Drinking Water Quality
Annual Report for Calendar Year 2018

Kunsan Air Base
(Published: June 2019)

This annual report summarizes the quality of water delivered by Kunsan AB. Under the "Consumer Confidence Reporting Rule" of the federal Safe Drinking Water Act (SDWA), community water systems are required to report this water quality information to the consuming public. Presented in this report is information on the source of our water, its constituents and the health risks associated with any contaminants. Our goal is to provide you with a safe and dependable supply of drinking water. **At Kunsan AB, the drinking water system is safe and reliable.**

"A copy of this Water Quality Report in Korean can be obtained by contacting the Kunsan Bioenvironmental Engineering office at 315-782-4670 or by Korean cellphone at 063-470-4670. This report is designed to further public understanding about public water systems and potential hazards"

"이 보고서에는 귀하의 식수에 대한 중요한 내용이 실려있습니다. 그러므로 이 보고서를 이해할 수 있는 사람한테 번역해 달라고 부탁하시기 바랍니다. 보고서에 대한 질문은 생물환경공학과 063-470-4670 로 문의 하시기 바랍니다."

1. Drinking Water Sources for Kunsan AB

All potable water supplied to the Kunsan Water Treatment Plant is sourced from the Okku Reservoir. This reservoir is a surface water source and primarily used for agriculture. This is located approximately 2.5 kilometers north-east of Kunsan AB. Another water source for Kunsan AB include a direct connection with the regional water purveyor (Gunsan city), K-Water which provides water from the Yongdam Reservoir which is also surface water. Kunsan AB used its secondary source (K-Water) intermittently during the monitoring period. For more information on these water sources, please contact Bioenvironmental Engineering (BE) Flight at DSN 315-782-4670.

2. Common Sources of Drinking Water Contamination

The sources of drinking water (both tap 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 that may be present in source or untreated water include:

- ***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, which can be naturally-occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- ***Pesticides and herbicides***, which may come from agriculture, urban storm water runoff, and residential uses.
- ***Organic chemical contaminants***, including synthetic and volatile organics, which are by-products of industrial processes and petroleum production, and can come from gas stations, urban storm water runoff, and septic systems.
- ***Radioactive Contaminants***, which can be naturally-occurring or the result of oil/gas production and mining activities.
- 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 Environmental Protection

Agency's Safe Drinking Water Hotline (800-426-4791).

- EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems in order to ensure that tap water is safe to drink. FDA regulations establish limits for contaminants in bottled water which must provide the same protection for public health.
- The 8 CES/CEOIU manages the maintenance and operation of the drinking water supply and distribution system. CES Utility personnel operate on 24 hour work shifts to ensure the system is pressurized and maintains sufficient chlorine residual.
- The 8 MDOS/SGOJ BE Flight monitors the quality of the drinking water provided to consumers and addresses any health related concerns. Analysis is conducted by certified laboratories.
- **The Drinking Water Working Group (DWWG), required by AFI 48-144** is held quarterly in the BE Conference Rm (Bldg. 409) by members of Civil Engineering (CE) Utility Shop, CE Environmental Element, and BE. The DWWG meets to address all local DW issues involving compliance, risk reduction, and continuous improvement. DWWG has the authority to call a special meeting with Public Affairs (PA), Base Legal (JA), or other related members as needed. Consumers are welcome to attend this meeting; please call 315-782-4670 for more information.

3. Drinking Water Monitoring

Kunsan AB BE routinely monitors for over 80 contaminants using certified laboratories and approved methods in accordance with Korean Environmental Governing Standards (KEGS) and EPA regulations.

- ***Microbial contaminants*** sampling is conducted every other week at distribution points (such as the clinic, dining facility, BX and various other administrative and industrial work centers on base), to include analysis for the levels of chlorine in the water. A total of 104 microbiological samples were taken and no samples were positive for microbial contaminants.
- ***Other contaminants*** (*inorganic, pesticides & herbicides, organic chemical and radioactive contaminants*) are monitored on different frequencies respectively. Some contaminants are only monitored every 4 years and for those, the last sampling results are listed on Table 1. The contaminants listed in the table were the only primary contaminants detected in our drinking water.

Table 1. Contaminant Groups and Monitoring Frequencies

Contaminant Group	Chemical Name	Monitoring Frequency	Sampling Location
Microbial	Total coliform, Fecal coliform, pH, Free Available Chlorine ****(13 Total)**	Monthly	Clinic, Food Facilities, etc.
Inorganic	Metals, (e.g. lead, copper, selenium, arsenic, mercury, nickel, sodium, etc.) ****(13 Total)**	Quarterly	Entry Point
	Nitrate, Nitrite ****(2 Total)**	Annually	
	Asbestos	Once every 9 years	
Volatile Organic Compounds (VOC)	Benzene, Trichloroethylene, Carbon Tetrachloride, etc. ****(25 Total)**	Quarterly	Entry Point Bldg. 3504
Synthetic Volatile Organic Compounds (SVOC)	Pesticides, Herbicides, PCBs, etc. ****(17 Total)**	Quarterly	Entry Point

Disinfectant By-Products	Total Trihalomethanes (TTHM) Total Haloacetic Acids (HAA5) ****(9 Total)**	Quarterly	Entry Point Bldg. 3504 Bldg. 550 Bldg. 960
Lead & Copper From Plumbing Materials	Lead, Copper ****(22 Total)**	Semi-annually	Kunsan AB: 22 locations
Radiological Compounds	Gross Alpha and Beta, Radium 226 / Uranium 228 ****(2 Total)**	Every 4 years (all 4 quarters)	Bldg. 980, Bldg. 238
PFOS/PFOA[1]	PFOS/PFOA **** (1 Total)**	Quarterly	Entry Point

****All regulated chemicals listed in KEGS Chapter 3, Table 3-4, 3-6, 3-8, and 3-9**

[1]PFOA/PFOA

4. Potential Health Effects & 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, 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/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).

About Lead in Drinking Water: 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. 8 CES/CEOIU is responsible for providing high quality of drinking water, but cannot control the variety of materials used in plumbing components. 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. [BE monitors lead and copper in housing semi-annually. **All test results for lead have met KEGS drinking water requirements.**] If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline (1-800-426-4791) or at http://www.epa.gov/safewater/lead.

5. Monitoring Results in Calendar Year 2018

Table 2: Kunsan AB Water System Detected Contaminants from 1 January to 31 December, 2018

Substances	Violation ? Yes / No	Units	Detected Levels In Your Water		MCL	Last Sampled	Likely Source of Contamination
			High	Low	EPA (KEGS)		
Inorganics Monitoring Frequency: Annually for *Nitrate, every 3 years for other Inorganics *Only chemicals detected are listed below*							
Barium	No	mg/L	0.029	0.012	2.0 (2.0)	11 Dec 18	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Sodium	No	mg/L	38.27	6.13	N/A	11 Dec 18	Erosion of natural deposits

Nickel	No	mg/L	0.000	0.034	0.10	11 Dec 18	Discharge from various industries Erosion of natural Deposits
Nitrate	No	mg/L	1.600	0.550	10	11 Dec 18	Runoff from fertilizer use, Leaching from septic tanks & sewage Erosion of natural deposits
Total Nitrate/ Nitrite	No	mg/L	1.600	0.550	10	11 Dec 18	Runoff from fertilizer use, Leaching from septic tanks & sewage Erosion of natural deposits

Disinfectant By-Products Monitoring Frequency: Annually

Only chemicals detected are listed below

Substances	Violation ? Yes / No	Units	Annual Average	EPA (KEGS)	Last Sampled	Likely Source of Contamination
TTHM	No	mg/L	0.049	0.08 (0.08)	11 Dec 18	By-product of drinking water disinfection
HAA5	No	mg/L	0.026	0.06 (0.06)	11 Dec 18	By-product of drinking water disinfection

Lead & Copper From Plumbing Materials

[1]*The AL for Lead and Copper is based on a 90th percentile value – i.e., no more than 10% of all sampled taps.*

Substance	Violation? Yes / No	Units	90th Percentile	AL[1]	Sites Over 90 %	Last Sampled	Likely Source of Contamination
				EPA (KEGS)			
Lead	No	mg/L	0.00529	0.015	0	16-22 Aug 18	Leeching from pipes into water
Copper	No	mg/L	0.802	1.3	1	16-22 Aug 18	Leeching from pipes into water

PFOS/PFOA

Monitoring Frequency: Quarterly

We continue to monitor the water sources: Although PFOS/PFOA are unregulated from KEGS, the Air Force is taking aggressive measures to reduce the risk of mission-related PFOS/PFOA contamination to installation and supporting communities' drinking-water sources. Kunsan BE Flight will continue to monitor these contaminants quarterly. Quarterly sampling was not utilized during the whole duration of 2018 due to the Water Treatment Plant being down for maintenance.

Substances	Location	Violation?	Unit	Detected Level		HAL	Last Sampled	Likely Source of Contamination
		Yes / No		High	Low	EPA (KEGS)		
PFOS/PFOA	**Water Treatment Plant**	No	ppt	Non-Detect		70 (N/A)	11 Sept 18	Synthetic fluorinated organic compounds, nonstick cookware, stain-resistant fabric and carpet, some food packaging and the firefighting agent Aqueous Film Forming Foam, or AFFF.

Terms Defined

Action Level (AL) - Indicates the level of a harmful or toxic substance/activity which requires medical surveillance, increased industrial hygiene monitoring, or biological monitoring.
Health Advisory Level (HAL) - Health advisories levels provide information on contaminants that can cause human health effects and are known or anticipated to occur in drinking water.
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 expected health risk. MCLGs allow for a margin of safety.
N/A - Not applicable, No MCL established
ND - Not detected. This indicates that the substance was not found by laboratory analysis.
Parts per trillion (ppt) - One ppt corresponds to one drop of water in 500,000 barrels of water.
Treatment Technology: A required process intended to reduce the level of a contaminant in drinking water.

Customer Views Welcome!

If you have any specific issues or concerns that you would like to address, you may present them to the Occupational and Environmental Health Working Group or Drinking Water Working Group. To schedule an appointment at this working group, please contact Bioenvironmental Engineering Flight at 312-782-4670 or 8 CES/CEOIU (Utility) at 312-782-5519 or email usaf.kunsan.8-mdg.mbx.8mdos-sgoj@mail.mil.

For more information on this report or base drinking water quality, please contact Bioenvironmental Engineering at 315-782-4670.

This CCR was prepared by Kunsan AB Bioenvironmental Engineering (8 MDOS/SGOJ) and will be posted on the Sharepoint (https://kunsan.eis.pacaf.af.mil/8MDG/8MDOS/BioEngineering/Environmental/Forms/AllItems.aspx). Information about EPA water regulations can be found at: http://www.epa.gov.