



USAG Daegu Drinking Water Quality Report CY2021



In this Report, you will find:

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Directorate of Public Works
U.S. Army Garrison Daegu

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Dedicated to Providing Clean Water

“Serving Those Who Serve”

The United States Environmental Protection Agency (EPA), through the Safe Drinking Water Act of 1974, requires drinking water suppliers to provide an Annual Water Quality Report. USAG Daegu adopted this requirement as a method to report compliance with USFK Regulation 201-1, Environmental Governing Standards. This report provides our community information about their drinking water produced between 01 January 2021 and 31 December 2021, including water sources; any detected contaminants in drinking water; health effects of contaminants when violations occur; and likely sources of drinking water contaminants.

United States Army Garrison Daegu (USAG Daegu) Directorate of Public Works (DPW) operates and maintains drinking water systems throughout Area IV and is dedicated to producing quality drinking water that meets the United States (U.S.) Environmental Protection Agency (EPA) and United States Forces Korea (USFK) regulatory standards. We continually monitor water quality in accordance with the regulations and strive to deliver the highest quality drinking water to the Soldiers, Family Members, Civilians and Local Nationals at the Army installations we serve.

Our staff of engineers and certified drinking water treatment plant operators from the DPW Environmental Division and Operations and Maintenance (O&M) Division work together to ensure the safe delivery of all potable water. Commitment to protect every drop of water is our priority.

USAG Daegu is pleased to present you with this annual water quality report and inform you that your drinking water is of high quality and meets all drinking water standards. Please remember that we are always available to assist and thank you for allowing us to serve you and your family!

Make a Difference!

Sincerely,

The USAG Daegu DPW Environmental Team



Where Your Water Comes From

The drinking water sources for Camp Walker, Camp Carroll and Carroll FOS come from groundwater that lie underneath the earth's surface. The source of the water consists primarily of rain and snow melt that has been filtered through hundreds of feet of soil. The water fills spaces between rocks and sand to create an aquifer. Groundwater wells at these installations were constructed to tap into these aquifer water supplies. The extracted groundwater (called raw water) is transferred from the wells to the Water Treatment Plant (WTP), where it's treated by specialized filters that remove sediment and harmful chemicals (if present). The raw water is then disinfected by chlorine treatment that kills potentially harmful bacteria and viruses. The treated water is then held in secured elevated storage tanks for eventual distribution to the customer's tap.

The drinking water for Camp Henry, Camp George, DLA-Distribution Services (DS) Gimcheon, Pusan Storage Facility (PSF) and Pier #8 consists of water purchased from the Cities of Daegu, Gimcheon, and Pusan and then supplied to their respective WTP at each installation. Following additional filtration and disinfection of the purchased water, the treated water is then held in secure storage tanks for eventual distribution to the customer's tap.

How Your Water Is Treated

Step 1

Aeration:

Raw water from each well is drawn into an aeration tower. Aeration

treatment consists of passing large amounts of air thru water and then venting the air outside. Aeration brings water and air in close contact to remove dissolved gases and oxidizes dissolved metals such as iron, hydrogen sulfide, and volatile organic chemicals.

2

Granulated Activated Carbon (GAC)

GAC is an effective adsorbent and commonly used to adsorb natural organic compounds, taste and odor compounds and contaminants in water because it is a highly porous material and provides a large surface to which contaminants may adsorb. Adsorption is both the physical and chemical process of accumulating a substance at the interface between liquid and solids phases.

3

Sedimentation:

Sedimentation is a physical water treatment process using gravity to remove suspended solids. Solid particles entrained by the turbulence of moving water are removed in clarifier tanks.

4

Filtration:

The water is then filtered through layers of fine, granulated sand and coal. As smaller, suspended particles are removed, turbidity diminishes and clear water emerges.

5

Disinfection (Chlorination):

As protection against any bacteria, viruses and other microbes that might remain, disinfectant is added before the water flows into aboveground reservoirs throughout the distribution system and into your home or business. USAG Daegu carefully monitors the amount of disinfectant added to maintain quality of the water at the farthest reaches of the system.

The treatment process consists of following steps:

- Camp Carroll: Step 1, 2, 3, 4 and 5
- Camp Walker: Step 2, 4 and 5
- Camp Henry, Carroll FOS, DLA DS Gimcheon, Pier#8 and PSF: Step 4 and 5

How Your Water Is Tested

We routinely test for various chemicals and compounds in the water supply to ensure your water quality meets the standards set forth in the U.S.

Environmental Protection Agency (EPA) regulations and United States Forces Korea (USFK) Reg.201-1 Environmental Governing Standards (EGS). This testing also allows us to make sure that the treatment and distribution systems are operating effectively.

USAG Daegu DPW Engineers, Water Plant Operators and MEDDAC-K Environmental health collect drinking water samples and analyze them in our in-house laboratories. For certain analyses that we cannot perform in-house, we send samples to the Public Health Command Laboratory at Camp Zama, Japan and U.S. Army Public Health Center, MD for analyses. All analyses conducted follow U.S. EPA approved test methods and protocols.



What Is In Your Water

How to Read the Water Quality Data Table:

The EPA establish the safe drinking water regulations that limit the amount of contaminant allowed in drinking water. There are over 90 various contaminants we test for. Contaminates NOT detected in USAG Daegu's water supply are not included in the tables on pages 5-6.

When drinking water meets EGS standards, there may not be any health benefits to purchase bottle water or water purifying devices. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants, within acceptable ranges, does not necessarily pose a health risk concern.

Possible Source of Contaminants

As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals. It can also pick up other substances resulting from the presence of animals or human activity. Drinking water, including bottled water, may reasonably be expected to contain at least trace amounts of some contaminants.

The presence of contaminants does not necessarily indicate that the water poses a health risk. 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, persons with HIV/AIDS or other immune 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 and the Center for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the EPA Hotline at 1-800-426-4791.

CY2021 Water Test Results

During calendar year (CY) 2021, USAG Daegu DPW collected bacteriological, inorganic, and organic chemical samples from the installations. Samples were analyzed for 95 different contaminants in accordance with the USFK Environmental Governing Standards (EGS). In addition, chlorine, turbidity and pH levels are monitored daily by USAG Daegu DPW laboratories. No microbial contaminants were detected in any of the USFK Daegu installations drinking water samples. Only detected contaminants are presented in the following tables.

Regulated Inorganic Substance Measured in the Water Leaving the Treatment Plant

Detected substance	MCLG	EGS's Allowable Limits	Meet EGS & EPA	Treatment Plant							Common Source of Chemicals (Examples)	
		Daegu		Waegwan Area			Pusan					
		Camp Henry		Camp Walker	Camp Carroll	DLA DS	Carroll FOS	Pier #8	PSF			
Nitrate/Fluoride												Unit: ppm
Nitrate (as N)	10	10	Yes	1.2	1.6	2.5~3.2	2.5~2.7	0~0.288	1.5~1.87	1.6~1.7	Runoff from fertilizer use; Leaching from sewage tanks, sewage; Erosion of natural deposits	
Nitrite (as N)	1	1	Yes	0.003	0.002	0.0024~0.0034	0.0022~0.0028	ND	0.009~0.014	0.007~0.009	Runoff from fertilizer use; Leaching from sewage tanks, sewage; Erosion of natural deposits	
Fluoride	4	4	Yes	0.6~1.0	0.6~0.9	0.70~0.76	ND	0.74~0.76	ND	ND	Water additive which promotes strong teeth; discharge from fertilizer and aluminum factories	
Primary Metals												Units: ppb
Antimony	0.006	0.006	Yes	ND	ND	ND	ND	ND	0.0011	ND	Erosion of natural deposits; runoff from orchards; glass	
Barium	2	2	Yes	0.061	0.087	0.031	0.033	0.0076	0.032	0.03	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder	
Nickel	0.1	0.1	Yes	ND	0.0021	ND	0.0011	ND	0.0031	0.003	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits	

Note. ND: "Not Detected"

Regulated Organic Substance Measured in the Water Leaving the Treatment Plant

Detected substance	MCLG	EGS's Allowable Limits	Meet EGS & EPA	Treatment Plant							Common Source of Chemicals (Examples)	
		Daegu		Waegwan Area			Pusan					
		Camp Henry		Camp Walker	Camp Carroll	DLA DS	Carroll FOS	Pier #8	PSF			
Volatile Organic Compounds (VOCs)												Unit: ppb
Carbon tetrachloride	0	5	Yes	ND	ND	0~0.8	ND	ND	2.2	2.2	Discharge from chemical plants and other industrial activities	
c-1,2-dichloroethylene	70	70	Yes	ND	ND	0~1.2	ND	ND	ND	ND	Discharge from industrial chemical factories	
Dichloromethane	0	5	Yes	ND	ND	ND	ND	ND	1.6	ND	Discharge from petroleum refineries	
Toluene	1000	1000	Yes	ND	ND	ND	0.5	ND	ND	0.8	Discharge from petroleum refineries	
Trichloroethylene	0	5	Yes	ND	ND	0~1.2	ND	ND	ND	ND	Discharge from metal degreasing sites and other factories	
Total Xylenes	10000	10000	Yes	ND	ND	ND	0.6	ND	ND	0.6	Discharge from petroleum factories; discharge from chemical factories	

Regulated Substances Measured in the Distribution System

Detected substance	Unit	MCLG	EGS's Allowable Limits	Meet EGS & EPA	Various Point							Common Source of Chemicals (Examples)	
			Daegu		Waegwan Area			Pusan					
			Camp Henry		Camp Walker	Camp Carroll	DLA DS	Carroll FOS	Pier #8	PSF			
Disinfection Byproducts and Disinfectants													
Total Trihalomethanes (TTHMs)*	ppb	N/A	80	Yes	39.37	5.07	12.95	64.6	ND	63.3	71.2	Runoff from fertilizer use; Leaching from sewage tanks, sewage; Erosion of natural deposits	
Total Haloacetic (HAA5)*	ppb	N/A	60	Yes	22.17	ND	ND	12.5	ND	17.1	22.6	Runoff from fertilizer use; Leaching from sewage tanks, sewage; Erosion of natural deposits	
Bromate	ppm	0	0.01	Yes	0.00028	ND	ND	0~0.0015	N/A	ND	ND	Byproduct of drinking water disinfection	
Residual Chlorine	ppm	4	0.2~4.0	Yes	0.5~1.2	1.0~1.1	0.9~1.3	0.2~0.9	0.4~0.9	0.5~1.54	1.0~1.41	Water additive which used to control microbes	
Lead and Copper: Tap Water Samples													
Lead	ppm	0	{0.015}	Yes	0~0.01	0~0.0045	0~0.0054	0~0.0024	ND	ND	0~0.0011	Corrosion of household plumbing systems; erosion of natural deposits	
Copper	ppm	1.3	{1.3}	Yes	0~0.78	0~0.66	0.006~0.45	0.14~0.52	0~0.019	0.023~0.075	0.0015~0.17		

Note: Drinking Water samples were collected from various taps to be representative at both the customer's tap water & distribution system quality. * Annual average.

pH, Turbidity and Total Coliform in the Various Locations

Detected substance	Unit	EGS's Allowable Limits	Meet EGS & EPA	Various Locations throughout the Distribution and Treatment Plant							Common Source of Chemicals (Examples)
		Daegu		Waegwan Area			Pusan				
		Camp Henry		Camp Walker	Camp Carroll	DLA DS	Carroll FOS	Pier #8	PSF		
pH	None	[6.5~8.5]	Yes	7.4~7.5	7.5	7.2~7.7	6.9~7.6	8.0~8.3	7.0~7.6	7.25~7.45	pH is a measure of acid/base properties
Turbidity	NTU	5*	Yes	0.059~0.083	0.08~0.09	0.07~0.09	0.092~0.100	0.04~0.15	0.07~0.24	0.04~0.24	Turbidity is often caused by soil runoff
Total Coliform	N/A	Negative**	Yes	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Naturally present in the environment

Note: *5 or less in 5% of monthly samples. Turbidity MCL changed 5 to 0.3 since 30 Jul 20 per USFK Reg 201-1 Revision. **Negative in 95% or more of monthly samples.

PFOS/PFOA in the Water Leaving the Treatment Plant

Detected substance	Unit	EPA's Recommended Limits	Meet EPA LHA	Treatment plant							Common Source of Chemicals (Examples)
		Daegu		Waegwan Area			Pusan				
		LHA		Camp Henry	Camp Walker	Camp Carroll	DLA DS	Carroll FOS*	Pier #8	PSF	
PFOS	ppt	70	Yes	ND	ND	32~35	ND	ND	ND	ND	Synthetic fluorinated organic compounds, nonstick cookware, stain-resistant fabric and carpet, some food packaging and the firefighting agent Aqueous Film Forming Foam (AFFF).
PFOA	ppt	70	Yes	2.4	0~2.8	22~29	3.1	ND	7.7	12	
PFOS+PFOA	ppt	70	Yes	2.4	0~2.8	54~62	3.1	ND	7.7	12	

Note: *Monitoring frequency for Carroll FOS is every three years. The results for Carroll FOS refer to CY2019 test results.

Frequently Asked Questions

Q. Why does the water sometimes look rusty?

Rusty or reddish tinted water may occur because of a sudden change in pressure which can cause rust in distribution piping to become dislodged. Iron causes the discoloration (rust is a secondary drinking water standard having mostly cosmetic or aesthetic effects) and it is not a health risk. If water looks rusty, flush the tap for three minutes or until clear before using water. Running the water will clear the piping system. If hot tap water is rusty, the water heater may need to be flushed.

Q. I don't like the taste/smell/appearance of my tap water. What's wrong with it?

Even when water meets standards, you may still object to its taste, smell, or appearance. Taste, smell and appearance are also known as aesthetic characteristics and do not pose health risks. Common complaints about water aesthetics include: temporary cloudiness (typically caused by air bubbles) or chlorine taste (which can be improved by letting the water stand exposed to the air). If you want to improve the taste, smell and appearance of water, you can filter it easily by purchasing a filtration pitcher at the PX. Please keep in mind that filters require periodic replacement in accordance with the manufacturer's guidance; if ignored, water taste, smell, or appearance issues may reoccur.

Glossary

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

Maximum Contaminant Level Goal (MCLG). The maximum level of a contaminant in drinking water in which there is no known or expected risk to health. MCLGs allow for a margin of safety.

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 technology.

Parts Per Million (ppm). One part of a contaminant is present for every million parts of water.

Parts Per Billion (ppb). One part of a contaminant is present for every billion parts of water.

Parts Per Trillion (ppt). One part of a contaminant is present for every trillion parts of water.

Life Health Advisory (LHA). Health advisories levels provide information on contaminants that can cause human health effects and are known or anticipated to occur in drinking water.

Secondary Maximum Contaminant Level (SMCL). Non-enforceable guidelines regulating contaminants that may cause cosmetic or aesthetic effects (such as taste, color and odor) in drinking water.

EPA Required Statements

The EPA requires that a Consumer Confidence Report (CCR) as the name of Water Quality Report (WQR) contain the following statements for our information. We have included these in this Water Quality Report for your information.

1. The sources of drinking water (both tap & bottled) 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 substances were resulting from the presence of animals or from animal activity. Contaminants that may be present in source water may include. (40 CFR 141.153(a))

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

2. In order to ensure tap water is safe to drink, EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. (40 CFR 141.153(h))

3. Drinking water, including bottled, may reasonably be expected to contain small amounts of some contaminants. The presence of contaminants does not necessarily indicate the 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) or visiting the website at <http://www.epa.gov/sdwa> (40 CFR 141.153(h))

4. 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, persons with HIV/AIDS or other immune 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. (40 CFR 141.154)