure drinking water safety. 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. Information on Lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

What can I do to conserve water?

There are many low-cost and no-cost ways to conserve water. Small changes can make a big difference - try one today and soon it will become second nature.

- Take short showers - a 5-minute shower uses 4 to 5 gallons of water compared to up to 50 gallons for a bath.
- Shut off water while brushing your teeth, washing your hair and shaving and save up to 500 gallons a month.
- Use a water-efficient showerhead. They're inexpensive, easy to install, and can save you up to 750 gallons a month.
- Run your clothes washer and dishwasher only when they are full. You can save up to 1,000 gallons a month.

- Fix leaky toilets and faucets. Faucet washers are inexpensive and take only a few minutes to replace. To check your toilet for a leak, place a few drops of food coloring in the tank and wait. If the coloring seeps into the toilet bowl without flushing, you have a leak. Fixing it or replacing it with a new, more efficient model can save up to 1,000 gallons a month.
- Adjust sprinklers so only your lawn is watered. Apply water only as fast as the soil can absorb it and during the cooler parts of the day to reduce evaporation.
- Teach your kids about water conservation to ensure a future generation that uses water wisely. Make it a family effort to reduce next month's water bill!
- Don't let the water run constantly while you're washing or rinsing dishes.
- Visit www.epa.gov/watersense for more information.

Compliance Information

All contaminants tested for in 2023 were below applicable Maximum Contaminant Levels (MCL) and are listed in Table 1. Compliance with U.S. and German Drinking Water Standards (pages 6-10). However, missed sampling events and a microbial contaminant detected above the EPA's Maximum Contaminant Level Goal (MCGL) are described below.

Volatile Organic Compounds:

A suite of Volatile Organic Compounds (VOCs) are required to be sampled on an annual basis. No VOCs were detected. For more information about VOCs tested in drinking water, please contact the BE Office.

Legionella:

Legionella is a type of bacterium found naturally in freshwater environments like lakes and streams. It can become a health concern when it grows undisturbed in manmade building water systems like showerheads, sink faucets, hot water tanks/heaters, etc. Individuals are exposed by breathing in small droplets of water in the air containing the bacteria. Sometimes the bacteria infect the lungs of susceptible individuals and can cause a severe pneumonia called Legionnaire's disease. The bacteria can also cause a less serious infection that seems like a mild case of the flu called Pontiac fever. In general, most healthy individuals exposed to *Legionella* do not get sick; persons at higher risk are those over 50 years of age, current or former smokers, and/or those with weakened immune systems. In July 2023, BE coordinated and supervised an installation-wide sampling event for *Legionella*. Of the 26 base-wide sampling locations tested, several locations exceeded the limit for *Legionella*. Specifically, *Legionella was* detected at 60,000 colony-forming units (cfu) per 100 mL of water, compared to 100 cfu/100 mL allowed per FGS-G guidance. Timely remediations (i.e. flushing) were put in place by employees, in coordination with CE personnel. *Legionella* was not detected upon resampling. *Legionella* testing is an annual sampling requirement for the installation and will be conducted again in June 2024.

Water Quality Data Tables:

In order to ensure tap water is safe to drink, EPA prescribes regulations which limit the number of contaminants in water provided by public water systems. The following tables list all drinking water contaminants that we monitored during the calendar year of this report (2023). All sources of drinking water contain some naturally occurring contaminants. At low levels, these substances are generally not harmful in our drinking water. Removing all contaminants would be extremely expensive, and in most cases, would not provide increased protection of public health. A few naturally occurring minerals may improve the taste of drinking water and have nutritional value at low levels. Unless otherwise noted, the data presented in this table is from testing done in the calendar year of the report. The FGS-G requires us to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not vary significantly from year to year, or the system is not considered vulnerable to this type of contamination. As such, some of our representative data may be more than one year old. In this table you will find terms and abbreviations that might not be familiar to you. To help you better understand these terms, we have provided the definitions below the tables (page 11).

Table 1. Compliance with U.S. and German Drinking Water Standards:

Contaminant (unit)	MCLG	MCL	Your Water	Violation	Frequency	Typical Source
1,1,1-Trichloroethane (ppb)	200	200	ND	No	Annual	Discharge from industrial chemical factories
1,1,2-Trichloroethane (ppb)	3	5	ND	No	Annual	Discharge from industrial chemical factories
1,1-Dichloroethylene (ppb)	7	7	ND	No	Annual	Discharge from industrial chemical factories
1,2,4-Trichloro-benzene (ppb)	70	70	ND	No	Annual	Discharge from industrial chemical factories
1,2-Dichloropropane (ppb)	0	5	ND	No	Annual	Discharge from industrial chemical factories
2,4,5-TP (Silvex) (ppb)	50	50	ND	No	Annual	Residue of banned herbicide
2,4-D (ppb)	70	70	ND	No	Annual	Runoff from herbicide use
Alachlor (ppb)	0	2	ND	No	Semi-annual	Runoff from herbicide use
Aldicarb (mg/L)	NA	0.003	ND	No	Semi-annual	Agricultural runoff
Aldicarb Sulfone (mg/L)	NA	0.003	ND	No	Semi-annual	Agricultural runoff
Aldicarb Sulfoxide (mg/L)	NA	0.004	ND	No	Semi-annual	Agricultural runoff
Antimony (ppb)	6	6	ND	No	Annual	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder
Arsenic (ppb)	0	10	ND	No	Annual	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production
Atrazine (ppb)	3	3	ND	No	Semi-annual	Runoff from herbicide use
Benzene (ppb)	0	5	ND	No	Annual	Discharge from industrial chemical factories
Barium (ppm)	2	2	0.022	No	Annual	Discharge and disposal of drilling wastes; smelting copper; manufacturing vehicle parts
Benzo(a)pyrene (ppt)	0	200	ND*	No	Semi-annual	Leaching from linings of water storage tanks and distribution lines
Beryllium (ppb)	4	4	ND	No	Annual	Discharge from metal refineries and coal-burning factories; Discharge from aerospace industries

Contaminant (unit)	MCLG	MCL	Your Water	Violation	Frequency	Typical Source
Cadmium (ppb)	5	5	ND	No	Annual	Corrosion of galvanized pipes; Erosion of natural deposits; Discharge from metal refineries; runoff from waste batteries and paints
Carbofuran (ppb)	40	40	ND	No	Semi-annual	Leaching of soil fumigant used on rice and alfalfa
Chlordane (ppb)	0	2	ND	No	Semi-annual	Residue of banned termiticide
Chlorobenzene (ppb)	100	100	ND	No	Semi-annual	Discharge from industrial chemical factories
Chromium (ppb)	100	100	ND	No	Annual	Discharge from steel and pulp mills; Erosion of natural deposits
cis-1,2-Dichloroethylene (ppb)	70	70	ND	No	Semi-annual	Discharge from industrial chemical factories
Combined Radium-226 and 228 (Bq/L)	0	0.16	0.01	No	3 samples per quarter every 4 years	Arise from natural processes in the ground or human activities, such as uranium mining and other extractive industries
Cyanide (ppb)	200	200	ND	No	Annual	Discharge from plastic and fertilizer factories; Discharge from steel/metal factories
Di (2-ethylhexyl) adipate (ppb)	400	400	ND	No	Annual	Discharge from chemical factories
Di (2-ethylhexyl) phthalate (ppb)	0	6	ND	No	Annual	Discharge from rubber and chemical factories
Dibromochloropropane (DBCP) (ppt)	0	200	ND*	No	Semi-annual	Runoff/leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards
Dichloromethane (ppb)	0	5	ND	No	Annual	Discharge from industrial chemical factories
Dinoseb (ppb)	7	7	ND	No	Semi-annual	Runoff from herbicide use
Dioxin (2,3,7,8-TCDD) (ppq)	0	30	ND	No	Semi-annual	Emissions from waste incineration and other combustion; Discharge from chemical factories
Diquat (ppb)	20	20	ND	No	Semi-annual	Runoff from herbicide use

Contaminant (unit)	MCLG	MCL	Your Water	Violation	Frequency	Typical Source
E. coli - in the distribution system (% positive/month)	0	0	0	No	Monthly	Human and animal fecal waste
Endothall (ppb)	100	100	ND	No	Semi-annual	Runoff from herbicide use
Endrin (ppb)	2	2	ND	No	Semi-annual	Residue of banned insecticide
Ethylbenzene (ppb)	700	700	ND	No	Annual	Discharge from petroleum refineries
Ethylene dibromide (ppt)	0	50	ND	No	Semi-annual	Discharge from petroleum refineries
Fluoride (ppm)	4	4	ND	No	Annual	Fluoride is a common natural mineral which can be added to water for public health to reduce cavities
Glyphosate (ppb)	700	700	ND	No	Semi-annual	Runoff from herbicide use
Gross Alpha (Bq/L)	0	0.56	0.005	No	3 samples per quarter every 4 years – composite of 4 consecutive quarterly samples to determine compliance	Arise from natural processes in the ground or human activities, such as uranium mining and other extractive industries
Haloacetic Acids (HAA5) (ppb) (see attachment along with radionuclides)	NA	60	2.7	No	Annual	HAA5's are a type of chlorination disinfection by-product that are formed when the chlorine used to disinfect drinking water reacts with naturally occurring organic matter in water
Heptachlor (ppt)	0	400	ND	No	Semi-annual	Residue of banned pesticide
Heptachlor epoxide (ppt)	0	200	ND	No	Semi-annual	Breakdown of heptachlor
Hexachlorobenzene (ppb)	0	1	ND	No	Semi-annual	Discharge from metal refineries and agricultural chemical factories
Hexachlorocyclopentadiene (ppb)	50	50	ND	No	Semi-annual	Discharge from chemical factories
Lead (mg/L) (2021 results)	0	.015 (AL)	0.0093	No	Every 3 years	Lead pipes, faucets, and plumbing fixtures.
Legionella (cfu/100mL) (see page 4 for details)	0	100	60,000 (highest result)	Yes	Annual	Naturally occurring; can multiply in hot water systems
Lindane (ppt)	200	200	ND	No	Semi-annual	Runoff/leaching from insecticide used on cattle, lumber, gardens

Contaminant (unit)	MCLG	MCL	Your Water	Violation	Frequency	Typical Source
Mercury [Inorganic] (ppb)	2	2	ND	No	Annual	Erosion of natural deposits; Discharge from refineries and factories; Runoff from landfills; Runoff from cropland
Methoxychlor (ppb)	40	40	ND	No	Semi-annual	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock
Nickel (mg/L)	NA	0.1	0.001	No	Annual	Direct leaching from rocks and sediments
Nitrate (mg/L)	10	44.3	5.0	No	Annual	Agricultural runoff
Nitrite (mg/L)	1	3.3	ND	No	Annual	Agricultural runoff
Nitrite and Nitrate (Total) (mg/L)	4.085	10	3.7	No	Quarterly	Agricultural runoff
Oxamyl [Vydate] (ppb)	200	200	ND	No	Semi-annual	Runoff/leaching from insecticide used on apples, potatoes and tomatoes
o-Dichlorobenzene (ppb)	600	600	ND	No	Annual	Discharge from industrial chemical factories
p-Dichlorobenzene (ppb)	75	75	ND	No	Annual	Discharge from industrial chemical factories
PCBs [Polychlorinated biphenyls] (ppt)	0	500	ND	No	Semi-annual	Runoff from landfills; Discharge of waste chemicals
Pentachlorophenol (ppb)	0	1	ND	No	Semi-annual	Discharge from wood preserving factories
Picloram (ppb)	500	500	ND	No	Semi-annual	Herbicide runoff
Selenium (ppb)	50	50	ND	No	Annual	Discharge from petroleum and metal refineries; Erosion of natural deposits; Discharge from mines
Simazine (ppb)	4	4	ND	No	Semi-annual	Herbicide runoff
Styrene (ppb)	100	100	ND	No	Annual	Discharge from rubber and plastic factories; Leaching from landfills
Thallium (ppb)	0.5	2	ND	No	Annual	Discharge from electronics, glass, and leaching from ore-processing sites; drug factories
Toluene (ppm)	1	1	ND	No	Annual	Discharge from petroleum refineries
trans-1,2-Dichloroethylene (ppb)	100	100	ND	No	Annual	Discharge from industrial chemical factories

Contaminant (unit)	MCLG	MCL	Your Water	Violation	Frequency	Typical Source
Trichloroethylene (ppb)	0	5	ND	No	Annual	Discharge from metal degreasing sites and other factories
Toxaphene (ppb)	0	3	ND	No	Semi-annual	Runoff/leaching from insecticide used on cotton and cattle
TTHMs [Total Trihalomethanes] (ppb)	NA	80	1.4	No	Annual	HAAs & TTHMs are a type of chlorination disinfection by-product that are formed when the chlorine used to disinfect drinking water reacts with naturally occurring organic matter in water
Total Coliform (% positive/month)	NA	0	0	No	Monthly	Naturally present in the environment
Uranium (µg/L)	0	30	ND	No	3 samples per quarter every 4 years – composite of 4 consecutive quarterly samples to determine compliance	Erosion of natural deposits
Vinyl Chloride (ppb)	0	2	ND	No	Annual	Leaching from PVC piping; Discharge from plastics factories
Xylene (totals) (ppm)	10	1	ND	No	Annual	Discharge from petroleum refineries

Table 2. PFAS Sampling Results

Emerging Contaminants	MCLG	Your Water	Violation
Perfluorooctanoic acid (PFOA)	4.0 ng/L	<1.82 ng/L	No
Perfluorooctanesulfonic acid (PFOS)	4.0 ng/L	< 1.82 ng/L	No
Perfluorobutane sulfonic acid (PFBS).	NA	< 1.82 ng/L	No
Perfluorononanoic acid (PFNA)	10 ng/L	< 1.82 ng/L	No
Perfluorohexane sulfonic acid (PFHxS)	10 ng/L	< 1.82 ng/L	No
Hexafluoropropylene oxide dimer acid (HFPO-DA, commonly known as GenX Chemicals)	10 ng/L	< 1.82 ng/L	No

Unit Descriptions	
Unit	**Definition**
mg/L	mg/L : number of milligrams of substance in one liter of water
µg/L	µg/L : number of micrograms of substance in one liter of water
ng/L	ng/L : number of nanograms of substance in one liter of water
ppm	ppm: parts per million, or milligrams per liter (mg/L)
ppb	ppb: parts per billion, or micrograms per liter (µg/L)
ppt	ppt: parts per trillion, or nanograms per liter (ng/L)
ppq	ppq: parts per quadrillion, or picograms per liter (pg/L)
Bq/L	Bq/L: amount of radioactivity in one liter of water
cfu/100 mL	cfu/100 mL: colony-forming units per one hundred milliliters of water
% positive samples/month	% positive samples/month: Percent of samples taken monthly that were positive

Drinking Water Definitions	
Term	**Definition**
MCLG	Maximum Contaminant Level Goal: 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.
MCL	Maximum Contaminant Level: 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.
HA	Health Advisory Level: The highest level of a contaminant at which adverse health effects and/or aesthetic effects are not anticipated to occur over specific exposure durations (Note: The EPA's 2016 HAs for PFOA and PFOS are lifetime HAs)
AL	Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow
NA	Not Applicable
ND	Not Detected: the result was below laboratory method's limit of detection
ND*	Not Detected*: not detected, but MCL was higher than laboratory method's limit of detection

For more information: We are available to answer any questions or address any concerns you may have. If you would like additional copies of this report, please contact Bioenvironmental Engineering.

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(Points of Contact: SSgt Samantha Campbell and SrA Devon Norman)

Information in **Deutscher** Sprache erhältlich bei der Umwelt-Abteilung. **Mr. Christian Thurner oder Mr. Franz Steffes** at Tel: 314-452-7257