



ISA AIR BASE, BAHRAIN (2015) DRINKING WATER CONSUMER CONFIDENCE REPORT



Is our water safe to drink?

Isa Air Base (IAB) Bahrain's drinking water system provides water that is safe and Fit for Human Consumption (potable) as determined by the Installation Commanding Officer's Record of Decision dated 14-Jul-2015. We are proud to support the Navy's commitment to provide safe and reliable drinking water to our service members and their families. This annual Consumer Confidence Report includes general and mandatory information to educate everyone about our water source(s), treatment processes, standard requirements, and other details to help assure you that our water is safe to drink.

Bottled water and trucked water tanks from ROWPU serving the Galley, Food and Beverage Trailer, and medical clinics used at the LSA on NAVCENT DET, Isa Air Base, Bahrain is Fit for Human Consumption (FFHC) for all uses, including internal uses of drinking, oral hygiene, and food preparation.

ROWPU treated product water distributed by the High Pressure Zone (HPZ) at LSA water distribution system is designated as Fit for Human consumption for all uses.

Potable water Tanks filled with ROWPU Product water and distributed by truck test within Maximum Contaminant Level (MCLs); however, due to their inherent vulnerabilities with a non-enclosed system are designated as Fit for limited external use; e.g. hand washing, laundry services, and showering.

Piped water through the base distribution network through NAVCENT DET, and its outlying sites, to include the Army Air Defense Artillery Patriot Missile Battery Sites, the personal have been notified of the acceptable uses for each water source. As a risk mitigation measure, personnel at IAB are notified regarding the water quality in areas serviced by not FFHC water and advised to drink bottled water that has been certified by the US Army Veterinarian to meet U.S. guidelines.

Our drinking water fully complies with the DOD's Final Governing Standards (FGS), which are derived from the U.S. DoD Overseas Environmental Baseline Guidance Document (OEBGD), U.S. Environmental Protection Agency (EPA) and Bahrain drinking water standards. When Bahrain and U.S. standards differ, the *most protective* requirement is adopted into the FGS. A detailed list of constituents found in our drinking water is included in this report, along with a comparison to the maximum levels considered safe for the general public by these standards.

Where does our water come from and how is it treated?

IAB purchases treated water from the Kingdom of Bahrain Electricity & Water Authority EWA. The city water comes from ocean and is treated at the Al Dur Power and Water Company, the Water Plant, is a multi-stage flash distillation plant. Water received from the Al Dur Power and Water Company is transferred through pipes from Royal Bahraini Air Force. The received water is stored in two underground tanks and four above ground raw water tanks which is further treated at the IAB facility. Two RO plants are operated on alternate days using single-stage Reverse Osmosis (RO) units and using appropriate process chemicals prior to purification. Disinfection of the water is achieved by chlorination. This water is stored in eight secured and controlled access tanks at the facility for direct distribution to various outlets throughout ISA Air Base water distribution network high pressure zone.

Why are there contaminants in drinking water?

IAB's drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. Isa Air Base Bahrain's drinking water source is distillation; however, distillation is not 100% effective in removing all contaminants because: 1) droplets of un-vaporized liquid can be carried with the steam prior to distillation, and 2) some contaminants have boiling points similar to water and will be vaporized and condensed with the distilled water. In order to ensure that tap water is safe to drink, regulations limit the amount of certain contaminants in water provided by public water systems.

Due to this, some contaminants may be present in drinking water, such as:

- **Microbial contaminants**, such as viruses and bacteria, that may come from wildlife, sewage treatment plants, septic systems, and livestock;
- **Disinfection by-products**, such as chlorine and chloramine used to remove pathogens from the water;
- **Pesticides and herbicides**, which may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses;
- **Inorganic contaminants**, naturally occurring 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;
- **Organic chemical contaminants**, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems; and
- **Radioactive contaminants**, which can be naturally occurring or be the result of oil and gas production and mining activities.

The presence of contaminants does not necessarily indicate that water poses a health risk. In order to ensure that tap water is safe to drink, regulations limit the amount of certain contaminants in water provided by public water systems. Regular sampling is conducted to detect the limits of contaminants in the water system. If the results are above regulatory levels, you will be notified by Email and Public Notification. You can learn more about contaminants and any potential health effects by visiting the EPA's Drinking Water Standards web site:

<http://permanent.access.gpo.gov/lps21800/www.epa.gov/safewater/standards.html>

Source water assessment

In May 2014 the Naval Facilities Engineering Command (NAVFAC) conducted a comprehensive sanitary survey of the Isa Air Base Bahrain drinking water system. This survey provided an evaluation of the adequacy of the drinking water source, facilities, equipment, operation and maintenance for producing and distributing safe drinking water. NAVFAC is continually improving the drinking water system based on the recommendations in the report.

Some people must use special precautions

There are people who 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/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 EPA's Safe Drinking Water webpage , www.epa.gov/safewater/sdwa.

Additional Information For Arsenic

Some people who drink water containing arsenic well in excess of the MCL for many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer. Arsenic enters drinking water supplies from natural deposits in the earth or from agricultural and industrial practices. Information on arsenic in drinking water and steps you can take to minimize exposure is available from the USEPA Safe Drinking Water website:

<http://water.epa.gov/drink/contaminants/basicinformation/arsenic.cfm>

Additional Information For Bromate

If present, elevated levels of bromate can cause serious health problems. Some people who drink water containing bromate in excess of the MCL over many years may have an increased risk of getting cancer. Information on bromate in drinking water and the steps you can take to minimize exposure is available from the USEPA Safe Drinking Water website, www.epa.gov/safewater/sdwa

Additional Information For Iron

Iron is regulated as a secondary contaminant by USEPA, because it may cause discolored water or aesthetic effects in drinking water, such as unpleasant odor or taste. Exceeding a secondary standard may cause people to stop using the water even though the water is actually safe to drink. Secondary standards are set to provide public water systems guidance on removing these chemicals to levels that are below what most people will find noticeable. Activities taken to reduce the iron concentration in ISA AB drinking water include flushing the distribution system to remove settled particulates. Information on iron in drinking water and the steps you can take to minimize exposure is available from the USEPA Safe Drinking Water website, www.epa.gov/safewater/sdwa

Additional Information For Lead

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. NAVFAC ISA AB Public Works is responsible for providing high-quality drinking water and has direct control over the materials used in plumbing components on the facility. This ensures that no lead service lines or components are used on the drinking water system. As a general safety practice, whenever - and wherever - you plan to use tap water for drinking or cooking, you can minimize the potential for lead exposure by flushing the tap for 30 seconds to 2 minutes prior to use. Information on lead in drinking water and steps you can take to minimize exposure is available from the USEPA Safe Drinking Water website, www.epa.gov/safewater/lead.

Additional Information For Nitrite

Infants below six months who drink water containing nitrite in excess of the maximum contaminant level (MCL) could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome. The major sources of nitrite in drinking water are runoff from fertilizer use; leaching from septic tanks, sewage; and erosion of natural deposits. Information on nitrite in drinking water and steps you can take to minimize exposure is available from the USEPA Safe Drinking Water website:

<http://water.epa.gov/drink/contaminants/basicinformation/nitrite.cfm>

Water Quality Data Table – [ISA Air Base]

The table below lists all of the drinking water contaminants and relevant sampling data collected during the 2015 calendar year (unless otherwise noted). The presence of contaminants in the water does not necessarily indicate that the water poses a health risk. All contaminants detected in ISA Air Base Bahrain’s drinking water are below the Maximum Contaminant Levels (MCLs) allowed by FGS, DoD, and EPA applicable requirements.

Contaminants	MCLG or MRDLG	MCL, TT, or MRDL	Your Water	Units	Sample Date	Violation	Typical Source
Inorganic Components							
Sodium	N/A	N/A	29	mg/l	28-Apr- 2015	NO	Erosion of natural deposits; Leaching
Boron	N/A	N/A	0.73	mg/l	28-Apr- 2015	NO	Erosion of natural deposits; Leaching
Silica	N/A	N/A	0.42	mg/l	01-Feb-2015	NO	Erosion of natural deposits; Leaching
Calcium	N/A	N/A	52	mg/l	01-Feb-2015	NO	Erosion of natural deposits; Leaching
Magnesium	N/A	N/A	0.13	mg/l	28-Apr- 2015	NO	Erosion of natural deposits; Leaching
Sulfate	250	N/A	0.59	mg/l	19-Oct-2015	NO	Runoff/leaching from natural deposits
Potassium	N/A	N/A	1.9	mg/l	28-Apr- 2015	NO	Erosion of natural deposits; Leaching
Arsenic	N/A	0.01	N/D	mg/l	19-Oct-2015	NO	It occurs in soil and minerals and it may enter air, water and land through wind-blown dust and water run-off
Bromate	N/A	0.01	N/D	mg/l	19-Oct-2015	NO	Erosion of natural deposits; Leaching
Iron	N/A	0.3	0.08	mg/l	01-Feb-2015	NO	Occurs naturally in the soil, sediments and ground water and some rocks
Copper	N/A	1.3	0.009	mg/l	19-Oct-2015	NO	Corrosion of household plumbing systems; erosion of natural deposits
Lead	N/A	0.015	N/D	mg/l	19-Oct-2015	NO	Corrosion of household plumbing systems; erosion of natural deposits

Nitrite	N/A	1.0	N/D	mg/l	19-Oct-2015	NO	Runoff/leaching from natural
Nitrates	N/A	10	0.08	mg/l	19-Oct-2015	NO	Runoff/leaching from natural
Note: All other Inorganic Compounds, Organic Compounds, Pesticides, PCBs, Total Trihalomethanes and Radionuclides, Lead, and Total Coliforms were not detected							

N/D= Not Detected, i.e. below PQL

PQL= Practical Quantitation Limit of the best method

Unit Descriptions	
Term	Definition
ppm	ppm: parts per million, or milligrams per liter (mg/L)
ppb	ppb: parts per billion, or micrograms per liter (µg/L)
pCi/L	pCi/L: picocuries per liter (a measure of radioactivity)
NA	NA: not applicable
ND	ND: Not detected
NR	NR: Monitoring not required, but recommended.

Important Drinking Water Definitions	
Term	Definition
MCLG	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	MCL: Maximum Contaminant Level: 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.
TT	TT: Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water.
AL	AL: Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements.
Variances and Exemptions	Variances and Exemptions: EPA permission not to meet an MCL or a treatment technique under certain conditions.
MRDLG	MRDLG: Maximum residual disinfection level goal. The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
MRDL	MRDL: Maximum residual disinfectant level. The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
MNR	MNR: Monitored Not Regulated
MPL	MPL: State Assigned Maximum Permissible Level

Violation(s) or Exceedance(s)/Missed Sampling Events:

There were no violations, exceedances, or missed sampling events noted during the year 2015 for any test parameters for Isa Air Base Bahrain.

Points of Contact

If you have any questions regarding this report or about the drinking water processes, please contact:

Patrick Smith

SWA Environmental Program Director

Coordinator, Installation Water Quality Board

Phone: +973-17-85-4603

Email: Patrick.g.smith@me.navy.mil