2014 Drinking Water Quality Report
Ramstein Air Base, Germany

I am pleased to present Ramstein Air Base's Annual Drinking Water Quality Report. This report is designed to inform you about the excellent water and services we have delivered to you over the past year. Our goal is to provide you with a safe, quality and reliable drinking water supply. We are continually striving to improve our services and protect our vital community water resources. I'm confident that together we can accomplish our goal in the upcoming years.

Lt Col Shannon McDonald
Bioenvironmental Engineering Flight Commander

Where do we get our drinking water?

The Kaiserslautern Military Community (KMC) draws all its drinking water from deep wells several hundred feet below ground. Our water is pumped from these wells, treated, and then distributed to our communities. Within the KMC, there are many water distribution systems. Ramstein Air Base has 2 systems, Vogelweh had 2 systems (since 1 November 2007 the Vogelweh systems, including Kapaun AS have combined and are supplied by the City of Kaiserslautern water provider Stadtwerke Kaiserslautern – SWK), USAFE Contingency Training Squadron (CTS) has 2 systems, and the Cold Storage Area has 1 system.

Who ensures our water is safe?

Several offices are responsible for preserving the quality of our drinking water.

The 786th Civil Engineer Squadron (CES) Water Plant & Systems and Exterior Utilities sections operate and maintain the KMC water distribution equipment and systems. CES personnel work 24 hours a day, 7 days a week to ensure the system is pressurized and maintains sufficient chlorine residual. On a daily basis CES personnel conduct operational monitoring to maintain the high quality of their final product -- drinking water for the KMC.

The 86th Medical Group Bioenvironmental Engineering (BE) Flight routinely monitors water quality throughout the system. Each week BE tests chlorine and pH levels, and collects water samples for bacteriological analysis. Analysis is conducted at the BE laboratory, and then reported to various organizations on a monthly basis. Periodically BE collects additional water samples for chemical analysis based on a monitoring schedule directed by the Final Governing Standards for Germany (FGS-G) to determine compliance.

The FGS-G defines the parameters to be monitored (most stringent US/German requirements), the sampling frequency, the maximum contaminant level (MCL), the notification procedures, and what processes should be initiated if non-compliance is detected (i.e., additional treatment techniques, bottled water issuance, etc). BE is ultimately responsible for characterizing health risks and ensuring public notifications are provided on a timely basis.

In addition to the FGS-G required compliance monitoring, BE responds to all drinking water related problems, to include when the water has to be shut off in certain areas (i.e., water main breakage, routine maintenance, new facility brought on line, etc…).

The US Army Public Health Command (P) Public Health Region - Europe (PHRE) at Landstuhl, a German and US certified and accredited laboratory, performs the analytical analyses for most of analytical requirements beyond bacteriological.

TTHM – Total Trihalomethanes

How pure is my water?

As water travels underground it can pick up various natural and man-made substances to include:

- *Microbes*, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- *Inorganics*, such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- *Pesticides and herbicides*, which may come from agriculture, urban stormwater runoff, and residential uses.
- *Organic chemicals*, including synthetic and volatile organics, which are by-products of industrial processes and petroleum production, and can come from gas stations, urban stormwater runoff, and septic systems.
- *Radioactive materials*, which can be naturally-occurring or the result of oil/gas production and mining activities.

Due to the exceptional quality of our groundwater source, treatment is for the most part, not necessary. Chlorination is accomplished because it provides a measurable means of ensuring our water is properly disinfected. All of our water sources, except the Vogelweh/Kapaun Air Station area, are chlorinated, and some of our water sources are filtered. This is done to ensure the safest, most aesthetically pleasing product for our consumers.

Ramstein AB routinely monitors for over 60 individual drinking water parameters in accordance with FGS-G. The tables below shows these results grouped together for the January 1st to December 31st 2014 monitoring period. All samples referenced in this report were accomplished by BE.

Terms and Abbreviations

The terms and abbreviations below will assist you with understanding some of the difficult words and acronyms found in the table below and within this report.

Maximum Contaminant Level (MCL) - The highest level of a contaminant that is allowed in drinking water before some type of action is required.

Action Level (AL) – A level below the MCL that if exceeded requires initiation of additional monitoring and possibly operational actions.

Milligram per Liter (mg/l) – unit of measure. One mg/l corresponds to 1 minute in 2 years, or a single penny in $10,000.

VOC – Volatile Organic Compound
SOC – Synthetic Organic Compound
PAH – Poly Aromatic Hydrocarbon

Required Monitoring Parameters per FGS-G:

SOC, VOC, PAH, TTHM and Inorganic parameters (grey area on the following tables) were monitored and are listed below. However, due to complexity the MCLs/ALs are not listed individually.

SOC (Pesticides/PCBs):

Alachlor	Aldicarb
Aldicarb Sulfone	Aldicarb Silfoxide
Atrazine	Carbofuran
Chlordane	2,4 –D
Endrin	Ethylene dibromide (EDB)
Heptachlor	Lindane
Methoxychlor	
1,2-Dibromo-3chloropropane (DBCP)	

VOC:

Benzene	Carbon tetrachloride
o-Dichlorobenzene	cis-1,2-Dichloroethylene
1,1-Dichloroethylene	trans-1,2-Dichloroethylene
1,1,1-Trichloroethane	1,2-Dichloroethane
Dichloromethane	1,1,2-Trichloroethane
1,2,4-Trichloro-benzene	1,2-Dichloropropane
Ethylbenzene	Monochlorobenzene
Para-Dichlorobenzene	Styrene
Tetrachloroethylene	Trichloroethylene
Toluene	Vinyl chloride
Xylene (total)	

PAH:

Fluoranthene	Benzo-(b)-Fluoranthene
Benzo-(k)-Fluoranthene	Benzo-(a)-Pyrene
Benzo-(ghi)-Perylene	Indeno-(1,2,3-cd)-Pyrene

TTHM:

Dibromochloromethane	Dichlorobromomethane
Tribromomethane (Bromoform)	
Trichloromethane (Chloroform)	

Inorganics:

Arsenic	Barium
Beryllium	Cadmium
Chromium	Copper
Cyanide	Fluoride
Lead	Mercury
Nickel	Nitrate
Nitrite	Selenium
Silver	Sodium
Surfactants	Thallium
Zinc	
Free Available Chlorine (FAC)	

Drinking Water and Your Health

All drinking water, including bottled water, may reasonably be expected to contain small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information on contaminants and potential health effects can be obtained by calling BE at DSN 479-2220 (06371-462220).

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised individuals such as those with cancer undergoing chemotherapy, those who have undergone organ transplants, those with HIV/AIDS or other immune system disorders, some elderly, and infants may be at a higher risk of waterborne illness. These people should seek advice about drinking water from their health care providers.

A Final Word on Water Quality

Your water quality team at Ramstein AB works around the clock to provide safe, dependable water at every tap. But they can only ensure the success of today's mission if everyone contributes.

Tomorrow's success will depend on all of us, *working together*, to protect our vital water resources.

Remember, the water we use does **not** quickly return to the aquifer, but is, for the most part, "consumed" by our actions. US military installations within the KMC and many nearby villages draw water from the same aquifer. Conservation is therefore essential to protect our water supply.

Water conservation measures taken at Ramstein AB include restricting irrigation and installing low-flow plumbing fixtures during housing and office renovations. You should also consider ways you can reduce your water consumption (i.e., don't let the water run while brushing your teeth, taking a shower vs. a bath). There are numerous ways to save our most valuable natural resource for us, and the future of our children. The 86 Civil Engineer Squadron Asset Optimization element regularly publishes conservation articles and tips. If you would like to request copies, contact the Save Our Resources Team or S.O.R.T. (POC – 86 CES/CEA). If you have ideas to reduce usage and contamination of this valuable resource submit it to the Ramstein AB Water Working Group (POC – 86 AMDS/SGPB).

These efforts will help protect the future water supply by reducing the overall consumptive use.

Customer Views Welcome

Although the base does not hold public meetings on its distribution systems, we're available to address any questions or concerns you may have. Housing residents should contact the Housing Office, at DSN 489-6643, with any water concerns. Dorm residents should contact their building manager.

For More Information

…on this report or base drinking water quality, call the 86th Medical Group's Bioenvironmental Engineering at 479-2220.

Table 1 Ramstein AB System I (Servicing Ramstein North, including Family Housing, Child Development Centers, DoD schools and youth center)

Parameters Monitored (by Group)	MCL - AL	Range		Exceedance
		Low	High	
Lead (mg/l)	0.015	<0.0002	0.008	No
Copper (mg/l)	1.3	<0.002	0.29	No
SOC (including Pesticides & Herbicides) (mg/l)				No
VOC (mg/l)				No
PAH (mg/l)				No
Inorganics (mg/l)				No
TTHM (mg/l)				No
Bacteriological				No

Table 2. Ramstein AB System 2 (Servicing the area between Kiesling Drive and the flight line, including the flight line north of Taxiway India)

Parameters Monitored (by Group)	MCL - AL	Range		Exceedance
		Low	High	
Lead (mg/l)	0.015	<0.0002	0.008	No
Copper (mg/l)	1.3	<0.002	0.29	No
SOC (including Pesticides & Herbicides) (mg/l)				No
VOC (mg/l)				No
PAH (mg/l)				No
Inorganics (mg/l)				No
TTHM (mg/l)				No
Bacteriological				No

Table 3. CTS System (G) (Industrial and administrative area – No MFH)

Parameters Monitored (by Group)	MCL - AL	Range		Exceedance
		Low	High	
Lead (mg/l)	0.015	<0.0002	0.0023	No
Copper (mg/l)	1.3	<0.002	0.031	No
SOC (including Pesticides & Herbicides) (mg/l)				No
VOC (mg/l)				No
PAH (mg/l)				No
Inorganics (mg/l)				No
TTHM (mg/l)				No
Bacteriological				No

Table 4. CTS System (A) Barrier Maintenance (Industrial and administrative – No MFH)

Parameters Monitored (by Group)	MCL - AL	Range		Exceedance
		Low	High	
Lead (mg/l)	0.015	<0.0002	0.0079	No
Copper (mg/l)	1.3	<0.002	0.058	No
SOC (including Pesticides & Herbicides) (mg/l)				No
VOC (mg/l)				No
PAH (mg/l)				No
Inorganics (mg/l)				No
TTHM (mg/l)				No
Bacteriological				No

Table 7. Cold Storage System (Servicing the cold storage area - strictly industrial and administrative – No MFH)				
Parameters Monitored (by Group)	MCL - AL	Range		Exceedance
		Low	High	
Lead (mg/l)	0.015	<0.0002	0.0054	No
Copper (mg/l)	1.3	0.002	0.038	No
SOC (including Pesticides & Herbicides) (mg/l)				No
VOC (mg/l)				No
PAH (mg/l)				No
Inorganics (mg/l)				No
TTHM (mg/l)				No
Bacteriological				No

Note: Water treatment plants three and four were out of operation due to mechanical and electrical problems. All of Ramstein AB was supplied by water treatment plant one and two.

Maximum Contaminant Levels (MCLs) for Parameter IAW Final Governing Standards for Germany (FGS-G)

Monitoring Parameter	MCL in mg/L
SOC (Pesticides/PCBs)	
Alachlor	0.002
Aldicarb	0.003
Aldicarb Sulfone	0.003
Aldicarb Silfoxide	0.004
Atrazine	0.003
Carbofuran	0.04
Chlordane	0.002
2,4 –D	0.07
Endrin	0.002
Ethylene dibromide (EDB)	0.00005
Heptachlor	0.0004
Lindane	0.0002
Methoxychlor	0.04
1,2-Dibromo-3chloropropane (DBCP)	0.0002

Monitoring Parameter	MCL in mg/L
PAH	
Benzo-(a)-Pyrene	0.00001
Fluoranthene	Total 0.0001
Benzo-(b)-Fluoranthene	
Benzo-(k)-Fluoranthene	
Benzo-(ghi)-Perylene	
Indeno-(1,2,3-cd)-Pyrene	
TTHM	
Dibromochloromethane	Total 0.08
Dichlorobromomethane	
Tribromomethane (Bromoform)	
Trichloromethane (Chloroform)	

Monitoring Parameter	MCL in mg/L
INORGANICS	
Arsenic	0.01
Barium	2.0
Beryllium	0.004
Cadmium	0.005
Chromium	0.1
Cyanide	0.2
Fluoride	4.0
Mercury	0.002
Nickel	0.1
Nitrate	10
Nitrite	1
Selenium	0.05
Sodium	No MCL
Thallium	0.002
Bacteriological	
Total Coliform Bacteria	0 – No Colonies

Monitoring Parameter	MCL in mg/L
VOC	
Benzene	0.001
Carbon tetrachloride	0.005
o-Dichlorobenzene	0.6
cis-1,2-Dichloroethylene	0.07
1,1-Dichloroethylene	0.007
trans-1,2-Dichloroethylene	0.1
1,1,1-Trichloroethane	0.2
1,2-Dichloroethane	0.003
Dichloromethane	0.005
1,1,2-Trichloroethane	0.005
1,2,4-Trichloro-benzene	0.07
1,2-Dichloropropane	0.005
Monochlorobenzene	0.1
Para-Dichlorobenzene	0.075
Styrene	0.1
Tetrachloroethylene	0.005
Trichloroethylene	0.005
Toluene	1.0
Vinyl chloride	0.002
Xylene (total)	10