DEPARTMENT OF THE ARMY
US ARMY INSTITUTE OF PUBLIC HEALTH
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MCHB-IP-RDE 25 September 2013

MEMORANDUM FOR Office of the Command Surgeon (LTC (b) (6)), U.S. Central Command, 7115 South Boundary Boulevard, MacDill Air Force Base, FL 33621-5101

SUBJECT: Deployment Occupational and Environmental Health Surveillance Sample Report, Soil, Sharana, Afghanistan, 28 May 2013, U_AFG_SHARANA_IP_SQA_20130528

1. The enclosed report details the assessment of three soil samples collected by 788th Medical Detachment personnel, Sharana, Afghanistan, 28 May 2013.

2. None of the chemicals detected in the sample were identified as potential hazards.

FOR THE DIRECTOR:

(b) (6)

Encl

Portfolio Director, Health Risk Management

CF: (w/encl)
788th MED DET (Commander/MAJ (b) (6)
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USAFSAM (Chief, Special Projects/Maj (b) (6)
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USAPHC
U.S. ARMY PUBLIC HEALTH COMMAND
5158 Blackhawk Road, Aberdeen Proving Ground, Maryland 21010-5403

Deployment Occupational and Environmental Health Surveillance Sample Report, U_AFG_SHARANA_IP_SQA_20130528
Health Risk Management Portfolio

Soil, Sharana, Afghanistan

Prepared by (b) (6)
Deployment Environmental Surveillance Program

Preventive Medicine Surveys: 40-5f1

ACKNOWLEDGEMENTS

Deployment Occupational and Environmental Health Surveillance Sample Report
Soil
Sharana, Afghanistan
28 May 2013
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1 References

See Appendix A for a list of references.

2 Purpose

This report provides the U.S. Army Public Health Command (USAPHC), Army Institute of Public Health (AIPH) assessment of the laboratory analytical results and exposure information associated with the samples collected by 788th Medical Detachment personnel on 28 May 2013 at Sharana, Afghanistan according to the U.S. Department of Defense deployment occupational and environmental health (DOEH) surveillance requirements. The assessment serves several purposes. It identifies DOEH hazards that may be related to acute health effects that could occur in personnel during their deployment. It provides an official record of observed exposure conditions for use in future site evaluations. Finally, this report includes preventive steps to reduce or eliminate occupational and environmental exposures, and surveillance and/or sampling recommendations, as necessary.

3 Scope

The assessment of sample results and exposure information in this report follows the process published in the USAPHC Technical Guide (TG) 230 “Environmental Health Risk Assessment and Chemical Exposure Guidelines for Deployed Military Personnel, June 2010 Revision.” The assessment is based on limited data representing a specific time period and assesses short-term exposure risks only. This report, therefore, cannot be used alone to estimate the risk of chronic health effects from exposures. In addition, this assessment does not address all DOEH hazards to which U.S. personnel may be exposed.

4 Laboratory Analysis

Deployment soil samples received at the USAPHC, AIPH laboratory are analyzed for a standard set of parameters that includes metals, pesticides/polychlorinated biphenyls, herbicides, semivolatile organic compounds, inorganic chemicals, radionuclides, and various physical characteristics. The complete analytical sample results can be viewed in the Defense Occupational and Environmental Health Readiness System (DOEHRS). Log into the DOEHRS and search for the samples using the DOEHRS sample identification numbers (IDs) provided in Table 1 below.

Table 1. Sample Identification Information

DOEHRS Sample ID	Sample ID Reported on Field Data Sheet	Sample Site	Date and Time Sample Collected	Collection Type
00009EQJ	AFG_SHARAN_20130528_01S	200 METERS FROM OPEN BURN PIT	2013/05/28 1400	Soil-Discrete
00009EQK	AFG_SHARAN_20130528_02S	200 METERS FROM OPEN BURN PIT	2013/05/28 1415	Soil-Discrete
00009EQL	AFG_SHARAN_20130528_03S	200 METERS FROM OPEN BURN PIT	2013/05/28 1430	Soil-Discrete

5 Exposure Setting

Table 2 contains information about the sampling location, environmental conditions, and associated potential population exposure. The information was provided on the field data sheets and/or exposure assessment worksheets submitted with the samples unless otherwise noted. Correction and clarification of exposure assumptions by the sampling unit is encouraged.

Table 2. Exposure Information

Questions About Exposure	Information Provided and Assumptions
Why was this sample/sample set collected?	The samples were collected to test for contaminates in the soil.
What population is exposed and how?	Approximately 50 percent of personnel, mainly the personnel working in the maintenance area and at the helicopter loading zone, are exposed. Soil is aerosolized when aircraft enter or leave the area.
What is the timeframe under consideration?	Personnel are deployed for approximately one year.
Where was the sample/sample set collected?	The samples were taken from the area between the burn pit and the helicopter landing zone, near the aircraft maintenance area.
What is known about location, activity, setting and potential sources of contamination that may affect exposure?	The area is a main hub for transportation and is a high traffic area.

6 Prescreen

The summary table in Appendix B compares the peak and average concentrations of detected chemicals to their most health-protective screening level in accordance with USAPHC TG 230 military exposure guidelines (MEGs). Chemicals with peak concentrations greater than these MEGs are considered potential hazards. Potential hazards are further assessed to determine if they are acute hazards. Parameters analyzed but not shown in Table 3 are not considered hazards. The prescreening is conducted as described in USAPHC TG 230, section 3.4.3. The sample results were compared to MEGs on 25 July 2013.

7 Acute Screen

Table 3 shows parameters identified as potential hazards after prescreening. However, according to USAPHC TG 230, section 3.4.5, sampling data for soil is not evaluated in an acute risk assessment.

Table 3. Results of Prescreen

Parameter	Peak Concentration ($\mu g/m^3$)	1-year Negligible MEG ($\mu g/m^3$)	Result
Actinium-228	1.3	none	Exclude as acute hazard
Bismuth-214	0.7	none	Exclude as acute hazard

Legend: $\mu g/m^3$ = micrograms per cubic meter

8 Conclusion

None of the chemicals detected in the sample were identified as potential hazards because the concentrations were not greater than USAPHC TG 230 MEGs.

9 Limitations

9.1 Field Data Quality

Field data provided with the samples were adequate; however, there were minor discrepancies between the sample times recorded on the field data sheets and the sample times written on the sample jars.

9.2 Sample Receipt at USAPHC Laboratory

The samples were received at the USAPHC at a temperature of 26 degrees Celsius. The samples were packaged correctly.

9.3 Laboratory Data Quality

No laboratory data quality issues associated with this sample set were identified.

9.4 Risk Assessment

Military exposure guidelines have not been developed for several chemicals detected in the samples primarily due to a lack of accepted health information data for these chemicals. The U.S. Environmental Protection Agency or other health organizations have not published nor recommended health-impacting exposure thresholds.

10 Recommendations

Maintain communication with USAPHC, AIPH points of contact (POCs) and continue standard surveillance of soil exposures in accordance with defined Occupational and Environmental Health Site Assessment (OEHSA) exposure pathways and sampling plans for your location.

An OEHSA was completed for Sharana, Afghanistan on 18 June 2013. Update the OEHSA annually or as the exposure scenario changes.

11 Points of Contact

The USAPHC, AIPH POCs for this assessment are Ms. (b) (6) and Ms. (b) (6). Ms. (b) (6) may be contacted at e-mail (b) (6) and Ms. (b) (6) may be contacted at e-mail (b) (6), or DSN (b) (6) or commercial (b) (6).

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Appendix A

References

Department of Defense. 2004. Department of Defense Directive 6490.02E, *Comprehensive Health Surveillance*. http://www.dtic.mil/whs/directives/corres/pdf/649002Ep.pdf

Department of Defense. 2006. Department of Defense Instruction 6490.03, *Deployment Health*. http://www.dtic.mil/whs/directives/corres/pdf/649003p.pdf

Department of the Army. 2006. Field Manual 5-19, *Composite Risk Management*. https://rdl.train.army.mil/soldierPortal/atia/adlsc/view/public/23137-1/FM/5-19/TOC.HTM

U.S. Army Public Health Command. 2010. Technical Guide 230, *Chemical Exposure Guidelines for Deployed Military Personnel*. http://phc.amedd.army.mil/PHC%20Resource%20Library/TG230.pdf

Appendix B

Summary of Detected Parameters

Parameter	Units	Concentration		Samples (Valid)		Negligible 1-year MEGs	
		Peak	Average	#	# > LOQ	# > MEG	Value
Actinium-228	pCi/g	1.3	1.09	3	3		none
Barium	mg/kg	54	42.333	3	3	0	14801
Bismuth-214	pCi/g	0.7	0.6	3	3		none
Chromium	mg/kg	40	37.333	3	3	0	297840
Nickel	mg/kg	54	49.667	3	3	0	4242.4
Strontium	mg/kg	97	89	3	3	0	424240

Legend:
none = Military exposure guidelines have not been developed for several parameters detected in the sample(s) generally because they are not chemicals or due to a lack of accepted health information data. The U.S. Environmental Protection Agency or other health organizations have not published nor recommended health-impacting exposure thresholds for those chemicals without MEGs.
mg/kg = milligrams per kilogram
pCi/g = picocuries per gram
MEG = military exposure guideline
LOQ = limit of quantitation