



The Role of Industrial Hygiene in a Deployed Setting

LCDR William O. Haissig, MSC, USN
Navy Environmental Health Center,
Portsmouth, VA

Deployments

- JTF Fundamental Response (Venezuela)
- Operation Enduring Freedom (Guantanamo Bay, Cuba)
- Operation Iraqi Freedom (OIF)
- Operation Iraqi Freedom II (OIF II)

Operation Fundamental Response

- Mission: Conduct Industrial Hygiene Survey of JTF areas of operation







Operation Fundamental Response

- Industrial Hygiene Survey
- Consequence Management
- Air Monitoring
- Respiratory Protection
- Sheltering in Place



Operation Enduring Freedom



Operation Enduring Freedom

- Mission: Conduct Environmental Health Site Assessment (EHSA) to identify Occupational and Environmental Health and Endemic Disease (OEH/ED) threats that could adversely affect the health of deployed military personnel

Environmental Health Site Assessment

- **What are the exposure routes?**

- Dermal
 - Bathing water
 - Soil
- Ingestion
 - Soil
 - Drinking water
 - Unapproved food sources
- Inhalation
 - Particulate
 - Fumes
 - Vapors

- **What are the potential threats?**

- Physical hazards
- Biological/disease vectors
- Chemical, radiological hazards
- Others

Guidance

- ASTM E 2318-03 Standard Guide for Environmental Health Site Assessment Process for Military Deployments

Operation Enduring Freedom

- Consequence Management
- Drinking Water and Air Quality
- Vector Control
- Respiratory Protection
- Ventilation
- Physical Stressors

Consequence Management

- North American
Emergency
Response
Guidebook

Initial Isolation &
Protective Action
Distances



Plume Modeling

- DTRA Combat Support Operations Center does plume modeling
- Request plume models through the COC
- DTRA (703) 325-2102



Drinking Water Quality



Air Quality

- PM₁₀ Samples were weighed and analyzed by USACHPPM for ten potential contaminants







Respiratory Protection

- N95 Respirator Fit Testing



Ventilation



Ventilation



Soil Sampling



Operation Iraqi Freedom



Operation Iraqi Freedom

- Drinking Water Quality
- Chemical Detection and Analysis
- Chemical Decontamination
- Environmental Health Site Assessments
- Air sampling

Drinking Water Quality



EHSA Analytical Approach in OIF

- Instrumentation available to conduct *most* tactically-relevant chemical risk assessments
- Assessments of health effects from completed long-term exposure pathways still require advanced lab support



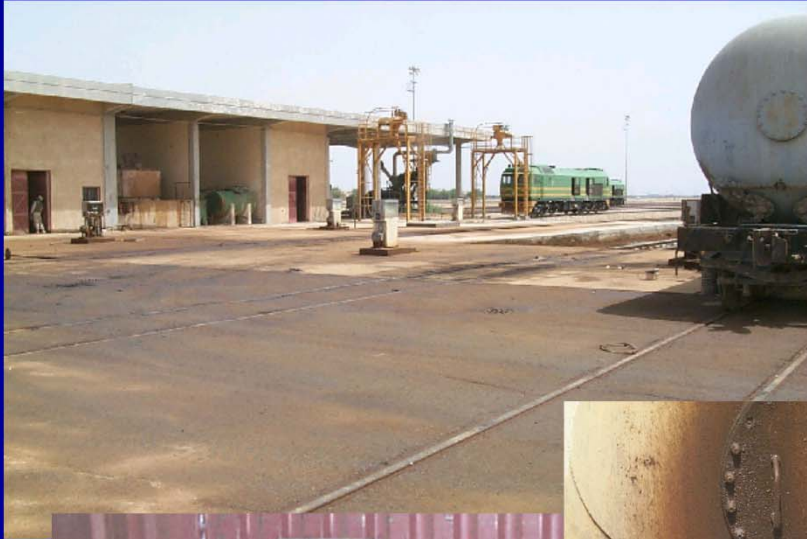
EHSA Analytical Equipment in Iraq

	GC/MS	FTIR	UVF	UV/VIS	RAPID	Other
Fuel components (s/a/w)	✓	✓	✓			✓
CWA in drinking water	✓	✓		✓		✓
Heavy metals (w)				✓		
Unidentified powders		✓			✓	✓
Unidentified liquids (w)		✓				
Combustion by-products (a)	✓					
PAHs/PCBs (s)			✓			

Chemical Detection



Environmental Health Site Assessment (EHSA) in OIF



What's in the Air?



What's in the Air?

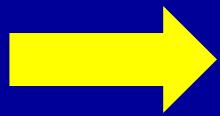
PM₁₀ Air Sampling



EHSA Report

Process:

- Predeployment activities
- Site recon/interviews
- Sampling
- Conceptual site model



Report preparation:

- Documentation
- Executive summary
- Introduction
- Site description
- Information sources
- Findings
- Conclusions
- Discussion
- Recommendations
- Assumptions/deviations
- References
- Signature
- Appendices



Operation Iraqi Freedom II



References

- NEHC Standard Operating Procedures for Environmental Site Assessments (Nov 2002)
- ASTM E 2318 – 03: Standard Guide for Environmental Health Site Assessment Process for Military Deployments

References Continued

USACHPPM TG 248 Guide for Deployed Preventive Medicine Personnel on Health Risk Management (August 2001)

USACHPPM TG 230 Chemical Exposure Guidelines for Deployed Military Personnel (August 2001)

USACHPPM TG 273 Diagnosis & Treatment of Diseases of Tactical Importance

References Continued

- FM 100-14 Risk Management (April 1998)
- TG 174 Personal Protective Techniques Against Insects and Other Arthropods of Military Significance (June 1991)
- TG 251 Environmental and Occupational Field Sampling