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, Delaram, Afghanistan, 19 October 2009, U_AFG_DELARAM_CM_SQA_20091019

1. The enclosed report details the occupational and environmental health (OEH) risk characterization for three surface composite soil samples collected by Marine Expeditionary Brigade-A, Command Element personnel at Delaram, Afghanistan, 19 October 2009. Two additional samples were collected from the fuel site and submitted for analysis but gross fuel contamination prevented laboratory analysis of the samples.

2. The OEH risk estimate for exposure to the soil and associated dust from the fuel site, burn pit, and water treatment plant areas at Delaram, 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:

(b) (6)

Director, Health Risk Management

Encl

CF: (w/encl)
MEB-A-CE (LT (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)
(CONT)

MCHB-TS-RDE
SUBJECT: Deployment Occupational and Environmental Health Risk Characterization, Soil and Associated Dust Samples, Delaram, Afghanistan, 19 October 2009, U_AFG_DELARAM_CM_SQA_20091019

CF: (w/encl) (CONT)
CFLCC/USA 3RD MDSC (MAJ [redacted])
NMCPHC (Expeditionary Preventive Medicine/Mr. [redacted])
USAPHC-EUR (MCHB-AE-EE/CPT [redacted])

U.S. Army Public Health Command
(Provisional)

USAPHC

DEPLOYMENT OCCUPATIONAL AND ENVIRONMENTAL
HEALTH RISK CHARACTERIZATION
SOIL AND ASSOCIATED DUST SAMPLES
DELARAM, AFGHANISTAN
19 OCTOBER 2009
U_AFG_DELARAM_CM_SQA_20091019

Preventive Medicine Survey: 40-5f1

PHC FORM 433-E (MCHB-CS-IP), NOV 09

DEPLOYMENT OCCUPATIONAL AND ENVIRONMENTAL HEALTH RISK CHARACTERIZATION SOIL AND ASSOCIATED DUST SAMPLES DELARAM, AFGHANISTAN 19 OCTOBER 2009 U_AFG_DELARAM_CM_SQA_20091019

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 Delaram, Afghanistan.

3. SCOPE. This assessment addresses the analytical results for three surface composite soil samples collected from Delaram, Afghanistan, 19 October 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 this location. 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 TG 230, to facilitate decision making that can minimize the likelihood of significant risks.

4. BACKGROUND AND EXPOSURE ASSUMPTIONS. Three surface composite 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 Delaram, Afghanistan.

a. Sample AFGDELARA0929201S. Sample was collected near the fuel site. The degree of exposure to the soil is considered medium (exposures typical of walking areas, common areas, grassy athletic fields, etc.) and it is expected that 25-50 percent of the personnel stationed at Delaram, Afghanistan are exposed to the soil in this area for exposure durations less than 1 year.

b. Sample AFGDELARA0929201S. Sample was collected near the burn pit. The degree of exposure to the soil is considered high (exposures typical of fighting, area, physical training area, excavating, filling sandbags, etc.) and it is expected that 25-50 percent of the personnel stationed at Delaram, Afghanistan are exposed to the soil in this area for exposure durations less than 1 year.

c. Sample AFGDELARA0929201S. Sample was collected near the water treatment plant. The degree of exposure to the soil is considered medium (exposures typical of walking areas, common areas, grassy athletic fields, etc.) and it is expected that 10-25 percent of the personnel stationed at Delaram, Afghanistan are exposed to the soil in this area for exposure durations less than 1 year.

d. Other Samples. Two additional samples were collected from the fuel site. These samples were not analyzed because the gross fuel contamination in the samples could damage sensitive laboratory equipment.

5. METHOD. The US Army Public Health Command (Provisional) (USAPHC (Prov)) uses the 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, and 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 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 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 (PCBs), herbicides, radionuclides, and semivolatile organic compounds (SVOCs). 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 surface composite 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 from areas near the fuel sight, burn pit, and water treatment plant at Delaram, Afghanistan is **low**. Confidence in the risk estimate is considered medium. Exposure to the soil and associated dust is expected to have little or no impact on unit readiness.

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 Delaram, Afghanistan, the following general personal protection recommendations should be followed.

(a) 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.

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

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

(d) 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 above 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 (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 OEHS data at https://doehsportal.apgea.army.mil/doehrs-oehs/. If you have additional OEHS data for this location it can also be submitted via this Web site.

Deployment OEH Risk Characterization, Soil and Associated Dust Samples, Delaram, Afghanistan, 19 Oct 09, U_AFG_DELARAM_CM_SQA_20091019

9. POINTS OF CONTACT. The USAPHC (Prov) points of contact for this assessment are Mr. (b) (6) and Mr. (b) (6). Ms. (b) (6) may be contacted at e-mail (b) (6) and 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

SAMPLING SUMMARY
SOIL AND ASSOCIATED DUST SAMPLES
DELARAM, AFGHANISTAN
19 OCTOBER 2009

DOEHRS Sample ID	Field/Local Sample ID	Site	Start Date/Time	Collection Type
00001E4A	AFGDELARA0929201S	Fuel site	2009/10/19 1120	Soil-Composite
00001E4B	AFGDELARA0929201S	Burn pit	2009/10/19 1036	Soil-Composite
00001E4F	AFGDELARA0929201S	Water Treatment Plant	2009/10/19 1310	Soil-Composite

LEGEND:
DOEHRS Sample ID = Deployment Occupational and Environmental Health Readiness System Sample Identification Number
TMC = Troop Medical Clinic

APPENDIX B

RESULTS SUMMARY
SOIL AND ASSOCIATED DUST SAMPLES
DELARAM, AFGHANISTAN
19 OCTOBER 2009

Parameter[1]	Units	Sample Identification			Average	USACHPPM TG230 Military Exposure Guideline (MEG)	
		AFGDELARA0929201S	AFGDELARA0929201S	AFGDELARA0929201S		1 year	
		Fuel site	Burn pit	Water Treatment Plant		# > MEG	MEG
		Concentration[2]					
Barium	mg/kg	82.2	105	36.2	74.467	0	18000
Chromium	mg/kg	25.9	39.3	22.3	29.167	0	5700
Di(2-ethylhexyl)phthalate	mg/kg	0.52	0.57	< 0.36000	0.42333	0	2900
Dimethylphthalate	mg/kg	< 0.34	1.5	< 0.36000	0.61667	0	1000000
Lead	mg/kg	95.6	15.1	< 10.5	38.65	0	2200
Mercury	mg/kg	0.0147	< 0.0112	< 0.0124	0.008833	0	33
Nickel	mg/kg	31	34.7	25.5	30.4	0	5300
Phenol	mg/kg	< 0.34	0.58	< 0.36000	0.31	0	31000
Silver	mg/kg	4.52	< 1.99	< 2.1	2.1883	0	1300
Strontium	mg/kg	687	305	1780	924	0	140000

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

LEGEND:
mg/kg = milligram per kilogram

APPENDIX C

ANALYTICAL RESULTS
SOIL AND ASSOCIATED DUST SAMPLES
DELARAM, AFGHANISTAN
19 OCTOBER 2009

DOEHRS Sample ID			00001E4A	00001E4B	00001E4F
Field/Local Sample ID			AFGDELARA0929201S	AFGDELARA0929201S	AFGDELARA0929201S
Site			Fuel site	Burn pit	Water Treatment Plant
Start Date/Time			2009/10/19 1120	2009/10/19 1036	2009/10/19 1310
Parameter	Class	Units	Concentration[1,2]		
1,2,4-Trichlorobenzene	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
1,2-Dichlorobenzene	VOC	mg/kg	< 0.34	< 0.33	< 0.36000
1,3-Dichlorobenzene	VOC	mg/kg	< 0.34	< 0.33	< 0.36000
1,4-Dichlorobenzene	VOC	mg/kg	< 0.34	< 0.33	< 0.36000
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	< 0.34	< 0.33	< 0.36000
2,4,6-Trichlorophenol	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
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	< 0.34	< 0.33	< 0.36000
2,4-Dimethylphenol	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
2,4-Dinitrophenol	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
2,4-Dinitrotoluene	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
2,6-Dinitrotoluene	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
2-Chloronaphthalene	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
2-Chlorophenol	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
2-Methyl-4,6-dinitrophenol	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
2-Methylnaphthalene	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
2-Methylphenol (o-Cresol)	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
2-Nitroaniline	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
2-Nitrophenol	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
3,5-Dichlorobenzoic acid	Herbicides	mg/kg	< 0.05	< 0.05	< 0.05
3-Nitroaniline	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
4-Chloro-3-methylphenol	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
4-Chloroaniline	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000

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DOEHRS Sample ID			00001E4A	00001E4B	00001E4F
Field/Local Sample ID			AFGDELARA0929201S	AFGDELARA0929201S	AFGDELARA0929201S
Site			Fuel site	Burn pit	Water Treatment Plant
Start Date/Time			2009/10/19 1120	2009/10/19 1036	2009/10/19 1310
Parameter	Class	Units	Concentration[1,2]		
4-Methylphenol (p-Cresol)	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
4-Nitroaniline	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
4-Nitrophenol	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
Acenaphthene	PAH	mg/kg	< 0.34	< 0.33	< 0.36000
Acenaphthylene	PAH	mg/kg	< 0.34	< 0.33	< 0.36000
Acifluorfen	Herbicides	mg/kg	< 0.05	< 0.05	< 0.05
Actinium-228		uCi/g	< 0.00000131	< 0.00000112	< 0.00000111
Alachlor	Herbicides	mg/kg	< 0.201	< 0.2	< 0.213
Aldrin	Insecticides	mg/kg	< 0.0504	< 0.05	< 0.0534
alpha-Chlordane	Insecticides	mg/kg	< 0.0504	< 0.05	< 0.0534
alpha-HCH (alpha-BHC)	Insecticides	mg/kg	< 0.0504	< 0.05	< 0.0534
Anthracene	PAH	mg/kg	< 0.34	< 0.33	< 0.36000
Aroclor 1016	PCB	mg/kg	< 0.201	< 0.2	< 0.213
Aroclor 1221	PCB	mg/kg	< 0.201	< 0.2	< 0.213
Aroclor 1232	PCB	mg/kg	< 0.201	< 0.2	< 0.213
Aroclor 1242	PCB	mg/kg	< 0.201	< 0.2	< 0.213
Aroclor 1248	PCB	mg/kg	< 0.201	< 0.2	< 0.213
Aroclor 1254	PCB	mg/kg	< 0.201	< 0.2	< 0.213
Aroclor 1260	PCB	mg/kg	< 0.201	< 0.2	< 0.213
Arsenic	Metals	mg/kg	< 39.3	< 39.8	< 42.0
Aspon	Insecticides	mg/kg	< 0.101	< 0.1	< 0.107
Atrazine	Herbicides	mg/kg	< 2.01	< 2.0	< 2.13
Azinphos-ethyl	Insecticides	mg/kg	< 0.201	< 0.2	< 0.213
Azinphos-methyl	Insecticides	mg/kg	< 0.201	< 0.2	< 0.213
Barium	Metals	mg/kg	82.2	105	36.2
Benefin	Herbicides	mg/kg	< 0.101	< 0.1	< 0.107
Bentazon	Herbicides	mg/kg	< 0.05	< 0.05	< 0.05
Benz[a]anthracene	PAH	mg/kg	< 0.34	< 0.33	< 0.36000
Benzo[a]pyrene	PAH	mg/kg	< 0.34	< 0.33	< 0.36000
Benzo[b]fluoranthene	PAH	mg/kg	< 0.34	< 0.33	< 0.36000
Benzo[g,h,i]perylene	PAH	mg/kg	< 0.34	< 0.33	< 0.36000
Benzo[k]fluoranthene	PAH	mg/kg	< 0.34	< 0.33	< 0.36000
Benzyl alcohol	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
Beryllium	Metals	mg/kg	< 1.97	< 1.99	< 2.1
beta-HCH (beta-BHC)	Insecticides	mg/kg	< 0.0504	< 0.05	< 0.0534
Bis(2-chloroethoxy)methane	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000

Deployment OEH Risk Characterization, Soil and Associated Dust Samples, Delaram, Afghanistan, 19 Oct 09, U_AFG_DELARAM_CM_SQA_20091019

		DOEHRS Sample ID	00001E4A	00001E4B	00001E4F
		Field/Local Sample ID	AFGDELARA0929201S	AFGDELARA0929201S	AFGDELARA0929201S
		Site	Fuel site	Burn pit	Water Treatment Plant
		Start Date/Time	2009/10/19 1120	2009/10/19 1036	2009/10/19 1310
Parameter	Class	Units	Concentration[1,2]		
Bis(2-chloroethyl)ether	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
Bis(2-chloroisopropyl) ether	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
Bismuth-214		µCi/g	1.73E-06	8.9E-07	1.13E-06
Bolstar	Insecticides	mg/kg	< 0.201	< 0.2	< 0.213
Bromacil	Herbicides	mg/kg	< 0.403	< 0.4	< 0.427
Butylbenzylphthalate	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
Cadmium	Metals	mg/kg	< 3.93	< 3.98	< 4.2
Carbophenothion	Insecticides	mg/kg	< 0.201	< 0.2	< 0.213
Cesium-134		uCi/g	< 0.000000239	< 0.000000206	< 0.00000011700
Cesium-137		uCi/g	< 0.000000185	< 0.000000201	< 0.000000191
Chlordane, technical	Insecticides	mg/kg	< 0.201	< 0.2	< 0.213
Chlorfenvinphos	Insecticides	mg/kg	< 0.101	< 0.1	< 0.107
Chloroneb	Fungicides	mg/kg	< 0.252	< 0.25	< 0.267
Chlorothalonil	Fungicides	mg/kg	< 0.101	< 0.1	< 0.107
Chlorpyrifos	Insecticides	mg/kg	< 0.101	< 0.1	< 0.107
Chlorpyrifos-methyl	Insecticides	mg/kg	< 0.101	< 0.1	< 0.107
Chromium	Metals	mg/kg	25.9	39.3	22.3
Chrysene	PAH	mg/kg	< 0.34	< 0.33	< 0.36000
cis-Permethrin	Insecticides	mg/kg	< 0.403	< 0.4	< 0.427
Cobalt-60		uCi/g	< 0.00000035400	< 0.000000136	< 0.000000149
Coumaphos	Insecticides	mg/kg	< 0.201	< 0.2	< 0.213
Crotoxyphos	Insecticides	mg/kg	< 0.201	< 0.2	< 0.213
DCPA (Dacthal)	Herbicides	mg/kg	< 0.101	< 0.1	< 0.107
delta-HCH (delta-BHC)	Insecticides	mg/kg	< 0.0504	< 0.05	< 0.0534
Di(2-ethylhexyl)phthalate	SVOC	mg/kg	0.52	0.57	< 0.36000
Diazinon	Insecticides	mg/kg	< 0.101	< 0.1	< 0.107
Dibenz[a,h]anthracene	PAH	mg/kg	< 0.34	< 0.33	< 0.36000
Dibenzofuran	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
Dicamba	Herbicides	mg/kg	< 0.05	< 0.05	< 0.05
Dichlofenthion	Insecticides	mg/kg	< 0.101	< 0.1	< 0.107
Dichloroprop	Herbicides	mg/kg	< 0.05	< 0.1	< 0.05
Dichlorvos	Insecticides	mg/kg	< 0.201	< 0.2	< 0.213
Dicloran	Fungicides	mg/kg	< 0.201	< 0.2	< 0.213
Dieldrin	Insecticides	mg/kg	< 0.0504	< 0.05	< 0.0534
Diethylphthalate	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
Dimethoate	Insecticides	mg/kg	< 0.403	< 0.4	< 0.427

Deployment OEH Risk Characterization, Soil and Associated Dust Samples, Delaram, Afghanistan, 19 Oct 09, U_AFG_DELARAM_CM_SQA_20091019

DOEHRS Sample ID			00001E4A	00001E4B	00001E4F
Field/Local Sample ID			AFGDELARA0929201S	AFGDELARA0929201S	AFGDELARA0929201S
Site			Fuel site	Burn pit	Water Treatment Plant
Start Date/Time			2009/10/19 1120	2009/10/19 1036	2009/10/19 1310
Parameter	Class	Units	Concentration[1,2]		
Dimethylphthalate	SVOC	mg/kg	< 0.34	1.5	< 0.36000
Di-n-butylphthalate	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
Di-n-octylphthalate	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
Dinoseb	Herbicides	mg/kg	< 0.05	< 0.05	< 0.05
Disulfoton	Insecticides	mg/kg	< 0.201	< 0.2	< 0.213
Endosulfan I	Insecticides	mg/kg	< 0.0504	< 0.05	< 0.0534
Endosulfan II	Insecticides	mg/kg	< 0.101	< 0.1	< 0.107
Endosulfan sulfate	Insecticides	mg/kg	< 0.101	< 0.1	< 0.107
Endrin	Insecticides	mg/kg	< 0.0504	< 0.05	< 0.0534
EPN	Insecticides	mg/kg	< 0.101	< 0.1	< 0.107
Ethion	Insecticides	mg/kg	< 0.101	< 0.1	< 0.107
Ethoprop	Insecticides	mg/kg	< 0.101	< 0.1	< 0.107
Etridiazole	Fungicides	mg/kg	< 0.201	< 0.2	< 0.213
Europium-152		uCi/g	< 0.00000083600	< 0.00000064500	< 0.00000056700
Famphur	Insecticides	mg/kg	< 0.201	< 0.2	< 0.213
Fenarimol	Fungicides	mg/kg	< 0.0504	< 0.05	< 0.0534
Fenitrothion	Insecticides	mg/kg	< 0.101	< 0.1	< 0.107
Fensulfothion	Insecticides	mg/kg	< 1.01	< 1.0	< 1.07
Fenthion	Insecticides	mg/kg	< 0.201	< 0.2	< 0.213
Fluchloralin	Herbicides	mg/kg	< 0.201	< 0.2	< 0.213
Fluoranthene	PAH	mg/kg	< 0.34	< 0.33	< 0.36000
Fluorene	PAH	mg/kg	< 0.34	< 0.33	< 0.36000
Fonofos	Insecticides	mg/kg	< 0.101	< 0.1	< 0.107
gamma-Chlordane	Insecticides	mg/kg	< 0.0504	< 0.05	< 0.0534
gamma-HCH (gamma-BHC, Lindane)	Insecticides	mg/kg	< 0.0504	< 0.05	< 0.0534
Heptachlor	Insecticides	mg/kg	< 0.0504	< 0.05	< 0.0534
Heptachlor epoxide	Insecticides	mg/kg	< 0.0504	< 0.05	< 0.0534
Hexachlorobenzene	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
Hexachlorobutadiene	VOC	mg/kg	< 0.34	< 0.33	< 0.36000
Hexachlorocyclopentadiene	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
Hexachloroethane	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
Indeno[1,2,3-cd]pyrene	PAH	mg/kg	< 0.34	< 0.33	< 0.36000
Isazophos	Insecticides	mg/kg	< 0.101	< 0.1	< 0.107
Isofenphos	Insecticides	mg/kg	< 0.101	< 0.1	< 0.107
Isophorone	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
Lead	Metals	mg/kg	95.6	15.1	< 10.5

Deployment OEH Risk Characterization, Soil and Associated Dust Samples, Delaram, Afghanistan, 19 Oct 09, U_AFG_DELARAM_CM_SQA_20091019

DOEHRS Sample ID			00001E4A	00001E4B	00001E4F
Field/Local Sample ID			AFGDELARA0929201S	AFGDELARA0929201S	AFGDELARA0929201S
Site			Fuel site	Burn pit	Water Treatment Plant
Start Date/Time			2009/10/19 1120	2009/10/19 1036	2009/10/19 1310
Parameter	Class	Units	Concentration[1,2]		
Leptophos	Insecticides	mg/kg	< 0.101	< 0.1	< 0.107
Malathion	Insecticides	mg/kg	< 0.101	< 0.1	< 0.107
MCPA	Herbicides	mg/kg	< 5.0	< 5.0	< 5.0
MCPP	Herbicides	mg/kg	< 5.0	< 10.0	< 5.0
Mercury	Metals	mg/kg	0.0147	< 0.0112	< 0.0124
Methoxychlor	Insecticides	mg/kg	< 1.01	< 1.0	< 1.07
Mevinphos	Insecticides	mg/kg	< 0.403	< 0.4	< 0.427
Mirex	Insecticides	mg/kg	< 0.0504	< 0.05	< 0.0534
Naphthalene	PAH	mg/kg	< 0.34	< 0.33	< 0.36000
Nickel	Metals	mg/kg	31	34.7	25.5
Nitrobenzene	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
N-Nitrosodimethylamine	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
N-Nitrosodiphenylamine	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
N-Nitrosodipropylamine	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
o,p'-DDD	Insecticides	mg/kg	< 0.0504	< 0.05	< 0.0534
o,p'-DDE	Insecticides	mg/kg	< 0.0504	< 0.05	< 0.0534
o,p'-DDT	Insecticides	mg/kg	< 0.0504	< 0.05	< 0.0534
Oxadiazon	Herbicides	mg/kg	< 0.0504	< 0.05	< 0.0534
Oxychlordane	Insecticides	mg/kg	< 0.0504	< 0.05	< 0.0534
p,p'-DDD	Insecticides	mg/kg	< 0.0504	< 0.05	< 0.0534
p,p'-DDE	Insecticides	mg/kg	< 0.0504	< 0.05	< 0.0534
p,p'-DDT	Insecticides	mg/kg	< 0.0504	< 0.05	< 0.0534
Parathion-ethyl (Parathion)	Insecticides	mg/kg	< 0.101	< 0.1	< 0.107
Parathion-methyl	Insecticides	mg/kg	< 0.101	< 0.1	< 0.107
p-Bromophenyl phenyl ether	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
p-Chlorophenyl phenyl ether	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
Pentachloronitrobenzene	Fungicides	mg/kg	< 0.101	< 0.1	< 0.107
Pentachlorophenol	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
Permethrin, trans-	Insecticides	mg/kg	< 0.403	< 0.4	< 0.427
Phenanthrene	PAH	mg/kg	< 0.34	< 0.33	< 0.36000
Phenol	SVOC	mg/kg	< 0.34	0.58	< 0.36000
Phorate	Insecticides	mg/kg	< 0.403	< 0.4	< 0.427
Phosmet	Insecticides	mg/kg	< 0.201	< 0.2	< 0.213

Deployment OEH Risk Characterization, Soil and Associated Dust Samples, Delaram, Afghanistan, 19 Oct 09, U_AFG_DELARAM_CM_SQA_20091019

DOEHRS Sample ID			00001E4A	00001E4B	00001E4F
Field/Local Sample ID			AFGDELARA0929201S	AFGDELARA0929201S	AFGDELARA0929201S
Site			Fuel site	Burn pit	Water Treatment Plant
Start Date/Time			2009/10/19 1120	2009/10/19 1036	2009/10/19 1310
Parameter	Class	Units	Concentration[1,2]		
Picloram	Herbicides	mg/kg	< 0.05	< 0.05	< 0.05
Procymidone	Fungicides	mg/kg	< 0.201	< 0.2	< 0.213
Pronamide	Herbicides	mg/kg	< 0.403	< 0.4	< 0.427
Propazine	Herbicides	mg/kg	< 2.01	< 2.0	< 2.13
Propetamphos	Insecticides	mg/kg	< 0.101	< 0.1	< 0.107
Protactinium-234M		uCi/g	< 0.0000348	< 0.000014600	< 0.000020
Protothiophos	Insecticides	mg/kg	< 0.201	< 0.2	< 0.213
Pyrene	SVOC	mg/kg	< 0.34	< 0.33	< 0.36000
Ronnel	Insecticides	mg/kg	< 0.101	< 0.1	< 0.107
Selenium	Metals	mg/kg	< 9.83	< 9.94	< 10.5
Silver	Metals	mg/kg	4.52	< 1.99	< 2.1
Simazine	Herbicides	mg/kg	< 2.01	< 2.0	< 2.13
Strontium	Metals	mg/kg	687	305	1780
Sulfotep	Insecticides	mg/kg	< 0.101	< 0.1	< 0.107
Terbufos	Insecticides	mg/kg	< 0.101	< 0.1	< 0.107
Tetrachlorvinphos	Insecticides	mg/kg	< 0.201	< 0.2	< 0.213
Thorium-234		uCi/g	< 0.0000035100	< 0.0000027200	< 0.00000275
Total solids	Characteristic	%	99.3	100	93.7
Toxaphene	Insecticides	mg/kg	< 1.01	< 1.0	< 1.07
trans-Nonachlor	Insecticides	mg/kg	< 0.0504	< 0.05	< 0.0534
Trichloronate	Insecticides	mg/kg	< 0.201	< 0.2	< 0.213
Trifluralin	Herbicides	mg/kg	< 0.101	< 0.1	< 0.107
Uranium-235		uCi/g	< 0.00000178	< 0.00000135	< 0.00000126
Vinclozolin	Fungicides	mg/kg	< 0.201	< 0.2	< 0.213
Zinophos	Insecticides	mg/kg	< 0.101	< 0.1	< 0.107

[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
TMC = Troop Medical Clinic
SVOC = semivolatile organic compound
VOC = volatile organic compound
PAH = polycyclic aromatic hydrocarbon
PCB = polychlorinated biphenyl
mg/kg = milligrams per kilogram
µCi/g = micro curies per gram
EPN = O-ethyl-O-4-(nitrophenyl)phenyl phosphonothioate
MCPA = 2-methyl-4-chlorophenoxyacetic acid
MCPP = me*ta*-chlorophenylpiperazine