DEPARTMENT OF THE ARMY
US ARMY PUBLIC HEALTH COMMAND (PROVISIONAL)
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND, MD 21010-5403

12 JAN 2010

MCHB-TS-RDE

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

SUBJECT: Analytical Results, Burn Pit Ash Characterization, Lion, Afghanistan, 29 September 2009, U_AFG_LION_CM_ASH_20090929

1. The enclosed report details the analytical results for one burn pit ash sample collected by 255th Medical Detachment-Preventive Medicine personnel at Lion, Afghanistan, 29 September 2009.

2. According to U.S. regulations, the ash sample did not exhibit hazardous waste toxicity characteristics. Assuming that the ash exhibits none of the other characteristics of hazardous waste (such as, corrosivity, reactivity, or ignitability), the ash should be considered nonhazardous solid waste under U.S. regulations. The ash should continue to be analyzed on a quarterly basis for 1 year to establish a baseline for this burn pit. Annual samples should be taken thereafter to ensure continued proper characterization.

FOR THE COMMANDER:

(b) (6)
(b) (6)
Director, Health Risk Management

Encl

CF: (w/encl)
255th MED DET (Commander/CPT (b)
255th MED DET (SPC (b) (6)
CJTF-82 (Command Surgeon Office/CPT (b) (6)
ARCENT (Command Surgeon Office/LTC (b) (6)
CSTC-A (Command Surgeon Office/Maj (b) (6)
ARCENT (Force Health Protection Officer/LTC (b) (6)
30th MEDCOM (Environmental Science Officer/LTC (b) (6)
CFLCC/USA 3RD MDSC (MAJ (b) (6)
USAPHC-EUR (MCHB-AE-EE/CPT (b) (6)

# U.S. Army Public Health Command (Provisional)

USAPHC

ANALYTICAL RESULTS
INCINERATION ASH CHARACTERIZATION
LION, AFGHANISTAN
29 SEPTEMBER 2009
U_AFG_LION_CM_ASH_20090929



Preventive Medicine Survey: 40-5f1

ANALYTICAL RESULTS
INCINERATION ASH CHARACTERIZATION
LION, AFGHANISTAN
29 SEPTEMBER 2009
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1. REFERENCES.

a. Title 40, Code of Federal Regulations Part 261, Identification and Listing of Hazardous Waste.

b. U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) Technical Guide (TG) 230, Chemical Exposure Guidelines for Deployed Military Personnel, Version 1.3, May 2003 with the January 2004 addendum.

c. Environmental Protection Agency Manual SW-846, Test Methods for Evaluating Solid Waste - Laboratory Manual, Physical/Chemical Methods.

2. PURPOSE AND SCOPE. This assessment documents the analytical results for one ash sample collected from Lion, Afghanistan, 29 September 2009. Although the analytical results for the sample were assessed to determine whether the ash is considered hazardous waste according to U.S. regulations, an occupational and environmental health (OEH) risk estimate was not derived for the sample because it was assumed that there is no personnel exposure to the material as sampled (see background, paragraph 3). The U.S. criteria were used because there are no local regulations on the identification and management of hazardous waste.

3. BACKGROUND AND EXPOSURE ASSUMPTIONS. The ash sample was taken from a burn pit located approximately 10 feet outside the forward operating base (FOB). Wind passes through the valley and carries ash/smoke across the FOB. This sample was collected and analyzed using Toxicity Characteristic Leaching Procedure (TCLP) methods. Based on the burn pit process, it is assumed that the ash will not exhibit the hazardous characteristics of corrosivity, reactivity, or ignitability. The field data sheet indicates that all personnel are at Lion, Afghanistan for a deployment duration greater than 1 year.

4. ANALYTICAL RESULTS. The ash sample was analyzed by the U.S. Army Public Health Command (Provisional) (USAPHC(Prov)) laboratory for semivolatile organic compounds (SVOCs), herbicides, pesticides/polychlorinated biphenyls (PCBs), and metals using the TCLP method. A sampling summary is provided in Appendix A and the detailed laboratory results are provided in Appendix B.

5. CONCLUSION. No SVOCs, herbicides, pesticides, PCBs or metals using TCLP were detected at concentrations greater than U.S. regulatory guidelines for hazardous

waste. Assuming that the ash exhibits none of the other characteristics of hazardous waste (such as, corrosivity, reactivity, or ignitability), the ash should be considered nonhazardous solid waste under U.S. regulations. Since the previous sampling events found the ash to be nonhazardous and non PCB waste, the ash should be analyzed on an annual basis to ensure continued proper characterization and disposal.

6. RECOMMENDATIONS AND NOTES.

a. Recommendations.

(1) Manage the waste ash as nonhazardous solid waste provided that only medical waste is being disposed of in the burn pit and the burn pit is being operating in accordance with applicable standards.

(2) Collect samples of the ash annually. Submit them to USAPHC for analysis for the TCLP parameters and PCB content. If the inputs to this burn pit change appreciably, a new baseline will need to be established through quarterly sampling.

b. Notes.

(1) This analytical report is specific to the nonexposure scenario listed in Background and Exposure Assumptions, paragraph 3. If the scenario changes and personnel are exposed to the ash, an OEH risk estimate will need to be prepared to match the new exposure scenario and resampling may need to occur.

(2) As part of a Comprehensive Military Medical Surveillance Program, required by Department of Defense Directive (DoDD) 6490.02E and Department of Defense Instruction (DoDI) 6490.03, this report has been submitted to the Occupational and Environmental Health Surveillance-Data Portal (OEHS-DP). You can view this and other archived deployment occupational and environmental health surveillance (DOEHS) data at https://doehsportal.apgea.army.mil/doehrs-oehs/. If you have additional DOEHS data for this location it can also be submitted via this Web site.

Analytical Results, Burn Pit Ash Characterization, Lion, Afghanistan, 29 Sep 09, U_AFG_LION_CM_ASH_20090929

7. POINTS OF CONTACT. The USAPHC points of contact for this assessment are Mr. (b) (6) and Mr. (b) (6). Mr. (b) (6) may be contacted at e-mail (b) (6); Mr. (b) (6) may be contacted at e-mail (b) (6), or DSN (b) (6) or commercial (b) (6).

(b) (6)
(b) (6)
Environmental Scientist
Deployment Environmental Surveillance Program

Approved by:

(b) (6)
(b) (6), (b) (9)
MAJ, MS
Program Manager
Deployment Environmental Surveillance

# APPENDIX A

## INFORMATION SUMMARY
## BURN PIT ASH SAMPLE
## LION, AFGHANISTAN
## 29 SEPTEMBER 2009

| DOHERS Sample ID | Field/Local Sample ID | Site | Start Date/Time | Collection Type |
|---|---|---|---|---|
| 00001ACH | AFG LION 01A 09272 | Burn pit | 2009/09/29 1140 | Soil-discrete |

LEGEND:
DOEHRS Sample ID = Deployment Occupational and Environmental Health Readiness System Sample Identification Number

Analytical Results, Burn Pit Ash Characterization, Lion, Afghanistan, 29 Sep 09, U_AFG_LION_CM_ASH_20090929

# APPENDIX B

## ANALYTICAL RESULTS SUMMARY
## BURN PIT ASH SAMPLE
## LION, AFGHANISTAN
## 29 SEPTEMBER 2009

| | | | |
|---|---|---|---|
| | | DOEHRS Sample ID | 00001ACH |
| | | Field/Local Sample ID | AFG LION 01A 09272 |
| | | Site | Burn Pit |
| | | Start Date/Time | 2009/09/29 1140 |
| Parameter | Class | Units | Concentration[1,2] |
| 1,4-Dichlorobenzene | VOC | µg/m$^3$ | < 20000. |
| 2,4,5-TP {Silvex} | Herbicides | µg/m$^3$ | < 100000 |
| 2,4,5-Trichlorophenol | SVOC | µg/m$^3$ | < 800000 |
| 2,4,6-Trichlorophenol | SVOC | µg/m$^3$ | < 40000. |
| 2,4-D | Herbicides | µg/m$^3$ | < 1000000 |
| 2,4-Dinitrotoluene | SVOC | µg/m$^3$ | < 4000.0 |
| Aroclor 1016 | PCB | mg/kg | < 0.2 |
| Aroclor 1221 | PCB | mg/kg | < 0.2 |
| Aroclor 1232 | PCB | mg/kg | < 0.2 |
| Aroclor 1242 | PCB | mg/kg | < 0.2 |
| Aroclor 1248 | PCB | mg/kg | < 0.2 |
| Aroclor 1254 | PCB | mg/kg | < 0.2 |
| Aroclor 1260 | PCB | mg/kg | < 0.2 |
| Arsenic | Metals | µg/m$^3$ | < 200000 |
| Barium | Metals | µg/m$^3$ | < 5000000 |
| Cadmium | Metals | µg/m$^3$ | < 100000 |
| Chlordane | Insecticides | µg/m$^3$ | < 3000.0 |
| Chromium | Metals | µg/m$^3$ | < 10000. |
| Cresol | | µg/m$^3$ | 29000 |
| Endrin | Insecticides | µg/m$^3$ | < 2000.0 |
| gamma-HCH {gamma-BHC, Lindane} | Insecticides | µg/m$^3$ | < 4000.0 |
| Heptachlor | Insecticides | µg/m$^3$ | < 100.0 |
| Heptachlor epoxide | Insecticides | µg/m$^3$ | < 100.0 |

Analytical Results, Burn Pit Ash Characterization, Lion, Afghanistan, 29 Sep 09, U_AFG_LION_CM_ASH_20090929

| | | | |
|---|---|---|---|
| | | DOEHRS Sample ID | 00001ACH |
| | | Field/Local Sample ID | AFG LION 01A 09272 |
| | | Site | Burn Pit |
| | | Start Date/Time | 2009/09/29 1140 |
| Parameter | Class | Units | Concentration[1,2] |
| Hexachlorobenzene | SVOC | µg/m$^3$ | < 4000.0 |
| Hexachlorobutadiene | VOC | µg/m$^3$ | < 10000. |
| Hexachloroethane | SVOC | µg/m$^3$ | < 40000. |
| Lead | Metals | µg/m$^3$ | < 400000 |
| Mercury | Metals | µg/m$^3$ | < 2000.0 |
| Methoxychlor | Insecticides | µg/m$^3$ | < 10000. |
| Nitrobenzene | SVOC | µg/m$^3$ | < 40000. |
| PCB-209 | | mg/kg | 0.0727 |
| Pentachlorophenol | SVOC | µg/m$^3$ | < 200000 |
| Pyridine | SVOC | µg/m$^3$ | < 20000. |
| Selenium | Metals | µg/m$^3$ | < 400000 |
| Silver | Metals | µg/m$^3$ | < 40000. |
| Tetrachloro-m-xylene | | mg/kg | 0.0232 |
| Toxaphene | Insecticides | µg/m$^3$ | < 5000.0 |
| Yttrium | | µg/m$^3$ | 0 |

[1] < X.XX = Below laboratory reporting limit (X.XX)
[2]Laboratory reporting limit is parameter and sample specific

LEGEND:
DOEHRS Sample ID = Deployment Occupational and Environmental Health Readiness System Sample Identification Number
SVOC = semivolatile organic compound
VOC = volatile organic compound
PCB = polychlorinated biphenyl
mg/kg = milligrams per kilogram
µg/m$^3$ = macrograms per meter cubed