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US ARMY INSTITUTE OF PUBLIC HEALTH
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MCHB-IP-RDE

19 OCT 2012

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, Airborne Volatile Organic Compounds, Shindand, Afghanistan, 1 July 2012, U_AFG_SHINDAND_IP_A17_20120701

1. The enclosed report details the assessment of two volatile organic compound air samples collected by 792d Medical Detachment personnel, Shindand, Afghanistan, 1 July 2012.

2. None of the chemicals detected in the samples were identified as acute hazards.

FOR THE DIRECTOR:

(b) (6)

Encl

Portfolio Director, Health Risk Management

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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_SHINDAND_IP_A17_20120701
Health Risk Management Portfolio

Airborne Volatile Organic Compounds, Shindand, Afghanistan

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

Preventive Medicine Surveys: 40-5f1

ACKNOWLEDGEMENTS

Deployment Occupational and Environmental Health Surveillance Sample Report Airborne Volatile Organic Compounds Shindand, Afghanistan 1 July 2012 U_AFG_SHINDAND_IP_A17_20120701

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 792d Medical Detachment personnel on 1 July 2012 at Shindand, 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. It identifies whether or not there is a potential for chronic health concerns which may require additional characterization. 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. Therefore, this report 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

These deployment air samples were analyzed at the USAPHC, AIPH laboratory for a standard set of volatile organic compounds (VOCs). 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.

Table 1. Sample Identification Information

DOEHRS Sample ID	Sample ID Reported on Field Data Sheet	Sample Site	Date and Time Sample Collected	Sampling Duration	Sample Invalid (Yes/No) Reason for Invalid Sample
000077B5	AFG_SHIND_20120702_DVS01	Burn Pit Road	2012/07/02 1237	480.0 minutes	No
000077BM	AFG_SHIND_20120702_DVS02	Burn Pit Road	2012/07/02 1237	480.0 minutes	No

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 worksheet 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?	Sampling of VOCs in the ambient air pathway as described in the Occupational and Environmental Health Site Assessment (OEHSA).
What population is exposed and how?	All base camp personnel breathe the ambient air. However, it is assumed that personnel spend part of each day indoors.
What is the timeframe under consideration?	Although personnel will be deployed to this location for approximately 1 year, only the day sampled is being assessed.
Where was the sample/sample set collected?	The samples were collected along the fence line of the road adjacent to the old burn pit.
What is known about location, activity, setting and potential sources of contamination that may affect exposure?	Mixed garbage, including aerosol cans, plastic and small quantities of hazmat materials are burned daily at the burn pit.

6 Prescreen

Table 3 shows whether parameters are identified as potential hazards because their concentrations are greater than their most health-protective screening level USAPHC TG 230 military exposure guidelines (MEGs). Potential hazards are further assessed to determine if they are acute hazards. Parameters analyzed but not shown in Table 2 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 7 August 2012.

Table 3. Results of Prescreen

Parameter	Concentration ($\mu g/m^3$)	1-year Negligible MEG ($\mu g/m^3$)	Result
1,2,4-Trimethylbenzene	4.506	47.945	Exclude as potential hazard
1,2-Dichloroethane	10.823	184.4	Exclude as potential hazard
1,3,5-Trimethylbenzene	2.1645	6.8493	Exclude as potential hazard
Benzene	80.519	54.795	Retain as potential hazard
Chlorobenzene	3.355	342.47	Exclude as potential hazard
Cyclopentane	0.8658	589380	Exclude as potential hazard
Ethylbenzene	54.113	2081.7	Exclude as potential hazard
Hexane	15.576	1369.9	Exclude as potential hazard
Isopropylbenzene	8.1169	2739.7	Exclude as potential hazard
m,p-Xylene	15.152	273.97	Exclude as potential hazard
o-Xylene	6.6756	273.97	Exclude as potential hazard
Styrene	129	583.58	Exclude as potential hazard
Toluene	91.991	3424.7	Exclude as potential hazard

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

7 Acute Screen

Table 4 shows whether parameters identified as potential hazards after prescreening are considered acute hazards because their concentrations are greater than their acute screening MEGs. Acute hazards are further assessed to estimate the tactical risk from exposure to these parameters in the ambient air. The acute screening is conducted as described in USAPHC (Prov) TG 230, section 3.4.5.1.

Table 4. Results of Acute Screen

Parameter	Concentration ($\mu g/m^3$)	Screening MEG ($\mu g/m^3$)	Result
Benzene	80.519	14-day Negligible MEG: 638.94	Exclude as acute hazard

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

8 Conclusion

None of the chemicals detected in the samples were identified as acute hazards because their concentrations were not greater than their acute screening level MEGs.

9 Limitations

9.1 Field Data Quality

Field data provided with the samples were adequate.

9.2 Sample Receipt at USAPHC Laboratory

The sample set was 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.

10 Recommendations

Maintain communication with USAPHC, AIPH points of contact (POCs) and continue standard surveillance of airborne VOCs in accordance with defined Occupational and Environmental Health Site Assessment (OEHSA) Exposure Pathways and sampling plans for your location.

An OEHSA was completed for Shindand, Afghanistan on 15 October 2011. Update the OEHSA annually or as the exposure scenario changes.

11 Points of Contact

The USAPHC, AIPH POCs for this assessment are Mr. (b) (6) and Mr. (b) (6). Mr. (b) (6) may be contacted at e-mail (b) (6) and Mr. (b) 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 (Provisional). 2010. Technical Guide 230, *Chemical Exposure Guidelines for Deployed Military Personnel*. http://phc.amedd.army.mil/PHC%20Resource%20Library/TG230.pdf