



DEPARTMENT OF THE ARMY
PUBLIC HEALTH COMMAND REGION-EUROPE
CMR 402
APO AE 09180

MCHB-PHC

02 January 2019

MEMORANDUM FOR Directorate of Public Works, U.S. Army Garrison
(USAG) Bavaria-Garmisch (IMBV-GPW), Unit 24515, APO AE 09053

SUBJECT: Annual Drinking Water Monitoring, USAG Bavaria-Garmisch, 23-26 July
2018

1. USAG Bavaria-Garmisch complied with the reported Environmental Final Governing Standards – Germany water quality criteria for the drinking water parameters evaluated during the fiscal year 2018 (FY18) annual monitoring event.
2. Radiological results have not been reported and will be included in a later addendum.
3. A copy of the report is enclosed. We are interested in your comments and suggestions for improving the usefulness of the information and recommendations provided in this report. If you have any comments, or if this report does not meet your needs or expectations, please contact the undersigned at DSN 314-590-9802 or CIV 06371-9464-9802.

FOR THE COMMANDER:

Encl
as

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PHCE

Public Health Command Europe - CMR 402, APO AE 09180



USAG Garmisch Annual Drinking Water Monitoring July 2018

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**Annual Drinking Water
Monitoring USAG Garmisch
23-26 July 2018**

1 Purpose and Background

1.1 General

The Environmental Final Governing Standards – Germany (GFGS) (DoD, 2016) require that drinking water be periodically analyzed for selected chemical, physical, and radiological water quality parameters. At the request of Installation Management Command – Europe (IMCOM-E), Public Health Command Europe (PHCE) collects drinking water samples at U.S. Army Garrison (USAG) Bavaria-Garmisch in support of these requirements.

PHCE personnel accomplished annual drinking water sampling 23-26 July 2018. Contained herein are the findings and recommended courses of action.

1.1 Water Systems

The following water systems were monitored: Garmisch Community Water System (CWS) and Oberammergau CWS. Appendix A provides a tabulated summary of each water system.

2 Findings and Discussion

2.1 General

Findings are summarized below. Analytical results above method detection limits (MDL) are in Appendix B. A complete listing of results from this sampling event is in Appendix C. Certificates of analysis for all analytes monitored were provided in electronic format to the Directorate of Public Works (DPW) separately from this report.

2.2 Disinfection Byproducts

Currently, water treatment that could lead to the formation of disinfection byproducts (DBPs) is not conducted for either CWS. The suppliers for both water systems have the capability to chlorinate as a means of disinfection in emergency situations. Oberammergau CWS employs ultraviolet (UV) disinfection. The system is exempt to the disinfectant residual requirement based on an exemption issued by Army Europe Regional Health Command dated 09 July 2010. For the Garmisch CWS, system is not treated before or after the point of entry except at the Edelweiss Lodge and Resort, which uses UV treatment. Sampling for DBPs by PHCE will resume when chlorination is implemented.

2.3 Radiological

Radiological results (Oberammergau CWS) under service request number (SRN) 18-0324 and lab ID E18-00652 have not been received from Army Public Health Command. An addendum report will be compiled once the results are received.

3 Conclusions and Recommendations

3.1 Annual Monitoring Compliance Status

USAG Garmisch complied with GFGS water quality criteria for drinking water parameters evaluated during this annual monitoring event. Continue required routine drinking water monitoring in accordance with GFGS.

3.2 General Recommendations

- The Garmisch CWS is not in compliance with the GFGS, which requires a disinfectant residual throughout all water systems. Request a waiver or initiate corrective actions to place the chlorination stations back into operation.
- Inform the USAG Garmisch community of this study and its findings, conclusions, and recommendations.
- Request drinking water suppliers periodically provide reports of all sampling and testing conducted to USAG Bavaria, Garmisch DPW for review.
- Notify IMCOM-E and PHCE when significant changes occur to USAG Garmisch drinking water systems, such as chlorination/disinfection status and changes in water sources, occupancy, or mission.

3.3 Bacteriological and Operational Monitoring

DPW is responsible for DoD public water systems and is required to establish and maintain bacteriological monitoring and operational monitoring programs in accordance with GFGS. PHCE does not conduct monitoring of bacteriological or operational parameters for the garrisons. Ensure appropriate monitoring of garrison water systems is conducted to comply with GFGS drinking water requirements.

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Table 1. USAG Bavaria-Garmisch Water System Compliance Status Summary

Water System	Monitoring Sample Parameters								
	Inorganics	Ammonia/ Nitrate/Nitrite	PAHs	VOCs	Other Organics (SVOCs)	Pesticides & PCBs	TTHM & HAA5	Radionuclides	Asbestos
Garmisch Community Water System (CWS)									
Artillery Kaserne/ Breitenau Family Housing (FHA), Bldg 717	Sampled: FY18 Due: FY21	Sampled: FY18 Due: FY19	Sampled: FY18 Due: FY19	Sampled: FY17 Due: FY20	Sampled: FY17 Due: FY20	Sampled: FY17 Due: FY20		Sampled: FY16 Due: FY20	Sampled: FY15 Due: FY24
Sheridan Kaserne Bldg 105							Sampled: FY15 Due: TBD		
Breitenau FHA Bldg 709							Sampled: FY15 Due: TBD		
Oberammergau CWS									
NATO School Bldg 763	Sampled: FY18 Due: FY21	Sampled: FY18 Due: FY19	Sampled: FY18 Due: FY19	Sampled: FY17 Due: FY20	Sampled: FY17 Due: FY20	Sampled: FY17 Due: FY20		Sampled: FY18 Due: FY22	Sampled: FY15 Due: FY24
NATO School Bldg 760							Discontinued UV only disinfection		

Key

	Monitoring Not Required
	Compliant, All Standards Satisfied
	Requires Additional Information and/or Investigation
	Compliant, but Increased Monitoring Required
	Non-compliant, Action Required

HAA5 Haloacetic Acids (Five)
 PAHs Polycyclic Aromatic Hydrocarbons
 PCBs Polychlorinated Biphenyls
 TTHM Total Trihalomethanes
 VOCs Volatile Organic Compounds

Currently TTHM and HAA5 are not being checked since chlorine is not being used to disinfect. Monitoring for these chemicals will resume if chlorine disinfection is used.

4 Point of Contact

Direct questions concerning this report to Mr. Wayne Jousma at DSN: 314-590-9780, commercial: 06371-9464-9780, or e-mail: wayne.r.jousma.civ@mail.mil.
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Appendix A

Water Systems

Table A-1. USAG Bavaria - Garmisch Water Systems Summary

Water System	Supplier	Areas Supplied	Water Source	Treatment by Water Supplier	On-site Treatment	Population Served
Garmisch CWS	Gemeindewerke Garmisch-Partenkirchen	Artillery Kaserne	Ground	Filtration Treatment (Chlorine gas treatment system is available for emergency disinfection)	None currently (as of 26JUL2018);	2300 (not including transient population)
		Breitenau Family Housing Area			Chlorination (sodium hypochlorite) and Fluoridation treatment station Bldg 798 is not in operation	
		Sheridan Kaserne			None currently (as of 26JUL2018);	
		Edelweiss Lodge and Resort			Chlorination (sodium hypochlorite) Bldg 101 is not in operation	
		Abrams Complex			Ultraviolet treatment ELR basement	
Oberammergau CWS	City of Oberammergau	NATO School Complex	Ground	None	UV Treatment (Bldg 633, 761 762 763 764)	400

Note: Water system information provided by the Directorate of Public Works (DPW)

Appendix B

Procedures, Methods, and Analytical Results

Drinking water samples were collected by Public Health Command Europe (PHCE) personnel using accepted standards associated with the analytical methods utilized, and analyzed by PHCE, Laboratory Sciences (LS), or contract laboratories as necessary. PHCE, LS, is accredited by the internationally recognized *Deutsches Akkreditierungssystem Prüfwesen GmbH* (DAP) to DIN EN ISO/IEC 17025:2005. Contract laboratories are, at a minimum, accredited to ISO 17025. Analytical methods utilized for each analyte are noted on the laboratory certificates of analysis provided to the Directorate of Public Works (DPW). Additional information is available upon request.

The table(s) below may contain the following acronyms and identifiers:

B – Building

BOLD – Indicates result is above recommended level

BOLD/Shaded – Indicates results are above the MCL

CWS – Community Water System

DBP – Disinfectant Byproducts

HAA5 – Haloacetic Acids (HAA5)

MCL – Maximum Contaminant Level

MDL – Laboratory Method Detection Limit

MFL – Million Fibers per Liter

mg/L – Milligrams per Liter

n/a – Not Applicable

No Std – No Final Governing Standard

Not Required – GFGS does not require monitoring during the FY17 Monitoring Cycle

NTNCWS – Non-Transient Non-Community Water System

PAHs – Polycyclic Aromatic Hydrocarbons

TNCWS – Transient Non-Community Water System

TTHM – Total Trihalomethanes

VOCs – Volatile Organic Compounds

Certificates of analysis for all analytes monitored were provided in electronic format to the Directorate of Public Works (DPW) separately from this report. Results are tracked and stored under the following PHCE laboratory reports:

Project Name	Date Turned Into Lab	Date Received From Lab	SRN Number	Laboratory Report Number
S.0053050.2.3 BGM	26JUL2018	27JUL2018	18-0324	E18-00649
S.0053050.2.3 BGM	26JUL2018	TBD	18-0324	E18-00652

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Table B-1 USAG Garmisch Water Systems Results above the MDL

WATER SYSTEM	Public Health Command Europe			Garmisch CWS	Oberammergau CWS
SAMPLE SITE				Artillery Kaserne / Breitnau Family Housing Area (FHA)	NATO School Complex
BUILDING				B717	B3182
COLLECTION DATE				25-Jul-18	25-Jul-18
Inorganics/Metals	UNITS	MCL	MDL	RESULTS	
Nitrate as nitrogen	mg/L	10	0.1	0.40	0.60
Aluminum	mg/L	No Std	0.01	0.010	0.020
Barium	mg/L	2	0.005	0.022	0.070
Sodium	mg/L	No Std	1	1.1	0.80

Table B-2 USAG Garmisch Inorganics and Metals Results

WATER SYSTEM	Public Health Command Europe			Garmisch CWS	Oberammergau CWS
SAMPLE SITE				Artillery Kaserne / Breitnau Family Housing Area (FHA)	NATO School Complex
LOCATION				B717	B3182
COLLECTION DATE				25-Jul-18	25-Jul-18
Inorganics	UNITS	MCL	MDL	RESULTS	
Ammonia as N	mg/L	0.39	0.01	<0.010	<0.010
Cyanide, free	mg/L	0.2	0.005	<0.0050	<0.0050
Nitrate as nitrogen	mg/L	10	0.1	0.40	0.60
Nitrite as Nitrogen	mg/L	1	0.03	<0.030	<0.030
Metals	UNITS	MCL	MDL	RESULTS	
Aluminum	mg/L	No Std	0.01	0.010	0.020
Antimony	mg/L	0.006	0.0002	<0.00020	<0.00020
Arsenic	mg/L	0.01	0.003	<0.0030	<0.0030
Barium	mg/L	2	0.005	0.022	0.0070
Beryllium	mg/L	0.004	0.002	<0.0020	<0.0020
Cadmium	mg/L	0.005	0.002	<0.0020	<0.0020
Chromium	mg/L	0.1	0.004	<0.0040	<0.0040
Mercury	mg/L	0.002	0.0001	<0.00010	<0.00010
Nickel	mg/L	0.1	0.004	<0.0040	<0.0040
Selenium	mg/L	0.05	0.003	<0.0030	<0.0030
Sodium	mg/L	No Std	0.5	1.1	0.80
Thallium	mg/L	0.002	0.0002	<0.00020	<0.00020

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Table B-3 USAG Garmisch Poly Aromatic Hydrocarbon (PAH) Results

WATER SYSTEM	Public Health Command Europe			Garmisch CWS	Oberammergau CWS
SAMPLE SITE				Artillery Kaserne / Breitnau Family Housing Area (FHA)	NATO School Complex
BUILDING				B717	B763
COLLECTION DATE				25-Jul	25-Jul
PAHs - Regulated	UNITS	MCL	MDL	RESULTS	
Benzo(a)pyrene	mg/L	0.0002	0.000003	<0.0000030	<0.0000030
Total PAHs	mg/L	0.0001	-	Not Detected	Not Detected
Benzo(b)fluoranthene	mg/L	No Std	0.00002	<0.000020	<0.000020
Benzo(k)fluoranthene	mg/L	No Std	0.00002	<0.000020	<0.000020
Benzo(g,h,i)perylene	mg/L	No Std	0.00002	<0.000020	<0.000020
Indeno(1,2,3-cd)pyrene	mg/L	No Std	0.00002	<0.000020	<0.000020