2024 Annual Consumer Confidence Report
Commander, Naval Forces Korea (CNFK)
Headquarters (HQ) Busan

Your Water is Fit for Human Consumption!

Commander, Fleet Activities Chinhae (CFAC) is pleased to provide this annual Consumer Confidence Report (CCR) of the drinking water supplied to your facility on the Republic of Korea (ROK) Navy Base Busan. Our goal is to provide to you a safe and dependable supply of drinking water. This report is based on the results of our monitoring for the period of January 1 to December 31, 2024. If you have any questions about the quality of water at Commander, Naval Forces Korea (CNFK) Headquarters (HQ) Busan or would like more information on the Overseas Drinking Water Program, please contact the CFAC Public Works Department (PWD), Environmental Division at 763-8752.

Source of Water

The source water for CNFK HQ Busan is supplied from the ROK Naval Base Busan, which comes from the surface water source of the Nak-Dong River. The PWD Chinhae monitors the drinking water for a wide variety of impurities to verify the water provided to our community meets both U.S. Federal and Korean standards.

Water Treatment & Distribution System

The Hwamyeong Water Treatment Plant (WTP) takes surface water from Nak-Dong River and utilizes conventional treatment techniques of coagulation, flocculation, sedimentation, filtration, and disinfection to treat the water. The water is filtered to remove sediments and treated with chlorine and ozone to kill potentially harmful bacteria, viruses and pathogens. The treated water is then distributed to the ROK Navy Base Busan, which operates the water distribution system servicing the CNFK HQ Busan facility. Additionally in 2020, a chlorine booster pump was installed at Yongho storage tank located around 2 km from the ROK Naval base to supply adequate chlorine residual levels.

Overseas Drinking Water Program

U.S. Navy overseas installations are required to meet or exceed the National Primary Drinking Water regulations promulgated under the Safe Drinking Water Act of 1974, adopted in Commander, Navy Installations Command (CNIC) Manual 5090 Series to ensure safe drinking water. CNFK HQ Busan is also required to meet all criteria established in the Korea Environmental Governing Standards (KEGS) to protect the quality of drinking water at the U.S. installations.

The Installation Commanding Officer has established an Installation Water Quality Board (IWQB) tasked with ensuring there is a reliable supply of drinking water for all persons using CNFK HQ Busan facilities. The IWQB is currently taking steps to meet all requirements of the Navy's Overseas Drinking Water (ODW) program. The Regional Water Quality Board (RWQB) granted CNFK HQ Busan a Conditional Certificate To Operate (CTO) for its water system. CNFK HQ Busan is expected to receive a Full CTO when all deficiencies identified from the 2023 Sanitary Survey are corrected. The deficiencies have either been corrected or are in the process of implementing corrective actions

Source Water Assessment

In June 2023, the Navy Water Quality Oversight Council (WQOC) conducted a comprehensive sanitary survey on the CNFK HQ Busan drinking water system including Hwamyeong WTP. Sanitary surveys are to evaluate eight elements of an ODW system for the adequacy of the drinking water source, treatment, distribution system, finished water storage, facilities, monitoring & reporting, operation & maintenance and operator qualification for producing and distributing safe drinking water. The next sanitary survey is to be conducted in year of 2026.

Potential Contaminants

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 bacteria, organic and inorganic chemicals, and radionuclides.

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 particularity 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.
In 2024, our drinking water met health standards established by both U.S. EPA regulations and KEGS for all listed contaminants.

Other Potential Contaminants

Coliforms in Drinking Water

Coliforms are bacteria naturally present in the environment and used as an indicator to detect that other potentially harmful bacteria may be present in drinking water. It is a warning of potential problems if coliforms are found in more water samples than allowed. Information on total coliforms in drinking water is available at https://www.epa.gov/dwreginfo/revised-total-coliform-rule-and-total-coliform-rule.

Lead

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. To take extra precaution in avoiding possible lead contamination for water that has been sitting for several hours, you can further minimize potential lead exposure by flushing the tap for 30 seconds to two minutes before using water for drinking or cooking. Information on lead in drinking water is available at http://www.epa.gov/safewater/lead.

Copper

Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. Information on copper in drinking water is available at http://water.epa.gov/drink/contaminants/basicinformation/copper.cfm.

Nitrate/Nitrite

Nitrates are naturally present in soil, water, and food. Nitrates themselves are relatively nontoxic. However, when swallowed, they are converted to nitrites that can react with hemoglobin in the blood creating methemoglobin. This methemoglobin cannot transport oxygen thus causing conditions of shortness of breath and blue baby syndrome. Information on Nitrate in drinking water is available at http://water.epa.gov/drink/contaminants/basicinformation/nitrate.cfm.

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 are found in many consumer products, as well as in industrial products, like certain firefighting agents called aqueous film forming foam (AFFF). PFAS is also found in essential use applications such as in microelectronics, batteries, and medical equipment. PFAS chemicals 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. Information on PFAS in drinking water is available at https://www.epa.gov/pfas/our-current-understanding-human-health-and-environmental-risks-pfas

Total Trihalomethanes (TTHM) and Halo acetic Acids (HAA5)

TTHM and HAA5 are groups of chemicals formed when the naturally-occurring organic materials in water reacts with the chlorine, which is added as disinfectant. Potential health effects from exposure to TTHM and HAA5 depend on a variety of factors, including concentration of the chemicals, and duration and frequency of exposure. Some people who drink water containing TTHMs in excess of the Maximum Contaminant Levels (MCLs) over many years may experience liver, kidney or central nervous system problems and increased risk of cancer. Information on the disinfection byproducts is available at https://www.epa.gov/your-drinking-water/table-regulated-drinking-water-contaminants#Byproducts.

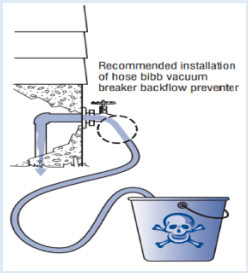
Frequently Asked Questions

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 and it is not a health risk. Rust is a secondary drinking water standard having mostly cosmetic or aesthetic effects. If water looks rusty, flush the tap for three minutes or until clear before using

water. If hot tap water is rusty, the water heater may need to be flushed.

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 install a home water filter. Please keep in mind that filters require regular maintenance and replacement; if ignored, water taste, smell, or appearance issues may reoccur.

Is it okay to drink from a garden hose?
The water coming out of the tap and into the hose is safe. However, a garden hose is treated with special chemicals that make it flexible. Those chemicals are not good for you and neither are the bacteria that may be growing inside the hose.



An ordinary garden hose submerged in a bucket of water or swimming pool can result in backflow contamination. To protect our water supply, a simple screw-on vacuum breaker (photo) must always be attached to the faucet when a garden hose is used.


VACUUM BREAKER

Is there a regulation for PFAS in drinking water?
On April 26, 2024, the U.S. EPA published a National Primary Drinking Water Regulation (NPDWR) final rule on drinking water standards for six PFAS under the Safe Drinking Water Act (SDWA). The rule establishes the following maximum contaminant levels (MCLs):

Compound	MCL	Hazard index (MCL)
PFOS	4 ppt	NA
PFOA	4 ppt	NA
Gen X (HFPO-DA)	10 ppt	1 (unitless)
PFNA	10 ppt	
PFHxS	10 ppt	
PFBS	NA	

Under the NPDWR, regulated public water systems (PWS) are required to complete initial monitoring by April 26, 2027. Beginning April 26, 2027, regulated PWSs will conduct ongoing compliance monitoring in accordance with the frequency dictated by the rule and as determined by the initial compliance monitoring results. Regulated PWSs must demonstrate compliance with the MCLs by April 26, 2029. In order to provide safe drinking water to all Department of Defense (DoD) personnel, OSD policy extends this requirement to all DoD systems which provide drinking water for human consumption, regardless of size of the drinking water system. In addition to the six regulated compounds, DoD-owned systems are required by DoD policy to monitor for all 25 compounds detected when using EPA Method 533. Protecting the health of our personnel, their families, and the communities in which we serve is a priority for CNFK. DoD is committed to complying with requirements of the NPDWR and the continued provision of safe drinking water to those that work and live on DoD installations.

Has CNFK HQ Busan tested its water for PFAS?
Yes. In June and December 2024, samples were semi-annually collected from B600 CNFK HQ Busan. We are informing you that 6 of the 25 PFAS covered by the sampling method were detected in the water system. The results are provided in the below table. EPA does not have an MCL for all of these compounds at this time. PFOS, PFNA, PFHxS, PFBS, and Gen X were not detected.

What is next?
CFAC will continue to monitor for PFAS in accordance with the EPA regulation and DoD policy. Once required initial monitoring information is available, we will calculate the Running Annual Averages (RAA) for the regulated PFAS and will compare those numbers to the MCL and Hazard Index (HI) trigger levels. This will determine what our continuing monitoring requirements will be beginning in 2027, and if needed, we will plan operational or infrastructure changes to ensure our water complies with the PFAS MCLs and HI by April 2029 in accordance with the SDWA.

Water Quality Monitoring

CNFK HQ Busan uses Navy Operator Certification Authority (NOCA) approved laboratory methods to analyze our drinking water for the following potential contaminants at the frequencies required by regulation.

Group	Potential Contaminants	Frequency of Sampling
Micro-organisms	Total Coliform	Monthly
Disinfectants	Residual Chlorine	3 times a month
Disinfection Byproducts	TTHM/HAA5, Bromate	Annually, Quarterly
Inorganic Chemical	Metals, Nitrate/ Nitrite, Lead & Copper	Annually, Quarterly, Annually
Organic Chemical	Synthetic (Volatiles, Pesticides)	Quarterly

2024 Water Quality Data

In 2024, PWD Chinhae tested CNFK HQ Busan's drinking water for many possible contaminants. The following table lists the categories with which a particular contaminant is associated. The below results show that CNFK HQ Busan's drinking water complies with all the pertinent standards.

REGULATORY CRITERIA – KEGS & CNIC M 5090.1				LABORATORY RESULTS		
Contaminant	Typical Sources	Unit	MCL, AL, TT or MRDL	Results		Violation
				Low	High	
MICROBIOLOGICAL						
Total Coliform	Naturally present in the environment	NA	No more than one positive sample per month	Negative	Negative	**No**
DISINFECTANT RESIDUAL AND DISINFECTANT/DISINFECTION BYPRODUCTS						
Residual Chlorine	Disinfectant water additive to control microbes	mg/L	MRDL = 4.0	0.11	0.40	**No**
Bromate	Byproduct of drinking water disinfection	mg/L	0.010	ND	ND	**No**
Halo Acetic Acids (HAA5)		mg/L	Annual average 0.06	0.0044	0.0051	**No**
Total Trihalomethanes (TTHM)		mg/L	Annual average 0.08	0.046	0.046	**No**
INORGANIC CHEMICALS						
Nitrate (as N)	Runoff from fertilizer use; Leaking from septic tanks; Sewage; Erosion of natural deposits	mg/L	10	0.65	2.64	**No**
Nitrite (as N)		mg/L	1	ND	ND	**No**
Heavy Metal	Erosion of natural deposits	mg/L	0.0002 to 2.0	ND	0.028	**No**
Fluoride	Discharge from plastic and fertilizer factories; Discharge from steel/metal factories;	mg/L	4.0	ND		**No**
Cyanide		mg/L	0.2	ND		**No**
Lead	Corrosion of household plumbing systems; erosion of natural deposits.	µg/L	15 based on 90th percentile results exceeding AL	0.80		**No**
Copper		µg/L	1,300 based on 90th percentile results exceeding AL	275		**No**
SYNTHETIC ORGANIC CHEMICALS (SOCs)						
Semi Volatile Organics & Pesticides /PCB	Run off from landfills; Discharge of waste chemicals; Runoff from herbicide used on crops and soil fumigants	mg/L	$3x10^{-8}$ to 0.7	ND	ND	**No**
Volatile Organics	Discharge from industrial and agricultural chemical factories	mg/L	0.002 to 10	ND	0.0014	**No**

PFAS Contaminant		Typical Sources	MCL* (ppt)	Results (ppt)	Action
11Cl-PF3OUdS	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	Food packaging, stain resistant, nonstick products, water repellents, waxes, paints, cleaning products, firefighting foams	NA	ND	No Action Needed
4:2FTS	1H, 1H, 2H, 2H-Perfluorohexanesulfonic Acid		NA	ND	
6:2 FTS	1H, 1H, 2H, 2H-Perfluorooctanesulfonic Acid		NA	ND	
8:2 FTS	1H, 1H, 2H, 2H-Perfluorodecanesulfonic Acid		NA	ND	
9Cl-PF3ONS	9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid		NA	ND	
ADONA	4,8-Dioxa-3H-perfluorononanoic acid		NA	ND	
HFPO-DA (Gen X)	Hexafluoropropylene oxide dimer acid		10	ND	
NFDHA	Nonafluoro-3,6-dioxaheptanoic Acid		NA	ND	
PFBS	Perfluorobutanesulfonic acid		NA	4.7	
PFDA	Perfluorodecanoic acid		NA	ND	
PFHxA	Perfluorohexanoic acid		NA	19	
PFBA	Perfluorobutanoate		NA	11	
PFEESA	Perfluoro(2-ethoxyethane) Sulfonic Acid		NA	ND	
PFHpS	Perfluoroheptane Sulfonate		NA	ND	
PFMBA	Perfluoro-4-methoxybutanoic Acid		NA	ND	
PFMPA	Perfluoro-3-methoxypropanoic Acid		NA	ND	
PFPeA	Perfluoropentanoate		NA	11	
PFPeS	Perfluoropentane Sulfonic Acid		NA	ND	
PFDoA	Perfluorododecanoic acid		NA	ND	
PFHpA	Perfluoroheptanoic acid		NA	3.3	
PFHxS	Perfluorohexanesulfonic acid		10	ND	
PFNA	Perfluorononanoic acid		10	ND	
PFOS	Perfluorooctanesulfonate		4	ND	
PFOA	Perfluorooctanoic acid		4	5	
PFUnA	Perfluoroundecanoic acid		NA	ND	

* Regulated PWSs must demonstrate compliance with these MCLs by April 26, 2029.

Terms and Abbreviations

You may find unfamiliar terms and abbreviations in the tables below and throughout the document. To help you better understand these terms we've provided the following definitions:

Data Table Key: Unit Descriptions

mg/L	milligrams per liter, or parts per million (ppm)
µg/L	micrograms per liter, or parts per billion (ppb)
ppt	ppt: parts per trillion, or nanograms per liter (ng/L)
NA	Not Applicable
ND	Not Detected

Important Drinking Water Definitions

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 MCLG as feasible using the best available treatment technology.
TT	Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water.
AL	Action Level: The concentration of a contaminant that, if exceeded, triggers treatment or other requirements that a water systems must follow.
MRDL	Maximum Residual Disinfectant Level: The highest level of a disinfectant allowed in drinking water (4 mg/L of chlorine). There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
90^{th} percentile	Represents the highest value found out of 90 percent of the samples taken. If the 90th percentile value is greater than the AL, a treatment evaluation and/or mitigation actions must be conducted on the water system.