



Drinking Water Quality Annual Report for Calendar Year 2020

*Kunsan Air Base
(Published: June 2021)*



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.**

“This report contains important information regarding your drinking water. Therefore, please have someone who can understand this report translate it for you. Please call Bioenvironmental Engineering at 063-470-4670 if you have any question regarding this report”

“이 보고서에는 귀하의 식수에 대한 중요한 내용이 실려있습니다. 그러므로 이 보고서를 이해할 수 있는 사람한테 번역해 달라고 부탁드립니다.
보고서에 대한 질문은 생물환경공학과 063-470-4670 로 문의하시기 바랍니다.”

1. Drinking Water Sources for Kunsan AB

All potable water supplied to the Kunsan Water Treatment Plant is sourced from the Okku Reservoir. Okku Reservoir is a surface water source primarily used for agriculture. This is located approximately 2.5 kilometers north-east of Kunsan AB. A direct connection with the regional water purveyor (Gunsan city), K-Water, which provides water from the Yongdam Reservoir, acts as a secondary water source for Kunsan AB. Yongdam Reservoir is also a surface water source. 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 (EPA) 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. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for public health.
- ◆ The Water and Fuels Maintenance 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 BEE Flight 8 OMRS/SGXB 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 drinking water 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 monthly at distribution points (such as the fire department, 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 64 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 | Fire dept, Food Facilities, etc. |
| Inorganic | Metals, (e.g. lead, copper, selenium, arsenic, mercury, nickel, sodium, etc.) ** (13 Total) | Annually | 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 |
| Lead & Copper From Plumbing Materials | Lead, Copper ** (40 Total) | Semi-annually | Kunsan AB: 40 locations |
| Radiological Compounds | Gross Alpha and Beta, Radium 226 / Uranium 228 ** (2 Total) | Every 4 years (all 4 quarters) | Bldg. 980 |
| *PFOS/PFOA | PFOS/PFOA ** (1 Total) | Quarterly | Entry Point |

****All regulated chemicals are listed in KEGS Chapter 3, Table 3-4, 3-6, 3-8, and 3-9**
***Perfluorooctanesulfonic Acid (PFOS)/Perfluorooctanoic Acid (PFOA)**

4. Potential Health Effects & Risk

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised people such as those with cancer undergoing chemotherapy or 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/Child Development Center (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 (800-426-4791) or at <http://www.epa.gov/safewater/lead>.

5. Monitoring Results in Calendar Year 2020-2021

Table 2: Kunsan AB Water System Detected Contaminants from 1 July 2020 to 31 June 2021

| Substances | Violation? Yes / No | Units | Detected Levels In Your Water (High) | MCL | Last Sampled | Likely Source of Contamination |
|---|------------------------|-------|--|---------------|-----------------|--|
| | | | | EPA (KEGS) | | |
| Inorganics Monitoring Frequency: Annually <i>Only chemicals detected are listed below</i> | | | | | | |
| Barium | No | mg/L | 0.029 | 2.0 | Aug 20 | Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits |
| Sodium | No | mg/L | 0.04 | N/A | Aug 20 | Erosion of natural deposits |
| Calcium | No | mg/L | 0.02 | N/A | Aug 20 | Erosion of natural deposits |

| | | | | | | |
|--------|----|------|-------|------|--------|--|
| Nickel | No | mg/L | 0.001 | 0.10 | Aug 20 | Discharge from various industries Erosion of natural Deposits |
| Copper | No | mg/L | 0.002 | 1.3 | May 21 | Leeching from pipes into water |

Disinfectant By-Products Monitoring Frequency: Quarterly
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 | 0.052 | 0.08 | May 21 | By-product of drinking water disinfection |
| HAA5 | No | mg/L | 0.017 | 0.06 | May 21 | By-product of drinking water disinfection |

Volatile Organic Compounds Monitoring Frequency: Quarterly
Only chemicals detected are listed below

| Substances | Violation? Yes / No | Units | Annual Average | EPA (KEGS) | Last Sampled | Likely Source of Contamination |
|-----------------|------------------------|-------|----------------|---------------|-----------------|---|
| Dichloromethane | No | mg/L | 0.002 | 0.005 | May 21 | Volatile organic compounds (VOCs) are chemicals that both vaporize into air and dissolve in water. |
| Xylene | No | mg/L | 0.003 | 10 | May 21 | |

PFOS/PFOA Monitoring Frequency: Quarterly

Although PFOS/PFOA's 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.

| Substances | Violation? Yes / No | Units | Annual Average | EPA (Combined) | Last Sampled | Likely Source of Contamination |
|------------|------------------------|-------|----------------|-------------------|-----------------|--|
| PFOS | No | ppt | 2.66 | 70 | May 21 | Synthetic fluorinated organic compounds, nonstick cookware, stain-resistant fabric and carpet, some food packaging and the firefighting agent Aqueous Film Forming Foam, or AFFF. |
| PFOA | No | | 9.73 | | | |

Lead and Copper Monitoring Frequency: Semi-Annually

| Substances | Violation? Yes / No | Units | Annual Average | EPA | Last Sampled | Likely Source of Contamination |
|------------|------------------------|-------|----------------|-------|-----------------|-----------------------------------|
| | | | | AL * | | |
| Lead | No | mg/L | 2.66 | 0.015 | Apr 21 | Leeching from pipes into water |
| Copper | Yes | | 9.73 | 1.3 | | |

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

Lead and Copper Notice:

On 1 March 2021, Bioenvironmental Engineering (BE) collected water samples from base housings and dormitories to test for lead and copper levels in the drinking water. While several locations had elevated levels of copper, follow-up samples collected on 16 April 2021 revealed significantly lower levels, with only Bldg 204 having a high **copper** level.

What is being done?

For the time being, BE plans on sampling for lead and copper on a six-month-basis. BE in coordination with Airmen Dorm Leaders (ADLs) will keep all residents posted on findings and recommendations. *Follow-up sampling revealed the most likely culprit of the elevated copper levels in some samples was the prolonged lack of use of certain faucets.*

What should I do?

BE recommends for residents to run their faucet for at least 30 seconds before consuming water. This action will flush out most copper particles – *empirical evidence shows that copper levels present decrease to negligible levels in the line by just letting your tap run for 30 seconds.* NOTE: The risk of copper ingestion exposure from showering, washing hands, cleaning dishes, brushing teeth, and washing face is minimal. Please continue to adhere to flushing your lines prior to consuming water for drinking or cooking purposes.

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 advisory 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 OMRS/SGXB) 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>.