



DEPARTMENT OF THE ARMY
US ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE
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MCHB-TS-RDE

26 OCT 2007

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

SUBJECT: Ash Sample Characterization, Bagram, Afghanistan, 14 September 2007,
U_AFG_BAGRAM_CM_ASH_20070914

1. The enclosed report details the analytical results for one medical waste incinerator ash sample and one landfill burn box ash sample collected by 224th Medical Detachment–Preventive Medicine personnel from Bagram, Afghanistan, 14 September 2007.
2. According to U.S. regulations, the ash samples do not exhibit the hazardous waste toxicity characteristic. Assuming that the ash exhibits none of the other characteristics of hazardous waste (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 one year to establish a baseline for this incinerator. Annual samples should be taken thereafter to ensure continued proper characterization.

FOR THE COMMANDER:

(b) (6)

Encl

Director, Health Risk Management

CF: (w/encl)

224th Medical Detachment/MAJ (b) (6)

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USACHPPM-EUR (MCHB-AE-EE/Mr. (b) (6))

U.S. Army Center for Health Promotion and Preventive Medicine



ASH SAMPLE CHARACTERIZATION
BAGRAM, AFGHANISTAN
14 SEPTEMBER 2007
U_AFG_BAGRAM_CM_ASH_20070914

CHPPM FORM 433-E (MCHB-CS-IPD), OCT 03

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ASH SAMPLE CHARACTERIZATION
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1. REFERENCES.

a. 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.

b. U.S. Environmental Protection Agency (USEPA) Manual SW-846, Test Methods for Evaluating Solid Waste – Laboratory Manual, Physical/Chemical Methods.

c. Title 40, Code of Federal Regulations (CFR) Part 261, Identification and Listing of Hazardous Waste.

d. Title 40, CFR, Part 761, Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce and Use Prohibitions.

2. PURPOSE AND SCOPE. This assessment documents the analytical results for two ash samples collected from Bagram, Afghanistan, 14 September 2007. Although the analytical results for the samples were assessed to determine whether the ash is considered hazardous waste or PCB waste according to U.S. regulations, an occupational and environmental health (OEH) risk estimate was not derived for these samples because it was assumed that there is no personnel exposure to the materials as sampled (see background below). The U.S. criteria were used because there are no local regulations on the identification and management of hazardous waste or PCB waste.

3. BACKGROUND AND EXPOSURE ASSUMPTIONS. Two discrete samples were collected and submitted for toxicity characterization. An ash sample was collected from the medical waste incinerator located in the Hazardous Materials (HAZMAT) yard. Access to this area is limited to HAZMAT personnel. A landfill burn box ash sample was also collected. The burn box is used only for burning of regular municipal trash generated on-site. It is also a restricted area and landfill workers have minimal exposure to the ash. Based on the incineration processes, it is assumed that the ash will not exhibit the hazardous characteristics of corrosivity, reactivity, or ignitability. It is assumed that U.S. personnel have very limited or no exposure to the residual ash and, therefore, an operational risk assessment was not performed for either ash sample.

4. ANALYTICAL RESULTS.

a. General. The ash samples were submitted to the USACHPPM–Headquarters Laboratory for analysis. The samples collected were analyzed using the Toxic Characteristic Leaching Procedure (TCLP) for metals, pesticides, herbicides, and semivolatile organic compounds. They

were separately analyzed for PCBs. A sampling summary is provided in Appendix A and the detailed laboratory results are provided in Appendix B.

b. Characterization. None of the compounds in the analyses were detected at levels above their TCLP or PCB disposal regulatory limits. Therefore, the ash samples should be considered nonhazardous and non-PCB waste.

5. **CONCLUSION**. According to U.S. regulations, the ash samples do not exhibit the hazardous waste toxicity characteristic and would not be considered to be PCB waste. Assuming that the ash exhibits none of the other characteristics of hazardous waste (corrosivity, reactivity, or ignitability), the ash should be considered nonhazardous, non-PCB waste under U.S. regulations. The ash should continue to be analyzed on a quarterly basis for one year to establish a baseline for this incinerator. Annual samples should be taken thereafter to ensure continued proper characterization.

6. RECOMMENDATIONS AND NOTE.

a. Recommendations.

(1) Manage the waste ash as solid waste provided that the content of the waste stream to the RMW incinerator does not change and the incinerator is being operating according to applicable standards.

(2) Manage the waste ash from the burn box as solid waste provided that only regular municipal trash is burned.

(3) Collect quarterly samples of the ash from both sources and submit them to USACHPPM for analysis to establish a baseline. Samples will be analyzed for metals, pesticides, herbicides, and SVOCs using TCLP methods to confirm that the ash is not hazardous waste. The samples will also be analyzed for total PCB content to confirm that they would not be considered PCB waste under U.S. regulations. If the samples remain non-hazardous and non-PCB containing for 1 year, the sampling frequency can be reduced to annual and the analytical suite can be reduced to just TCLP metals as long as the materials being incinerated do not change.

b. Note. This analytical report is specific to the nonexposure scenario listed above. 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.

Ash Sample Characterization, Bagram, Afghanistan, 14 Sep 07,
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7. POINTS OF CONTACT. The USACHPPM 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); and Mr. (b) (6) may be contacted at e-mail (b) (6) DSN (b) (6) or commercial (b) (6).

(b) (6)

Environmental Scientist
Deployment Environmental Surveillance
Program

Approved by:

(b) (6)

Acting Program Manager
Deployment Environmental Surveillance

APPENDIX A
SAMPLING SUMMARY

Table A-1. Summary of Two Ash Samples Collected from Bagram, Afghanistan, 14 September 2007

Field Identification Number	Location	Collection Date	Collection Time	Collection Type	Notes
AFGbagram01A07257	Burn Box	14-Sep-07	10:41	Discrete	Sample taken from landfill burn box. Restricted area. Only landfill workers allowed access. Only regular trash.
AFGbagram02A07257	Medical Waste Incinerator	14-Sep-07	11:25	Discrete	Sample taken from HAZMAT yard. Regulated medical waste only. Only HAZMAT personnel are authorized access.

APPENDIX B

DETAILED ANALYTICAL RESULTS

Table B-1. Analytical Sample Results for Two Ash Samples Collected from Bagram, Afghanistan, 14 September 2007

Parameter	Toxicity Characteristic Regulatory Limit (mg/L)	Concentration (mg/L)	
		AFGbagram01A07257	AFGbagram02A07257
1,4-Dichlorobenzene	7.5	<0.02	<0.02
2,4,5-TP {Silvex}	1.0	<0.001	<0.001
2,4,5-Trichlorophenol	4.00	<0.02	<0.02
2,4,6-Trichlorophenol	2.0	<0.02	<0.02
2,4-D	1.0	<0.01	<0.01
2,4-Dinitrotoluene	0.13	<0.02	<0.02
2-Methylphenol {o-Cresol}	200	<0.02	<0.02
4-Methylphenol {p-Cresol}	200	<0.02	<0.02
Arsenic	5.0	<1	<1
Barium	100	<5	<5
Cadmium	5.0	<0.1	<0.1
Chlordane	0.03	<0.0025	<0.0025
Chromium	5.0	<0.1	<0.1
Endrin	0.02	<0.0001	<0.0001
gamma-HCH {gamma-BHC, Lindane}	0.4	<0.00005	<0.00005
Heptachlor	0.008	<0.00005	<0.00005
Heptachlor epoxide	0.008	<0.00005	<0.00005
Hexachlorobenzene	0.13	<0.02	<0.02
Hexachlorobutadiene	0.5	<0.02	<0.02
Hexachloroethane	3.0	<0.02	<0.02

Table B-1. Analytical Sample Results for Two Ash Samples Collected from Bagram, Afghanistan, 14 September 2007 (continued)

Parameter	Toxicity Characteristic Regulatory Limit (mg/L)	Concentration (mg/L)	
		AFGbagram01A07257	AFGbagram02A07257
Lead	5.0	<1	<1
Mercury	0.2	<0.01	<0.01
Methoxychlor	10.0	<0.0005	<0.0005
Nitrobenzene	2.0	<0.02	<0.02
Pentachlorophenol	100.0	<0.05	<0.05
Pyridine	5.0	<0.02	<0.02
Selenium	1.0	<1	<1
Silver	5.0	<0.2	<0.2
Toxaphene	0.5	<0.015	<0.015

Notes:

mg/L – milligrams per liter

< X.XX – Below laboratory detection limit (X.XX)

Laboratory detection limit is parameter and sample specific

Table B-2. Analytical PCB Sample Results for Two Ash Samples Collected from Bagram, Afghanistan, 14 September 2007

Parameter	PCB Regulatory Disposal Limit (mg/kg)*	Concentration (mg/kg)	
		AFGbagram01A07257	AFGbagram02A07257
Aroclor 1016	50	<0.017	<0.017
Aroclor 1221	50	<0.017	<0.017
Aroclor 1232	50	<0.017	<0.017
Aroclor 1242	50	<0.017	<0.017
Aroclor 1248	50	<0.017	<0.017
Aroclor 1254	50	<0.017	<0.017
All PCBs	50	<0.102	<0.102

Notes:

mg/kg – milligrams per kilogram

< X.XX – Below laboratory detection limit (X.XX)

Laboratory detection limit is parameter and sample specific

* The PCB Regulatory Disposal Limit is assumed to be the combined concentrations of all PCBs detected