

2023 Interim Arnold Air Force Base Water Quality Report

Is the water safe?

Yes, our water meets all the Environmental Protection Agency's (EPA's) health standards. We have conducted numerous tests for over 80 contaminants that may be in drinking water. As you will see on the chart below, we only detected 10 of these contaminants and found all of these contaminants at safe levels.

What is the source of the water?

The water on Arnold's main base area comes from Woods Reservoir and is treated at the Base Water Treatment Plant (Building 1503).

The Golf Course is served by a well located at the Golf Course. Water is filtered through cartridge filters and disinfected with liquid calcium hypochlorite.

For more information about drinking water on Arnold AFB and the AEDC Golf Course, please call the Base Bioenvironmental Engineer at 931-454-6232.

The Estill Springs Water System serves Arnold Village. They have conducted numerous tests for over 80 contaminants that may be in drinking water and only detected 12 of these contaminants. All of these contaminants are at safe levels.

For more information about the drinking water in Arnold Village, call Estill Springs City Hall at 931-649-5188.

Why are there contaminants in the drinking water?

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants; however, this does not necessarily indicate that the water poses a health risk. This report is provided to show that Arnold's water meets all EPA health standards and is safe to drink. More information about contaminants and potential health effects can be obtained by calling the EPA Safe Drinking Water Hotline, 800-426-4791.

For more information about your drinking water, please call the Base Bioenvironmental Engineer at 931-454-6232.

Do I need to take special precautions?

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 individuals, and infants can be particularly at risk from infections. These people should seek advice about not only their drinking water, but also food preparation, personal hygiene, and precautions in handling infants and pets from their health care providers.

EPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline, 800-426-4791.

Were there any contaminants detected in the drinking water?

All sources of drinking water contain some naturally occurring contaminants. In order to ensure that tap water is safe to drink, the EPA sets regulations, which limit the amount of contaminants allowed in water provided by public water systems. 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. The EPA or the State requires us to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not change frequently.

What does this chart mean?

- MCLG - Maximum Contaminant Level Goal, or 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 or 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. To understand the possible health effects described for many regulated constituents, a person would have to drink two liters of water every day at the MCL level for a lifetime to have a one-in-a-million chance of having the described health effect.
- AL - Action Level, or the concentration of a contaminant which, when exceeded, triggers treatment or other requirements which a water system must follow.
- Parts per million (ppm) or Milligrams per liter (mg/L) - Using money as an analogy, one part per million corresponds to a single penny in \$10,000.
- Parts per billion (ppb) or Micrograms per liter ($\mu\text{g/L}$) - Using money as an analogy, one part per billion corresponds to a single penny in \$10,000,000.
- MRDLG - Maximum Residential Disinfectant Level Goal or the level of drinking water disinfectant below which there is no known or expected risk to health.
- MRDL - Maximum Residential Disinfectant Level or the highest level of disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for the control of microbial contaminants.
- RAA - Running Annual Average of the results.
- ND - Not Detected.

Water Quality Data

Disinfectants and Disinfection Byproducts							
<u>Contaminant</u>	<u>MRDLG/ MCLG</u>	<u>MRDL/ MCL</u>	<u>RAA</u>	<u>Range</u>	<u>Sample Year</u>	<u>Violation</u>	<u>Typical Source</u>
Golf Course							
Chlorine (ppm)	<u>MRDLG</u> 4.0	<u>MRDL</u> 4.0	1.08	0.76-1.49	2023	0	Water additive used to control microbes.
Main Base							
Chlorine (ppm)	<u>MRDLG</u> 4.0	<u>MRDL</u> 4.0	1.36	1.22-1.53	2023	0	Water additive used to control microbes.
Chlorite (ppm)	<u>MCLG</u> 0.8	<u>MCL</u> 1.0	0.54	0.15-0.76	2023	0	Byproduct of disinfection
TTHMs (mg/L)	N/A	<u>MCL</u> 0.08	0.040	0.028-0.050	2023	0	Byproduct of disinfection
HAA5s (mg/L)	N/A	<u>MCL</u> 0.06	0.037	0.001-0.049	2023	0	Byproduct of disinfection
PFOS (ppb)	N/A	N/A	0.66	0.62-0.71	2023	0	Firefighting Foam and other manmade products
PFOA (ppb)	N/A	N/A	0.55	0.52-0.58	2023	0	Firefighting Foam and other manmade products

Inorganic Contaminants						
<u>Contaminant</u>	<u>MCLG</u>	<u>MCL</u>	<u>Level Detected</u>	<u>Sample Year</u>	<u>Violation</u>	<u>Typical Source</u>
Antimony (ppb)	6.0	6.0	ND	2023	0	Naturally occurring erosion from rocks and soils.
Arsenic (ppb)	0	10	ND	2023	0	Naturally occurring erosion from rocks and soils.
Barium (ppm)	2.0	2.0	0.02	2023	0	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits.
Beryllium (ppb)	4.0	4.0	ND	2023	0	Naturally occurring erosion from rocks and soils.
Cadmium (ppb)	5.0	5.0	ND	2023	0	Naturally occurring erosion from rocks and soils.
Chromium (ppm)	0.1	0.1	ND	2023	0	Naturally occurring erosion from rocks and soils. Runoff from electroplating or textile industries.
Cyanide [free] (ppm)	0.2	0.2	ND	2023	0	Runoff from chemical and steel plant industries and wastewater treatment.
Fluoride (ppm)	4.0	4.0	ND	2023	0	Water treatment additive for tooth health.
Mercury (ppb)	2.0	2.0	ND	2023	0	Emissions from coal-fired power plants.

Inorganic Contaminants (continued)						
<u>Contaminant</u>	<u>MCLG</u>	<u>MCL</u>	<u>Level Detected</u>	<u>Sample Year</u>	<u>Violation</u>	<u>Typical Source</u>
Nickel (ppm)	N/A	N/A	ND	2023	0	Leachate from pipes and fittings.
Nitrate [measured as Nitrogen] (ppm)	10.0	10.0	0.21	2023	0	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.
Selenium (ppm)	0.05	0.05	ND	2023	0	Erosion of natural deposits; runoff from mining operations
Thallium (ppb)	0.5	2.0	ND	2023	0	Erosion of natural deposits; runoff from mining operations

Other Metals					
<u>Contaminants</u>	<u>MCLG</u>	<u>AL</u>	<u>Level Found*</u>	<u>Sample Date</u>	<u>Typical Source</u>
Copper (ppm) - action level at consumer taps	1.3	1.3	0.288	8/10/2022	Erosion of natural deposits; Leaching from wood preservatives; Corrosion of household plumbing systems.
Lead (ppb) - action level at consumer taps	0	15	5	8/10/2022	Corrosion of household plumbing systems; Erosion of natural deposits.

Synthetic Organic Compounds							
<u>Contaminant</u>	<u>MCLG</u>	<u>MCL</u>	<u>RAA</u>	<u>Range</u>	<u>Sample Year</u>	<u>Violation</u>	<u>Typical Source</u>
Atrazine (ppb)	3	3	ND	ND	2023	0	Runoff from agricultural use.

Volatile Organic Compounds (VOCs)						
<u>Contaminant</u>	<u>MCLG</u>	<u>MCL</u>	<u>Highest Level Detected</u>	<u>Sample Year</u>	<u>Violation</u>	<u>Typical Source</u>
1,1,1-Trichloroethane (ppm)	0.20	0.2	ND	2023	0	Runoff from surface spills and air emissions.
1,1,2-Trichloroethane (ppb)	3	5	ND	2023	0	Runoff from surface spills and air emissions.
1,1-Dichloroethylene (ppb)		7	ND	2023	0	Discharge from chemical factories.
1,2,4-Trichlorobenzene (ppb)	70	70	ND	2023	0	Runoff from herbicide manufacturing and solvent use.
1,2-Dichloroethane (ppb)	0	5	ND	2023	0	Runoff from plastic and textile manufacturing.
1,2-Dichloropropane (ppb)	0	5	ND	2023	0	Runoff from manufacturing facilities.

Volatile Organic Compounds (VOCs) (continued)						
<u>Contaminant</u>	<u>MCLG</u>	<u>MCL</u>	<u>Level Detected</u>	<u>Sample Year</u>	<u>Violation</u>	<u>Typical Source</u>
Benzene (ppb)	0	5	ND	2023	0	Runoff from petroleum product spills or leaks.
Carbon tetrachloride (ppb)		5	ND	2023	0	Runoff from iron and steel manufacturing.
cis 1,2-Dichloroethylene (ppb)	70	70	ND	2023	0	Runoff from landfills.
Dichloromethane (ppb)	0	5	ND	2023	0	Runoff from manufacturing facilities.
Ethylbenzene (ppb)	70	70	ND	2023	0	Runoff from landfills and underground fuel storage tanks
Chlorobenzene (ppm)	0.1	0.1	ND	2023	0	Runoff from petroleum product spills or leaks.
ortho-Dichlorobenzene (ppm)	0.6	0.6	ND	2023	0	Runoff from petroleum product spills or leaks.
para-dichlorobenzene (ppb)	75	75	ND	2023	0	Runoff from petroleum product spills or leaks.
Styrene (ppm)	0.1	0.1	ND	2023	0	Runoff from plastics manufacturing.
Tetrachlorethylene (ppb)	0	5	ND	2023	0	Runoff from industrial metal cleaning.
Toluene (ppm)	1	1	ND	2023	0	Runoff from petroleum product and solvent spills or leaks.
trans 1,2-Dichloroethylene (ppm)	0.1	0.1	ND	2023	0	Runoff from industrial facilities
Trichloroethylene (ppb)	0	5	ND	2023	0	Runoff from industrial facilities
Vinyl chloride (ppb)	0	2	ND	2023	0	Runoff from industrial facilities
Xylenes [total] (ppm)	10	10	ND	2023	0	Runoff from petroleum product and solvent spills or leaks.

DETAILED INFORMATION ON CONTAMINANTS

Chlorine Residual Disinfection is maintained throughout the distribution system. Chlorine is added to the drinking water supply at well sites to provide assurance that water delivered to customers will remain free of microbiological contamination. This also ensures that the water meets microbiological drinking water standards from the time it is pumped from the ground until it reaches the customer's tap.

Disinfection Byproducts are the unintended reactions of disinfectants with naturally occurring materials in the water (e.g., natural organic matter, bromide, or disinfection by-product precursors).

Nitrate is a form of nitrogen and an important plant nutrient. Nitrate in drinking water at levels above 10 ppm is a health risk for infants 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 because of rainfall or agricultural activity. If you are caring for an infant, seek advice from your health care provider.

Lead and Copper are naturally occurring metals, which are generally found at very low levels in source waters. 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 Action Level for Naturally Occurring Metals (Lead and Copper) is calculated based on the 90th percentile of all the samples taken in the distribution system (e.g. of 10 samples collected, if two samples are above the Action Level, then the Action Level has been exceeded). The levels found in the AEDC drinking water system are below the Action Level, therefore we are in compliance, and the water is safe to drink.

Barium occurs naturally at very low concentrations in our groundwater.

TTHMs (Total Trihalomethanes) are a group of four chemicals that are formed along with other disinfection byproducts when chlorine or other disinfectants used to control microbial contaminants in drinking water react with naturally occurring organic and inorganic matter in water.

HAA5s (Haloacetic Acids) are chemicals that can form as a result of water treatment, when water acidity and temperature are slightly high and treatment chemicals react with organic particles or bromide.

Volatile Organic Compounds (VOCs) are a group of chemicals that evaporate easily and enter the atmosphere or water sources. They are found in many sources such as solvents, cleaning products, paints, and motor vehicle exhausts.

Atrazine is an herbicide used to prevent weeds in agricultural fields, golf courses, and residential lawns.

PFOS and PFOA (Perfluorooctane Sulfonate and Perfluorooctanoic acid) are a synthetic group of chemicals used to make products resistant to stains, grease, soil, and water. PFOS and PFOA are part of a larger group of chemicals called per- and polyfluoroalkyl substances (PFASs). PFASs have historically been used in firefighting foams and a variety of industrial and consumer products. PFASs are extremely present in the environment and are known to bioaccumulate in humans and wildlife. These are known as emerging contaminants, as EPA is currently studying the health effects of PFASs in order to establish MCLs for these substances.

For more information, contact:

Contact: Base Bioenvironmental Engineer

Unit: TSD/SG

Address: 225 Von Karman Rd
Arnold AFB, TN 37388

Phone: 931-454-6232, **DSN:** 340-6232