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

MCHB-TS-RDE

09 JAN 2010

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: Deployment Occupational and Environmental Health Risk Characterization, Soil and Associated Dust Samples, Geronimo, Afghanistan, 29 September 2009, U_AFG_GERONIMO_CM_SQA_20090929

1. The enclosed report details the occupational and environmental health (OEH) risk characterization for three soil samples collected by 2d Marine Expeditionary Brigade-Army-Combat Logistics Regiment personnel at Geronimo, Afghanistan, 29 September 2009.

2. The OEH risk estimate for exposure to the soil and associated dust in the areas between the battalion aid station, outside the chow hall, and between the burn pit and hygiene site at Geronimo, Afghanistan is **low**. None of the chemical or physical parameters were detected at concentrations above their respective military exposure guidelines. Exposure to the soil and associated dust is expected to have little or no impact on unit readiness.

FOR THE COMMANDER:

Encl

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

CF: (w/encl)
MEB-A-CE (LTJG (b) (6)
MEB-A, CLR-2 (LT (b) (6)
30th MEDCOM(Liaison Officer/LTC (b) (6)
30th MEDCOM (Environmental Science Officer/LTC (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)
CFLCC/USA 3RD MDSC (MAJ (b) (6)
NMCPHC (Expeditionary Preventive Medicine/Mr. (b) (6)
USAPHC-EUR (MCHB-AE-EE/CPT (b) (6)

U.S. Army Public Health Command
(Provisional)

USAPHC

DEPLOYMENT OCCUPATIONAL AND ENVIRONMENTAL
HEALTH RISK CHARACTERIZATION
SOIL AND ASSOCIATED DUST SAMPLES
GERONIMO, AFGHANISTAN
29 SEPTEMBER 2009
U_AFG_GERONIMO_CM_SQA_20090929

Preventive Medicine Survey: 40-5f1

DEPLOYMENT OCCUPATIONAL AND ENVIRONMENTAL HEALTH RISK CHARACTERIZATION SOIL AND ASSOCIATED DUST SAMPLES GERONIMO, AFGHANISTAN 29 SEPTEMBER 2009 U_AFG_GERONIMO_CM_SQA_20090929

1. REFERENCES.

a. Department of the Army, Field Manual (FM) 5-19, Composite Risk Management, 21 August 2006.

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. USACHPPM Reference Document (RD) 230, Chemical Exposure Guidelines for Deployed Military Personnel, Version 1.3, May 2003 with January 2004 addendum.

2. PURPOSE. According to U.S. Department of Defense medical surveillance requirements, this occupational and environmental health (OEH) risk characterization documents the identification and assessment of chemical hazards that pose potential health and operational risks to deployed troops. Specifically, the samples and information provided on the associated field data sheets were used to estimate the operational health risk associated with personnel exposure to identified chemical hazards in the soil at Geronimo, Afghanistan.

3. SCOPE. This assessment addresses the analytical results for three soil samples collected from Geronimo, Afghanistan, 29 September 2009. These samples are limited in time, area, and media. Therefore, this report should not be considered a complete assessment of the overall OEH hazards to which troops may be exposed at Geronimo, Afghanistan. However, this assessment has been performed using operational risk management (ORM) doctrine FM 5-19, and the relatively conservative (protective) assumptions and methods provided in USACHPPM TG 230, to facilitate decision making that can minimize the likelihood of significant risks.

4. BACKGROUND AND EXPOSURE ASSUMPTIONS. The soil samples were collected to assess the potential for adverse health effects to personnel coming into contact with the sampled soil and associated dust at Geronimo, Afghanistan.

a. AFG_GERONI_01S_09272. This is a composite, surface soil sample collected between the battalion aid station and the chapel. The sampling area is rocky with exposed soil. The elevation of the site is 2,510 feet (ft). Personnel are expected to remain on at Geronimo, Afghanistan for less than 1 year. The degree of exposure to the soil is considered medium (that is, walking area, common area, grassy athletic fields, etc.). It is expected that all of the personnel at Geronimo, Afghanistan are exposed to the soil in this area.

b. AFG_GERONI_02S_09272. This is a composite, surface soil sample collected from outside the chow tent. The ground soil in this area has a lot of small rocks. The elevation of this site is 2,514 ft. Personnel are expected to remain on at Geronimo, Afghanistan for less than 1 year. The degree of exposure to the soil is considered medium (that is, walking area, common area, grassy athletic fields, etc.). It is expected that 50 to 75 percent of the personnel at Geronimo, Afghanistan are exposed to the soil in this area.

c. AFG_GERONI_03S_09272. This is a composite, surface soil sample collected between the burn pit and hygiene area. The elevation of this site is 2,505 ft. Personnel are expected to remain on at Geronimo, Afghanistan for less than 1 year. The degree of exposure to the soil is considered medium (that is, walking area, common area, grassy athletic fields, etc.). It is expected that all of the personnel at Geronimo, Afghanistan are exposed to the soil in this area.

5. METHOD. The U.S. Army Public Health Command (Provisional) (USAPHC (Prov)), formally USACHPPM Deployment Environmental Surveillance Program uses the USACHPPM TG 230 methodology and associated military exposure guidelines (MEGs) to assess identified hazards and estimate risk in a manner consistent with doctrinal risk management procedures and terminology. This method includes identification of the hazard(s), assessment of the hazard severity and probability, determination of a risk estimate, and associated level of confidence. As part of the hazard identification step, the long-term (1-year) MEGs are used as screening criteria to identify those hazards that are potential health threats. These 1-year MEGs represent exposure concentrations at or below which no significant health effects (including delayed or chronic disease or significant increased risk of cancer) are anticipated even after 1 year of continuous daily exposures. Short-term MEGs are used to assess one time or intermittent exposures. The underlying toxicological basis for the MEGs is addressed in the USACHPPM RD 230. Since toxicological information about potential health effects varies among different chemicals, the determination of severity of effects when MEGs are exceeded involves professional judgment. Hazards with exposure concentrations greater than MEGs are identified as potential health threats, carried through the hazard assessment process, and assigned a risk estimate consistent with ORM methodology.

Hazards that are either not detected or are present only at levels below the 1-year MEGs are not considered health threats and, therefore, are automatically assigned a low operational risk estimate.

6. HAZARD IDENTIFICATION AND ASSESSMENT.

a. Laboratory Analysis. The three soil samples were analyzed by the USAPHC (Prov) laboratory for metals, pesticides/polychlorinated biphenyls, herbicides, radionuclides, and semivolatile organic compounds. The three samples at the fuel site were analyzed for metals and radionuclides only due to heavy fuel smell. The potential high concentration of fuel in the sample could damage sensitive laboratory equipment. The sample from the main gate and the burn pit received a full laboratory analysis. An information summary for the samples is contained in Appendix A. Appendix B presents a sample results summary table for all detected parameters. Appendix C presents detailed laboratory results.

b. Risk Estimate. None of the parameters detected in the three soil samples collected were present at concentrations greater than their respective MEGs. Therefore, no potential health threats were identified, and the risk estimate is considered **low**.

7. CONCLUSION. The OEH risk estimate for exposure to the soil and associated dust in the areas between the battalion aid station, outside the chow hall, and between the burn pit and hygiene site at Geronimo, Afghanistan is **low**. Confidence in the risk estimate is considered low because it is unknown whether the samples collected are representative of the entire camp.

8. RECOMMENDATIONS AND NOTES.

a. Recommendations.

(1) Do not collect soil samples from known fuel sites unless there is a need to know specific chemical constituents because there is an exposure concern or unless directed by Command.

(2) Document and archive known fuel spill sites. Documentation should include photographs and written record of location, type and amount of product spilled, circumstances resulting in spill, approximate date of spill, exposure scenario, exposed personnel roster, and any mitigation/controls/remediation efforts.

(3) Although there is a low risk of mission impact due to exposure to soil and associated dust at Geronimo, Afghanistan the following general personal protection recommendations should be followed.

(4) Minimize skin exposure to the soil and associated dust, the uniform should be worn properly: roll sleeves down, tuck pants into boots, and tuck undershirt into pants.

(5) Ensure hand washing stations are readily available. Wash hands and face with soap and water prior to eating, drinking, or smoking.

(6) Report any symptoms to a health care provider in order to identify potential causes and implement hazard control measures.

(7) Collect additional soil samples from this site/area if there is a known change in or concern with the soil conditions.

b. Notes.

(1) This OEH risk assessment is specific to the exposure assumptions identified in this report and the sample results assessed in this report. If the assumed exposure scenario changes, provide updated information so that the risk estimate can be reassessed. If additional samples from these areas are collected, a new OEH risk assessment will be completed.

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

9. POINTS OF CONTACT. The USAPHC (Prov) 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)

Environmental Scientist
Deployment Environmental Surveillance Program

Approved by:

(b) (6)

MAJ, MS
Program Manager
Deployment Environmental Surveillance

APPENDIX A

INFORMATION SUMMARY
SOIL AND ASSOCIATED DUST SAMPLES
GERONIMO, AFGHANISTAN
29 SEPTEMBER 2009

DOEHRS Sample ID	Field/Local Sample ID	Site	Start Date/ Time	Collection Type
00001FX1	AFG_Geroni_01S_09272	Battalion Aid Station	2009/09/29 1419	Soil-Composite
00001FX2	AFG_Geroni_02S_09272	Outside chow tent	2009/09/29 1441	Soil-Composite
00001FX3	AFG_Geroni_03S_09272	Near burn pit	2009/09/29 1505	Soil-Composite

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

APPENDIX B

RESULTS SUMMARY
SOIL AND ASSOCIATED DUST SAMPLES
GERONIMO, AFGHANISTAN
29 SEPTEMBER 2009

Parameter	Units	Sample Identification			USACHPPM TG 230 Military Exposure Guideline (MEG)	
		AFG_Geroni _01S_09272	AFG_Geroni _02S_09272	AFG_Geroni _03S_09272		
		Battalion Aid Station	Outside chow tent	Near burn pit	1 year	
		Concentration			# > MEG	MEG
Barium	mg/kg	83.7	66.9	88	0	18000
Chromium	mg/kg	22.8	26.6	27.8	0	5700
Di(2-ethylhexyl)phthalate	mg/kg	6.9	< 0.33	< 0.33	0	2900
Di-n-butylphthalate	mg/kg	2.9	< 0.33	< 0.33	0	26000
Di-n-octylphthalate	mg/kg	0.41	0.34	< 0.33	0	4200
Nickel	mg/kg	22	24.6	24.6	0	5300
Strontium	mg/kg	119	135	262	0	140000

[1] Laboratory detection limit is parameter and sample specific

LEGEND:
mg/kg = milligram per kilogram

APPENDIX C

ANALYTICAL SAMPLE RESULTS
SOIL AND ASSOCIATED DUST SAMPLES
GERONIMO, AFGHANISTAN
29 SEPTEMBER 2009

		DOEHRS Sample ID	00001FX1	00001FX2	00001FX3
		Field/Local Sample ID	AFG_Geroni_01S_09272	AFG_Geroni_02S_09272	AFG_Geroni_03S_09272
		Site	Battalion Aid Station	Outside chow tent	Near burn pit
		Start Date/Time	2009/09/29 1419	2009/09/29 1441	2009/09/29 1505
Parameter	Class	Units	Concentration[1,2]		
1,2,4-Trichlorobenzene	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
1,2-Dichlorobenzene	VOC	mg/kg	< 0.33	< 0.33	< 0.33
1,3-Dichlorobenzene	VOC	mg/kg	< 0.33	< 0.33	< 0.33
1,4-Dichlorobenzene	VOC	mg/kg	< 0.33	< 0.33	< 0.33
2,4,5-T	Herbicides	mg/kg	< 0.05	< 0.05	< 0.05
2,4,5-TP {Silvex}	Herbicides	mg/kg	< 0.05	< 0.05	< 0.05
2,4,5-Trichlorophenol	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
2,4,6-Trichlorophenol	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
2,4-D	Herbicides	mg/kg	< 0.05	< 0.05	< 0.05
2,4-DB	Herbicides	mg/kg	< 0.05	< 0.05	< 0.05
2,4-Dichlorophenol	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
2,4-Dimethylphenol	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
2,4-Dinitrophenol	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
2,4-Dinitrotoluene	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
2,6-Dinitrotoluene	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
2-Chloronaphthalene	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
2-Chlorophenol	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
2-Methyl-4,6-dinitrophenol	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
2-Methylnaphthalene	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
2-Methylphenol {o-Cresol}	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
2-Nitroaniline	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
2-Nitrophenol	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
3,5-Dichlorobenzoic acid	Herbicides	mg/kg	< 0.05	< 0.05	< 0.05
3-Nitroaniline	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
4-Chloro-3-methylphenol	SVOC	mg/kg	< 0.33	< 0.33	< 0.33

Deployment OEH Risk Characterization, Soil and Associated Dust Samples, Geronimo, Afghanistan, 29 Sep 09, U_AFG_GERONIMO_CM_SQA_20090929

		DOEHRS Sample ID	00001FX1	00001FX2	00001FX3
		Field/Local Sample ID	AFG_Geroni_01S_09272	AFG_Geroni_02S_09272	AFG_Geroni_03S_09272
		Site	Battalion Aid Station	Outside chow tent	Near burn pit
		Start Date/Time	2009/09/29 1419	2009/09/29 1441	2009/09/29 1505
Parameter	Class	Units	Concentration[1,2]		
4-Chloroaniline	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
4-Methylphenol {p-Cresol}	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
4-Nitroaniline	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
4-Nitrophenol	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
Acenaphthene	PAH	mg/kg	< 0.33	< 0.33	< 0.33
Acenaphthylene	PAH	mg/kg	< 0.33	< 0.33	< 0.33
Acifluorfen	Herbicides	mg/kg	< 0.05	< 0.05	< 0.05
Actinium-228		µCi/g	0.00000099	0.000000873	0.000000989
Alachlor	Herbicides	mg/kg	< 0.2	< 0.2	< 0.2
Aldrin	Insecticides	mg/kg	< 0.05	< 0.05	< 0.0501
alpha-Chlordane	Insecticides	mg/kg	< 0.05	< 0.05	< 0.0501
alpha-HCH {alpha-BHC}	Insecticides	mg/kg	< 0.05	< 0.05	< 0.0501
Anthracene	PAH	mg/kg	< 0.33	< 0.33	< 0.33
Aroclor 1016	PCB	mg/kg	< 0.2	< 0.2	< 0.2
Aroclor 1221	PCB	mg/kg	< 0.2	< 0.2	< 0.2
Aroclor 1232	PCB	mg/kg	< 0.2	< 0.2	< 0.2
Aroclor 1242	PCB	mg/kg	< 0.2	< 0.2	< 0.2
Aroclor 1248	PCB	mg/kg	< 0.2	< 0.2	< 0.2
Aroclor 1254	PCB	mg/kg	< 0.2	< 0.2	< 0.2
Aroclor 1260	PCB	mg/kg	< 0.2	< 0.2	< 0.2
Arsenic	Metals	mg/kg	< 39.2	< 39.2	< 39.9
Aspon	Insecticides	mg/kg	< 0.1	< 0.1	< 0.1
Atrazine	Herbicides	mg/kg	< 2.0	< 2.0	< 2.0
Azinphos-ethyl	Insecticides	mg/kg	< 0.2	< 0.2	< 0.2
Azinphos-methyl	Insecticides	mg/kg	< 0.2	< 0.2	< 0.2
Barium	Metals	mg/kg	83.7	66.9	88
Benefin	Herbicides	mg/kg	< 0.1	< 0.1	< 0.1
Bentazon	Herbicides	mg/kg	< 0.05	< 0.05	< 0.05
Benz[a]anthracene	PAH	mg/kg	< 0.33	< 0.33	< 0.33
Benzo[a]pyrene	PAH	mg/kg	< 0.33	< 0.33	< 0.33
Benzo[b]fluoranthene	PAH	mg/kg	< 0.33	< 0.33	< 0.33
Benzo[g,h,i]perylene	PAH	mg/kg	< 0.33	< 0.33	< 0.33
Benzo[k]fluoranthene	PAH	mg/kg	< 0.33	< 0.33	< 0.33

Deployment OEH Risk Characterization, Soil and Associated Dust Samples, Geronimo, Afghanistan, 29 Sep 09, U_AFG_GERONIMO_CM_SQA_20090929

		DOEHRS Sample ID	00001FX1	00001FX2	00001FX3
		Field/Local Sample ID	AFG_Geroni_01S_09272	AFG_Geroni_02S_09272	AFG_Geroni_03S_09272
		Site	Battalion Aid Station	Outside chow tent	Near burn pit
		Start Date/Time	2009/09/29 1419	2009/09/29 1441	2009/09/29 1505
Parameter	Class	Units	Concentration[1,2]		
Benzyl alcohol	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
Beryllium	Metals	mg/kg	< 1.96	< 1.96	< 1.99
beta-HCH {beta-BHC}	Insecticides	mg/kg	< 0.05	< 0.05	< 0.0501
Bis(2-chloroethoxy)methane	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
Bis(2-chloroethyl)ether	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
Bis(2-chloroisopropyl) ether	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
Bismuth-214		µCi/g	0.000000548	0.000000615	0.000000691
Bolstar	Insecticides	mg/kg	< 0.2	< 0.2	< 0.2
Bromacil	Herbicides	mg/kg	< 0.4	< 0.4	< 0.401
Butylbenzylphthalate	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
Cadmium	Metals	mg/kg	< 3.92	< 3.92	< 3.99
Carbophenothion	Insecticides	mg/kg	< 0.2	< 0.2	< 0.2
Cesium-134		µCi/g	< 0.0000000863	< 0.0000000912	< 0.0000000821
Cesium-137		µCi/g	0.000000151	< 0.000000105	< 0.0000000934
Chlordane, technical	Insecticides	mg/kg	< 0.2	< 0.2	< 0.2
Chlorfenvinphos	Insecticides	mg/kg	< 0.1	< 0.1	< 0.1
Chloroneb	Fungicides	mg/kg	< 0.25	< 0.25	< 0.25
Chlorothalonil	Fungicides	mg/kg	< 0.1	< 0.1	< 0.1
Chlorpyrifos	Insecticides	mg/kg	< 0.1	< 0.1	< 0.1
Chlorpyrifos-methyl	Insecticides	mg/kg	< 0.1	< 0.1	< 0.1
Chromium	Metals	mg/kg	22.8	26.6	27.8
Chrysene	PAH	mg/kg	< 0.33	< 0.33	< 0.33
cis-Permethrin	Insecticides	mg/kg	< 0.4	< 0.4	< 0.401
Cobalt-60		µCi/g	< 0.0000000943	< 0.0000000917	< 0.0000000862
Coumaphos	Insecticides	mg/kg	< 0.2	< 0.2	< 0.2
Crotoxyphos	Insecticides	mg/kg	< 0.2	< 0.2	< 0.2
DCPA {Dacthal}	Herbicides	mg/kg	< 0.1	< 0.1	< 0.1
delta-HCH {delta-BHC}	Insecticides	mg/kg	< 0.05	< 0.05	< 0.0501
Di(2-ethylhexyl)phthalate	SVOC	mg/kg	6.9	< 0.33	< 0.33
Diazinon	Insecticides	mg/kg	< 0.1	< 0.1	< 0.1
Dibenz[a,h]anthracene	PAH	mg/kg	< 0.33	< 0.33	< 0.33
Dibenzofuran	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
Dicamba	Herbicides	mg/kg	< 0.05	< 0.05	< 0.05

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		Field/Local Sample ID	AFG_Geroni_01S_09272	AFG_Geroni_02S_09272	AFG_Geroni_03S_09272
		Site	Battalion Aid Station	Outside chow tent	Near burn pit
		Start Date/Time	2009/09/29 1419	2009/09/29 1441	2009/09/29 1505
Parameter	Class	Units	Concentration[1,2]		
Dichlofenthion	Insecticides	mg/kg	< 0.1	< 0.1	< 0.1
Dichloroprop	Herbicides	mg/kg	< 0.05	< 0.05	< 0.05
Dichlorvos	Insecticides	mg/kg	< 0.2	< 0.2	< 0.2
Dicloran	Fungicides	mg/kg	< 0.2	< 0.2	< 0.2
Dieldrin	Insecticides	mg/kg	< 0.05	< 0.05	< 0.0501
Diethylphthalate	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
Dimethoate	Insecticides	mg/kg	< 0.4	< 0.4	< 0.401
Dimethylphthalate	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
Di-n-butylphthalate	SVOC	mg/kg	2.9	< 0.33	< 0.33
Di-n-octylphthalate	SVOC	mg/kg	0.41	0.34	< 0.33
Dinoseb	Herbicides	mg/kg	< 0.05	< 0.05	< 0.05
Disulfoton	Insecticides	mg/kg	< 0.2	< 0.2	< 0.2
Endosulfan I	Insecticides	mg/kg	< 0.05	< 0.05	< 0.0501
Endosulfan II	Insecticides	mg/kg	< 0.1	< 0.1	< 0.1
Endosulfan sulfate	Insecticides	mg/kg	< 0.1	< 0.1	< 0.1
Endrin	Insecticides	mg/kg	< 0.05	< 0.05	< 0.0501
EPN	Insecticides	mg/kg	< 0.1	< 0.1	< 0.1
Ethion	Insecticides	mg/kg	< 0.1	< 0.1	< 0.1
Ethoprop	Insecticides	mg/kg	< 0.1	< 0.1	< 0.1
Etridiazole	Fungicides	mg/kg	< 0.2	< 0.2	< 0.2
Europium-152		µCi/g	< 0.000000274	< 0.000000248	< 0.000000254
Famphur	Insecticides	mg/kg	< 0.2	< 0.2	< 0.2
Fenarimol	Fungicides	mg/kg	< 0.05	< 0.05	< 0.0501
Fenitrothion	Insecticides	mg/kg	< 0.1	< 0.1	< 0.1
Fensulfothion	Insecticides	mg/kg	< 1.0	< 1.0	< 1.0
Fenthion	Insecticides	mg/kg	< 0.2	< 0.2	< 0.2
Fluchloralin	Herbicides	mg/kg	< 0.2	< 0.2	< 0.2
Fluoranthene	PAH	mg/kg	< 0.33	< 0.33	< 0.33
Fluorene	PAH	mg/kg	< 0.33	< 0.33	< 0.33
Fonofos	Insecticides	mg/kg	< 0.1	< 0.1	< 0.1
gamma-Chlordane	Insecticides	mg/kg	< 0.05	< 0.05	< 0.0501
gamma-HCH {gamma-BHC, Lindane}	Insecticides	mg/kg	< 0.05	< 0.05	< 0.0501

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		Site	Battalion Aid Station	Outside chow tent	Near burn pit
		Start Date/Time	2009/09/29 1419	2009/09/29 1441	2009/09/29 1505
Parameter	Class	Units	Concentration[1,2]		
Heptachlor	Insecticides	mg/kg	< 0.05	< 0.05	< 0.0501
Heptachlor epoxide	Insecticides	mg/kg	< 0.05	< 0.05	< 0.0501
Hexachlorobenzene	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
Hexachlorobutadiene	VOC	mg/kg	< 0.33	< 0.33	< 0.33
Hexachlorocyclopentadiene	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
Hexachloroethane	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
Indeno[1,2,3-cd]pyrene	PAH	mg/kg	< 0.33	< 0.33	< 0.33
Isazophos	Insecticides	mg/kg	< 0.1	< 0.1	< 0.1
Isofenphos	Insecticides	mg/kg	< 0.1	< 0.1	< 0.1
Isophorone	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
Lead	Metals	mg/kg	< 9.8	< 9.81	< 9.97
Leptophos	Insecticides	mg/kg	< 0.1	< 0.1	< 0.1
Malathion	Insecticides	mg/kg	< 0.1	< 0.1	< 0.1
MCPA	Herbicides	mg/kg	< 5.0	< 5.0	< 5.0
MCPP	Herbicides	mg/kg	< 5.0	< 5.0	< 5.0
Mercury	Metals	mg/kg	< 0.0118	< 0.012	< 0.0119
Methoxychlor	Insecticides	mg/kg	< 1.0	< 1.0	< 1.0
Mevinphos	Insecticides	mg/kg	< 0.4	< 0.4	< 0.401
Mirex	Insecticides	mg/kg	< 0.05	< 0.05	< 0.0501
Naphthalene	PAH	mg/kg	< 0.33	< 0.33	< 0.33
Nickel	Metals	mg/kg	22	24.6	24.6
Nitrobenzene	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
N-Nitrosodimethylamine	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
N-Nitrosodiphenylamine	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
N-Nitrosodipropylamine	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
o,p'-DDD	Insecticides	mg/kg	< 0.05	< 0.05	< 0.0501
o,p'-DDE	Insecticides	mg/kg	< 0.05	< 0.05	< 0.0501
o,p'-DDT	Insecticides	mg/kg	< 0.05	< 0.05	< 0.0501
Oxadiazon	Herbicides	mg/kg	< 0.05	< 0.05	< 0.0501
Oxychlordane	Insecticides	mg/kg	< 0.05	< 0.05	< 0.0501
p,p'-DDD	Insecticides	mg/kg	< 0.05	< 0.05	< 0.0501
p,p'-DDE	Insecticides	mg/kg	< 0.05	< 0.05	< 0.0501
p,p'-DDT	Insecticides	mg/kg	< 0.05	< 0.05	< 0.0501

Deployment OEH Risk Characterization, Soil and Associated Dust Samples, Geronimo, Afghanistan, 29 Sep 09, U_AFG_GERONIMO_CM_SQA_20090929

		DOEHRS Sample ID	00001FX1	00001FX2	00001FX3
		Field/Local Sample ID	AFG_Geroni_01S_09272	AFG_Geroni_02S_09272	AFG_Geroni_03S_09272
		Site	Battalion Aid Station	Outside chow tent	Near burn pit
		Start Date/Time	2009/09/29 1419	2009/09/29 1441	2009/09/29 1505
Parameter	Class	Units	Concentration[1,2]		
Parathion-ethyl {Parathion}	Insecticides	mg/kg	< 0.1	< 0.1	< 0.1
Parathion-methyl	Insecticides	mg/kg	< 0.1	< 0.1	< 0.1
p-Bromophenyl phenyl ether	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
p-Chlorophenyl phenyl ether	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
Pentachloronitrobenzene	Fungicides	mg/kg	< 0.1	< 0.1	< 0.1
Pentachlorophenol	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
Permethrin, trans-	Insecticides	mg/kg	< 0.4	< 0.4	< 0.401
Phenanthrene	PAH	mg/kg	< 0.33	< 0.33	< 0.33
Phenol	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
Phorate	Insecticides	mg/kg	< 0.4	< 0.4	< 0.401
Phosmet	Insecticides	mg/kg	< 0.2	< 0.2	< 0.2
Picloram	Herbicides	mg/kg	< 0.05	< 0.05	< 0.05
Procymidone	Fungicides	mg/kg	< 0.2	< 0.2	< 0.2
Pronamide	Herbicides	mg/kg	< 0.4	< 0.4	< 0.401
Propazine	Herbicides	mg/kg	< 2.0	< 2.0	< 2.0
Propetamphos	Insecticides	mg/kg	< 0.1	< 0.1	< 0.1
Protactinium-234M		µCi/g	< 0.00001160	< 0.00000991	< 0.00000899
Protothiophos	Insecticides	mg/kg	< 0.2	< 0.2	< 0.2
Pyrene	SVOC	mg/kg	< 0.33	< 0.33	< 0.33
Ronnel	Insecticides	mg/kg	< 0.1	< 0.1	< 0.1
Selenium	Metals	mg/kg	< 9.8	< 9.81	< 9.97
Silver	Metals	mg/kg	< 1.96	< 1.96	< 1.99
Simazine	Herbicides	mg/kg	< 2.0	< 2.0	< 2.0
Strontium	Metals	mg/kg	119	135	262
Sulfotep	Insecticides	mg/kg	< 0.1	< 0.1	< 0.1
Terbufos	Insecticides	mg/kg	< 0.1	< 0.1	< 0.1
Tetrachlorvinphos	Insecticides	mg/kg	< 0.2	< 0.2	< 0.2
Thorium-234		µCi/g	< 0.00000124	< 0.00000133	< 0.000001360
Total solids	Characteristic	%	100	99.9	99.9
Toxaphene	Insecticides	mg/kg	< 1.0	< 1.0	< 1.0
trans-Nonachlor	Insecticides	mg/kg	< 0.05	< 0.05	< 0.0501
Trichloronate	Insecticides	mg/kg	< 0.2	< 0.2	< 0.2

Deployment OEH Risk Characterization, Soil and Associated Dust Samples, Geronimo, Afghanistan, 29 Sep 09, U_AFG_GERONIMO_CM_SQA_20090929

		DOEHRS Sample ID	00001FX1	00001FX2	00001FX3
		Field/Local Sample ID	AFG_Geroni_01S_09272	AFG_Geroni_02S_09272	AFG_Geroni_03S_09272
		Site	Battalion Aid Station	Outside chow tent	Near burn pit
		Start Date/Time	2009/09/29 1419	2009/09/29 1441	2009/09/29 1505
Parameter	Class	Units	Concentration[1,2]		
Trifluralin	Herbicides	mg/kg	< 0.1	< 0.1	< 0.1
Uranium-235		µCi/g	< 0.000000593	< 0.000000558	< 0.000000585
Vinclozolin	Fungicides	mg/kg	< 0.2	< 0.2	< 0.2
Zinophos	Insecticides	mg/kg	< 0.1	< 0.1	< 0.1

[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
mg/kg = milligrams per kilogram
µCi/g = micro curies per gram
VOC = Volatile Organic Chemical
SVOC = Semivolatile organic chemical
PAH = Polycyclic aromatic hydrocarbons
PCB = Polychlorinated biphenyls
EPN = O-ethyl-O-4-(nitrophenyl)phenyl phosphonothioate
MCPA = 2-methyl-4-chlorophenoxyacetic acid
MCPP = me*ta*-chlorophenylpiperazine