



# Environmental Health Site Assessments and Soldier Occupational Hazard Assessment Support to Multi-National Corps – Iraq

---

## Deployment Industrial Hygiene Challenges

Major Dennis S. Palalay  
Program Manager, Industrial Hygiene Field Services  
U.S. Army Center for Health Promotion and Preventive Medicine  
Aberdeen Proving Grounds, Maryland 21010

15 May 2006

UNCLASSIFIED





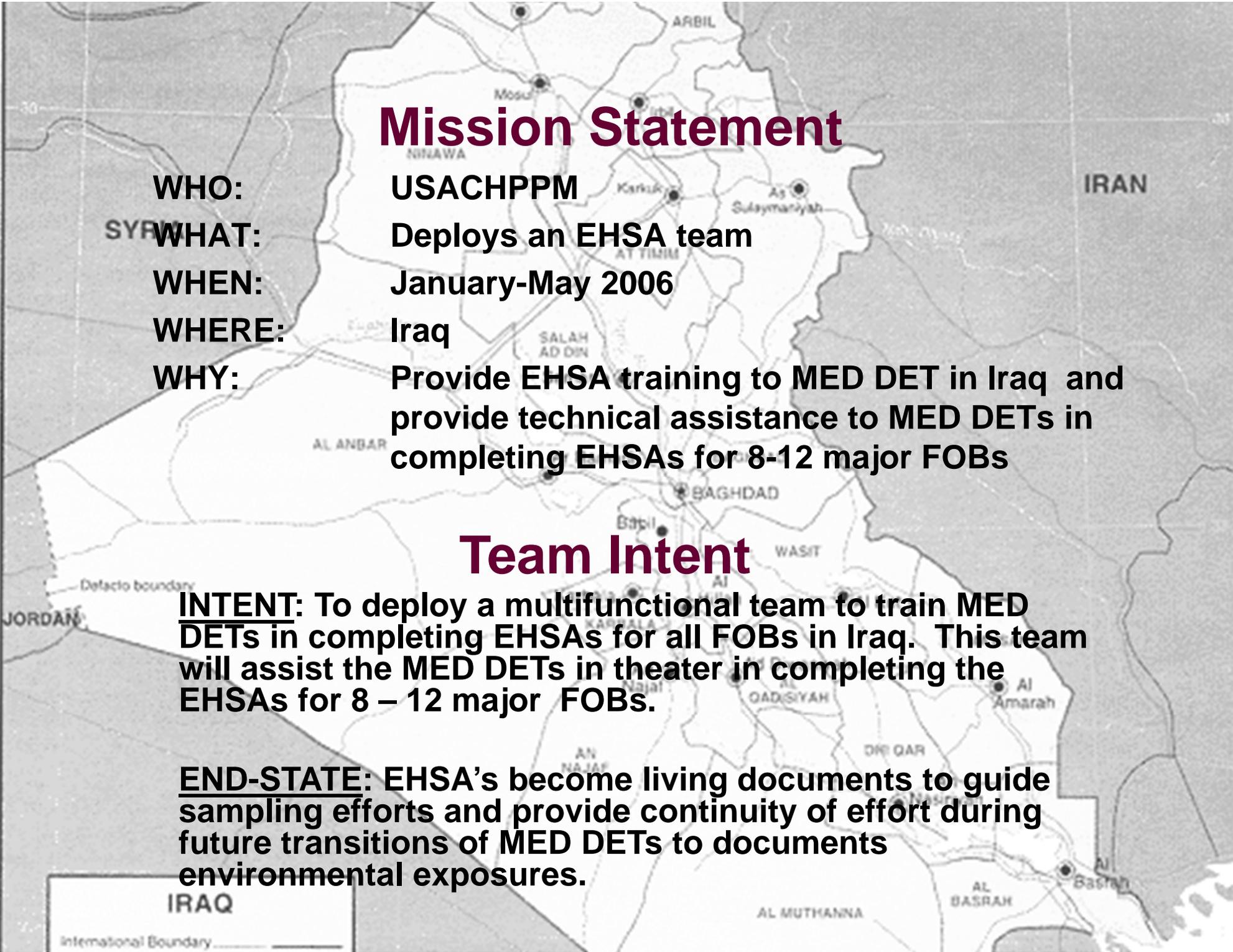
## BRIEFING OUTLINE

- 
- Mission
  - Team Intent
  - Purpose ASTM E2318-03
  - ASTM Collaborators
  - EHSA Process
  - Conceptual Site Model
  - Exposure Pathways
  - CSM – Bone Yard
  - CSM – Burn Pit
  - Soldier Occupational Hazard Assessment
    - SOHA Development
    - Sampling Strategy
    - Direct Assessment
    - Stryker Projects
    - Total Army SOHA
    - Conclusion



**“Hello, and welcome to Catfish Air, I will be your flight attendant and force protection today...”**



A grayscale map of Iraq with various provinces labeled: ARBIL, NINAWA, SALAH AD DIN, AL ANBAR, WASIT, QADISIYAH, AL MUTHANNA, AL BASRAH, and AL QADISIYAH. Major cities marked include Mosul, Kerkuk, Sulaymaniyah, Baghdad, Basra, and Amarah. Neighboring countries SYRIA, JORDAN, and IRAN are also shown. A legend at the bottom left identifies 'International Boundary' and 'De facto boundary'.

## Mission Statement

**WHO:**

**USACHPPM**

**WHAT:**

**Deploys an EHSA team**

**WHEN:**

**January-May 2006**

**WHERE:**

**Iraq**

**WHY:**

**Provide EHSA training to MED DET in Iraq and provide technical assistance to MED DETs in completing EHSAs for 8-12 major FOBs**

## Team Intent

**INTENT:** To deploy a multifunctional team to train MED DETs in completing EHSAs for all FOBs in Iraq. This team will assist the MED DETs in theater in completing the EHSAs for 8 – 12 major FOBs.

**END-STATE:** EHSA's become living documents to guide sampling efforts and provide continuity of effort during future transitions of MED DETs to documents environmental exposures.





## EHSA Support to MNC-I



# In-Theater Schedule – 80 Day Wonder

- Phase I: In-Brief to MNC-I
- Phase II: Environmental Health Site Assessment Training/Assistance
  - Balad Air Field (LSA Anaconda, Talil)
  - Mosul Air Field (FOB Marez, Courage, and LSA Diamondback)
- Phase III: EHSA Assistance
  - 21 Sites FOB/COB/Camps, etc..
  - Assist MED DET with EHSA
- Phase IV:
  - Complete Reports (26)
  - Out-Brief to MNC-I
- Phase V: Re-deployment



# EHSA Process

- Based on ASTM E 2318-03, Standard Guide for Environmental Health Site Assessment (EHSA) Process for Military Deployments
- Objective
- Pre-deployment activities
- Site Reconnaissance and Interviews
- Conceptual Site Model (CSM)
- Sampling
- Report

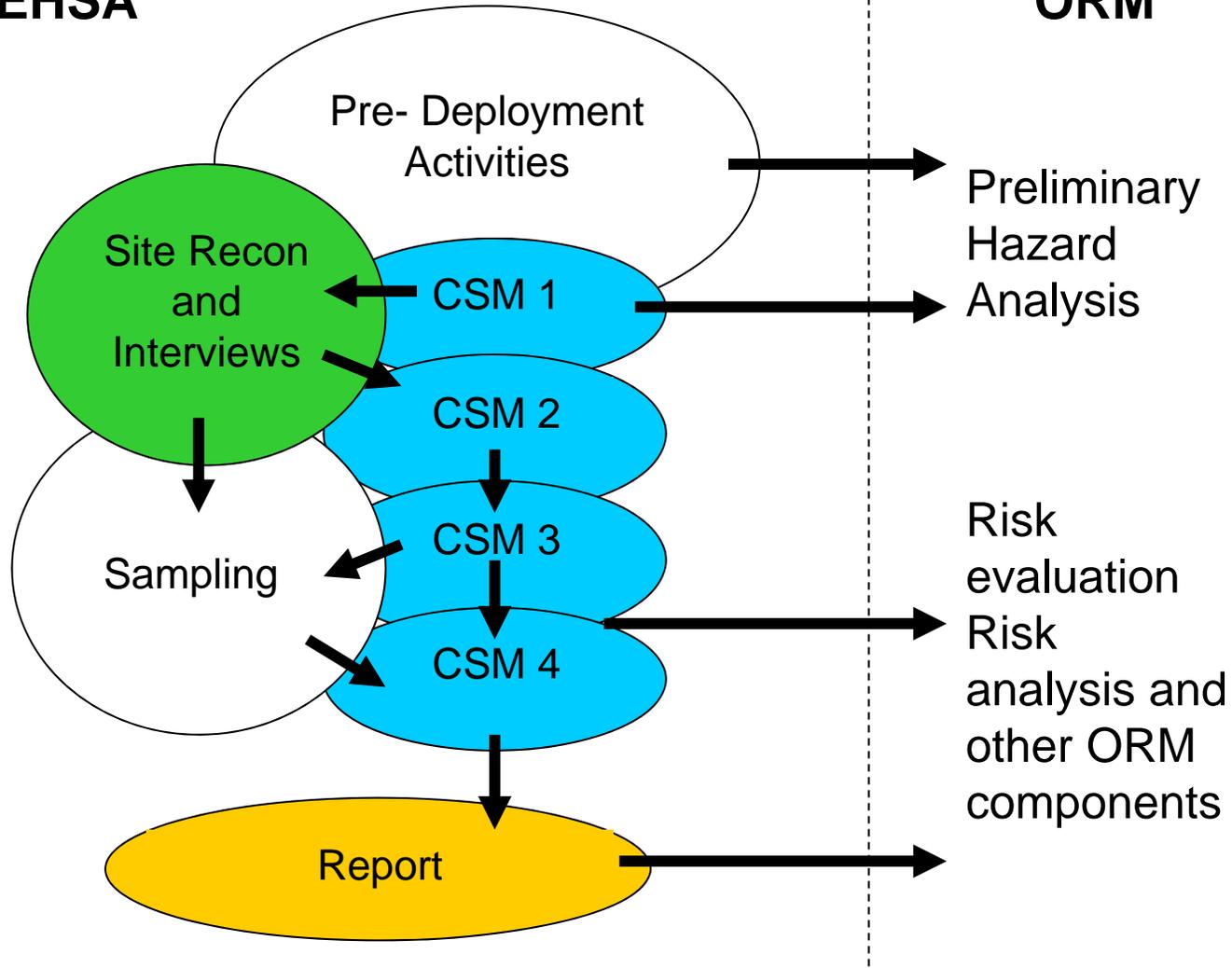




## EHSA Process

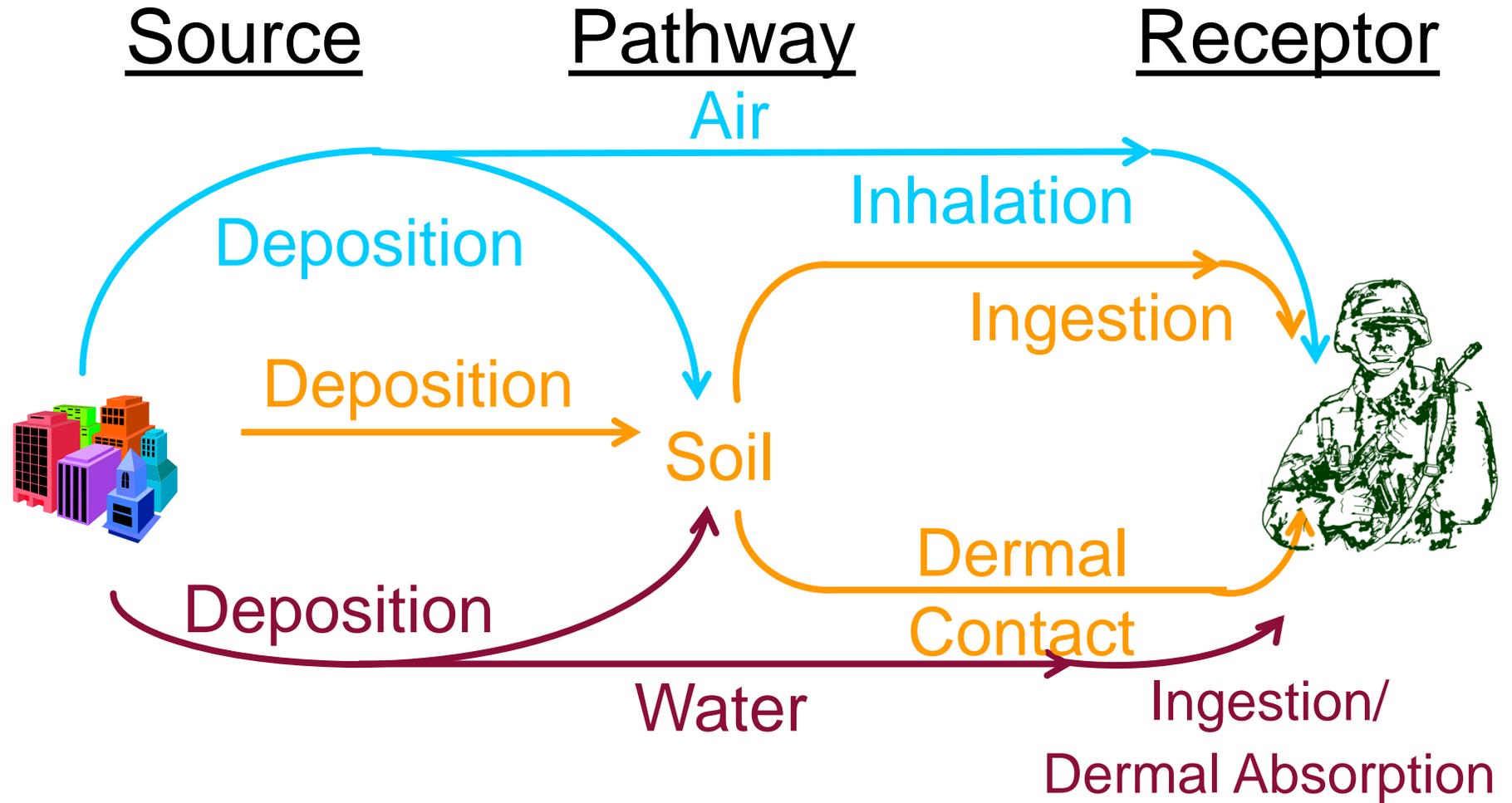
**EHSA**

**ORM**





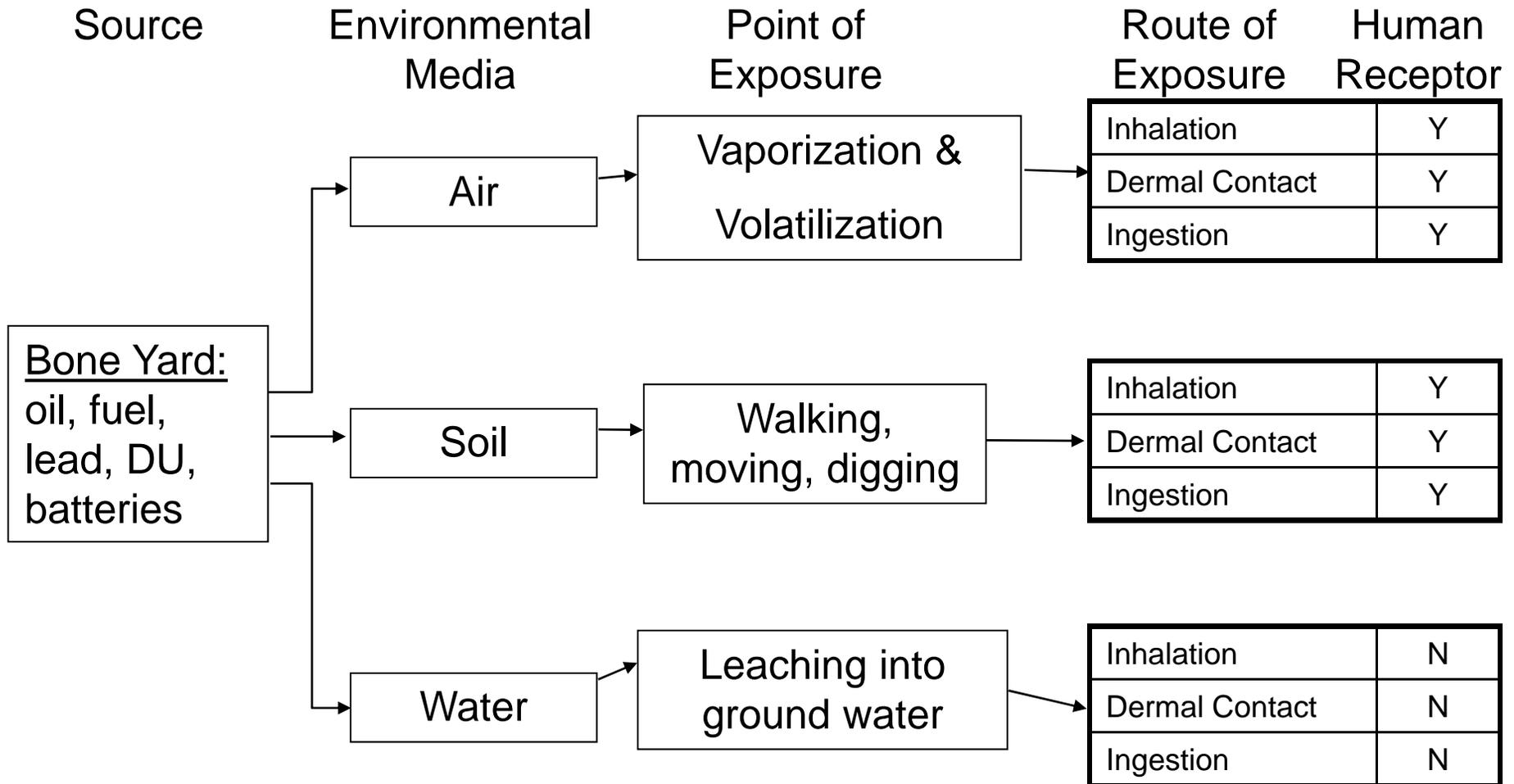
# Exposure Pathways





# Conceptual Site Model

## Bone Yard



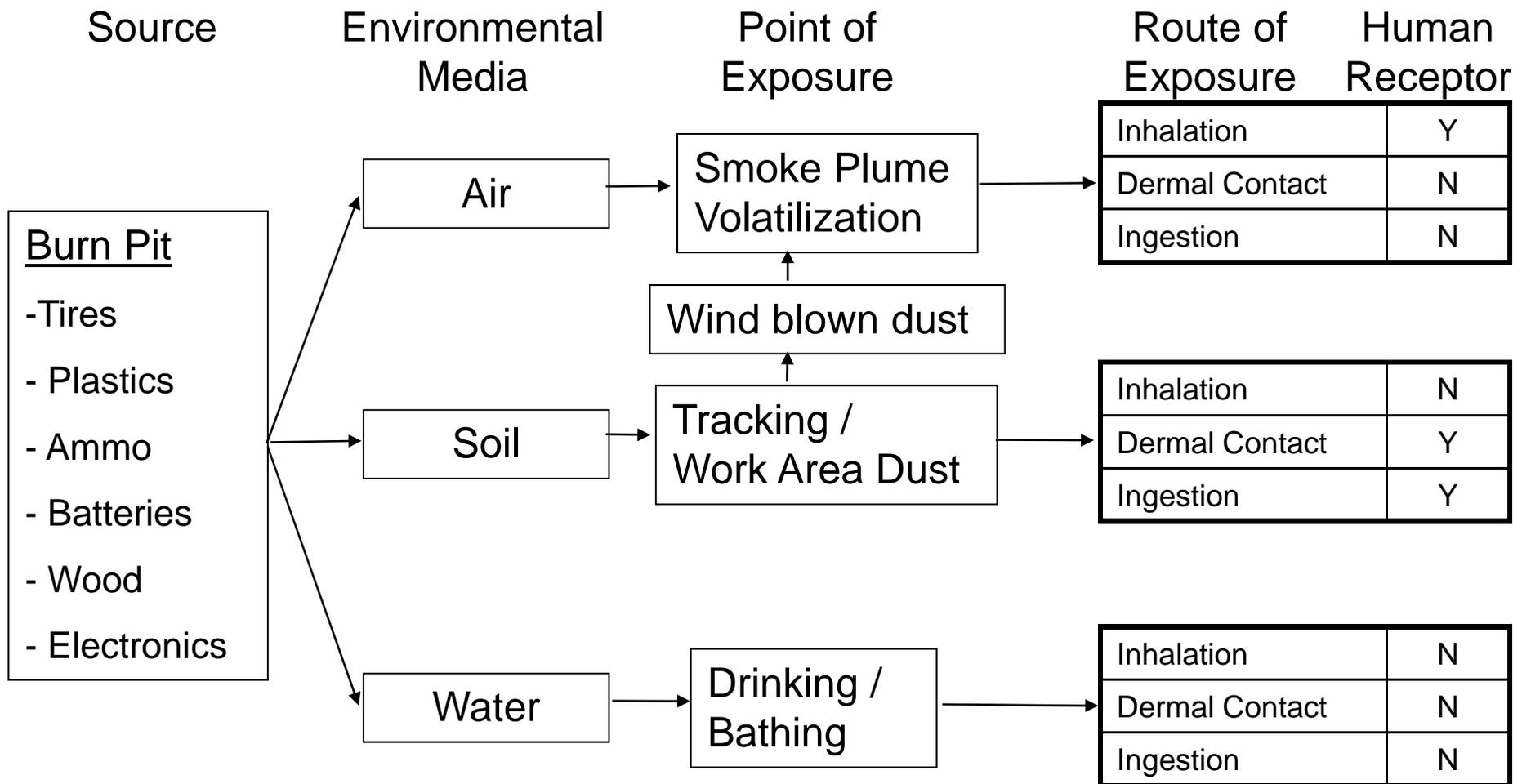


# EHSA Support to MNC-I





# Conceptual Site Model Solid Waste Burn Pit





# EHSA Support to MNC-I



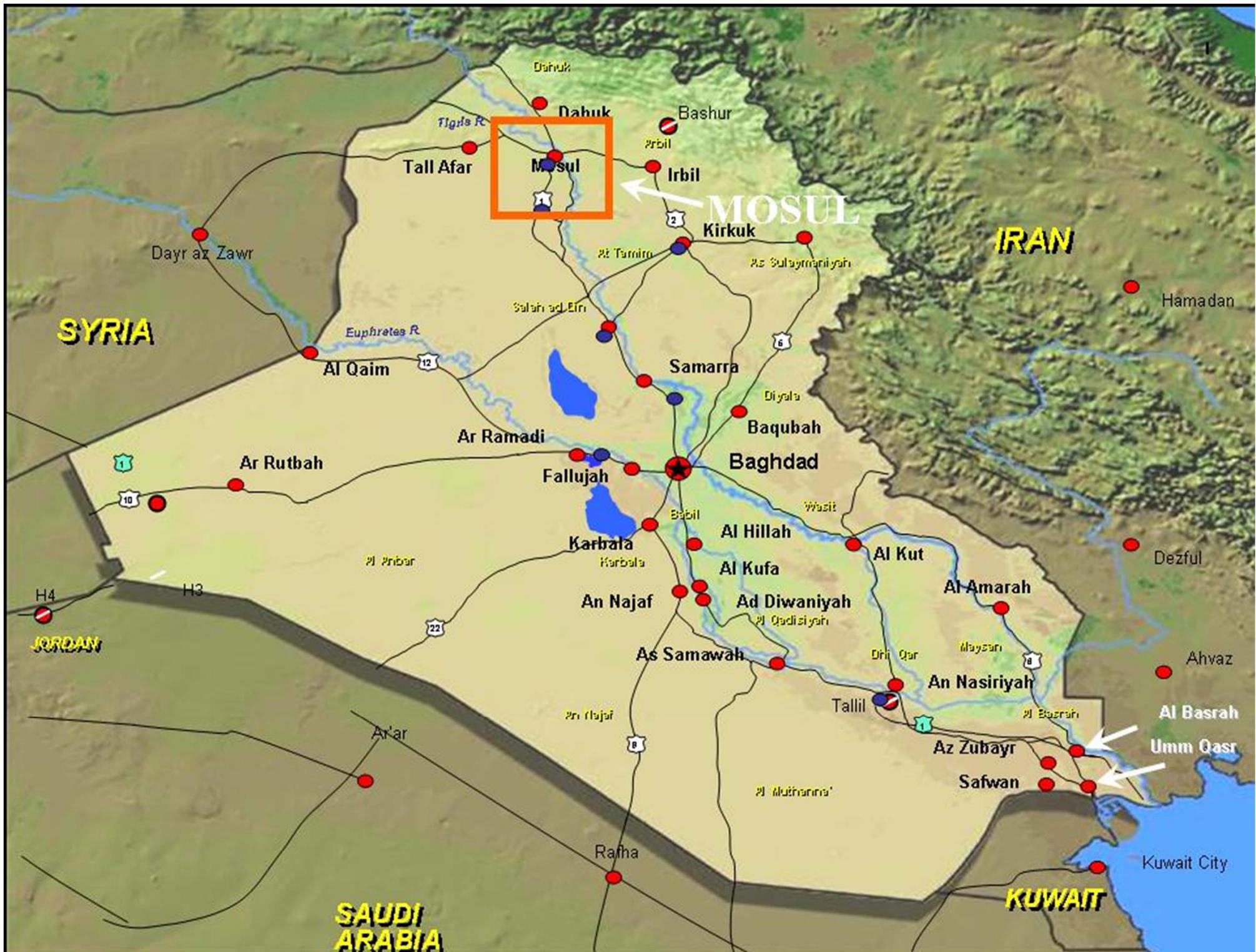
Slight distortion due to merging mul



# Conceptual Site Model Soldier Occupational Model

- EHSA – General Population
  - Does not look at Occupational Health Hazards
  - Deviance to ASTM – Occupational Hazards
- Soldier Occupational Hazard Assessment (SOHA)
  - Consistent with EHSA CSM
  - Deployment IH at its best





# ***Soldier Occupational Hazard Assessment (SOHA)***

Designed to assess soldier occupational exposure during use of type equipment and ***Direct*** classified military through ***Indirect*** ***Assessments***





# Why Was SOHA Developed

- Force Health Protection (FHP)
- DODD 6490.2
- AR 40-10 Health Hazard Assessment (HHA)





# SOHA Objectives

To eliminate or reduce disease non-battle injury (DNBI) to our soldiers, throughout their career.

### Accomplished by

1. Initiating life-cycle exposure evaluations
2. IH - Implementation Plan (IHIP)
3. Linking exposure data to soldier medical records





# SOHA Sampling Strategy

- Active and Passive Sampling Devices
- No Disruption To Mission
- Quick – In and Out,
- No Impact on Force Protection Measures





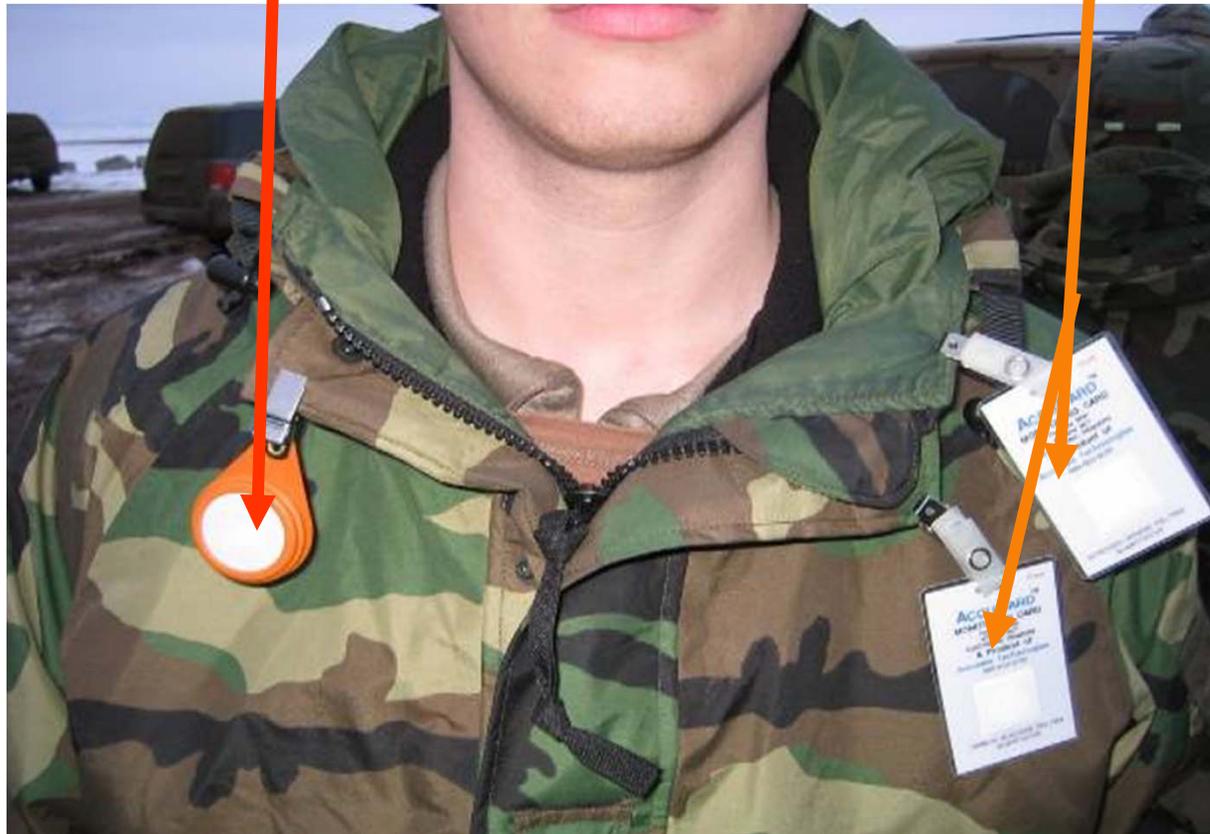
# Direct Assessment

## Use of Passive Monitor

Organic Vapor Monitor

ACT Card  
Passive  
Monitor

OVM  
sampling  
for  
Toluene  
Benzene  
and  
Xylene



Passive  
Monitors  
sampling  
for CO  
and NO<sub>2</sub>



## EHSA Support to MNC-I



# Direct Assessment

*Active Monitor-Data logger  
Noise Dosimeter*



Noise  
Dosimeter



## *Stryker Projects*

- National Training Center (NTC), Fort Irwin, CA (Sep-Oct 2003)
- Yakima Training Center, WA (Feb, Jun 2004), Fort Lewis
- Army Test Center, Aberdeen Proving Ground, MD (Apr 2004)-Developmental Test Command
- Fort Lewis Meetings and Future Project Planning (2005)
- OIF 172d SBCT – Mosul, Iraq



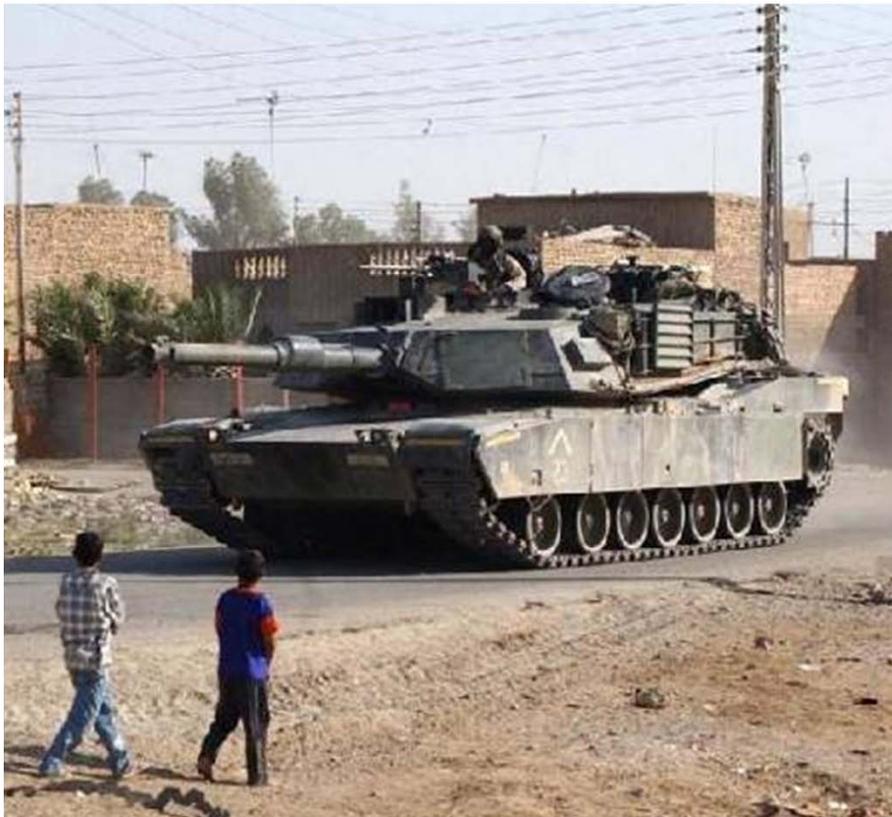


## EHSA Support to MNC-I



# Total Army SOHA

- SOHA must incorporate more traditional combat systems such as M1A2 tanks, Bradley fighting vehicles, etc...
- Opportunities to capture and document occupational hazards exist as units regroup, refit, and train for upcoming deployments into theater.
- Current redeployment of 3 ID presents an opportunity in 2006.
- Multinational Corps – Iraq, Environmental Science Officer, 4 ID 2006





## Benefits Of SOHA

**Recording Soldier exposure data**

**Working to keep the soldiers healthy**

**Enhancing visibility and awareness of unique exposure to soldiers**

**Sends the message that we Care**

**Reduces liability**



# Conclusion

- Industrial Hygiene or Occupational and Environmental Hygiene?
- EHSA Deviance –
  - **SOHA**
  - **Other Occupational Exposures**
- Direct Reading Instruments
- Real Time Data
- IH's Bring Everything To The Table





## BACK-UP SLIDES



# Purpose - ASTM E 2318-03 Standard Guide for Environmental Health Site Assessment (EHSA) Process for Military Deployments

- “... to describe a scientific methodology for conducting EHSA for military deployments.”
- Detail site conditions and how the site may affect US and coalition service members
- Not an Environmental Baseline Survey (EBS). EBS' are completed by the Engineers and detail how the US has affected a site.
- EHSA and EBS may be complimentary.



# ASTM Collaborators

- Joint Environmental Surveillance Work Group (JESWG)
- US Army Center for Health Promotion and Preventive Medicine (USACHPPM)
- US Navy Environmental Health Center (NEHC)
- US Air Force Air Mobility Command (AMC)
- Independent ASTM contractors



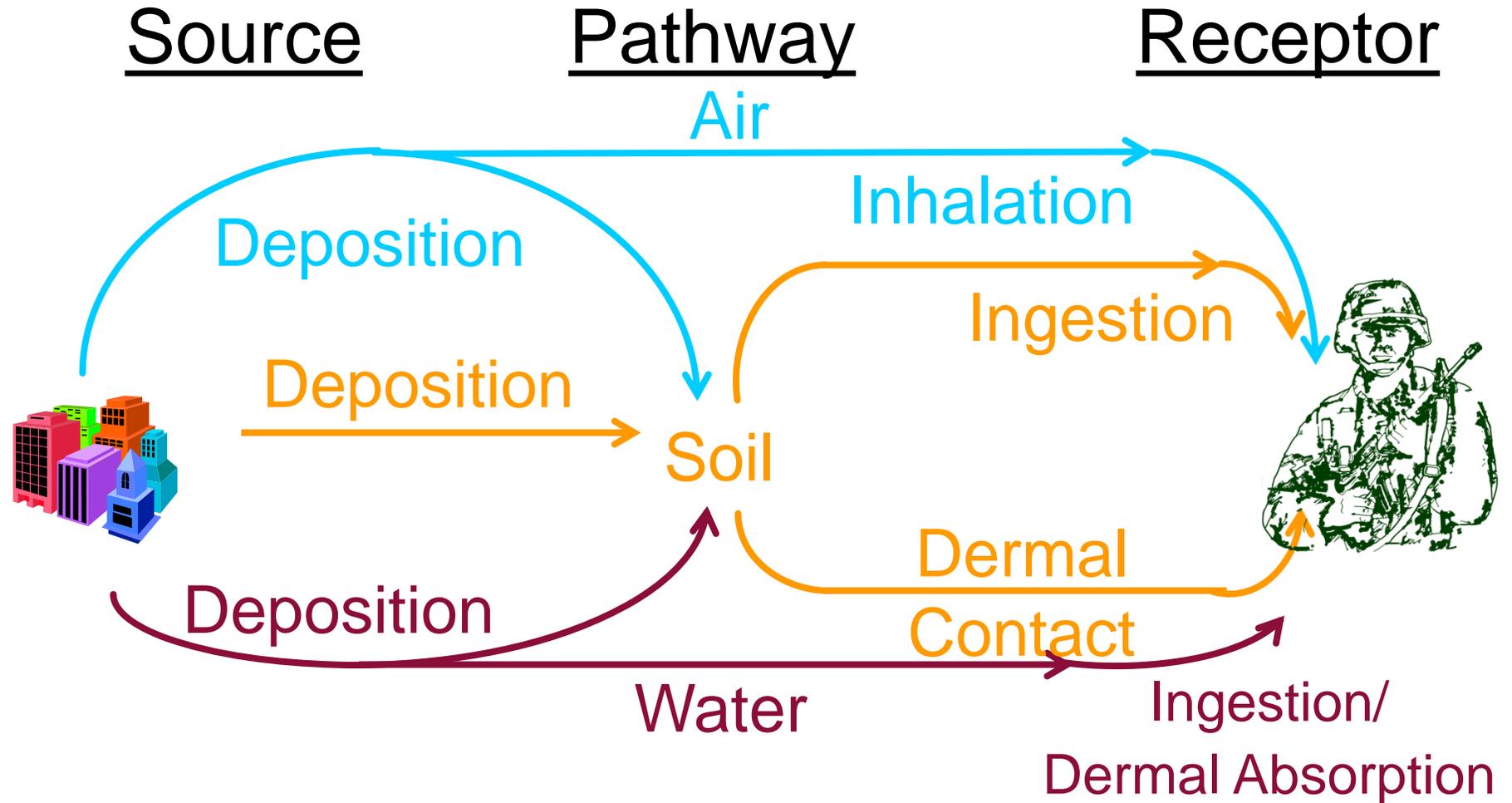
## EHSA Support to MNC-I



# ADDITIONAL CSM EXAMPLES



# Exposure Pathways

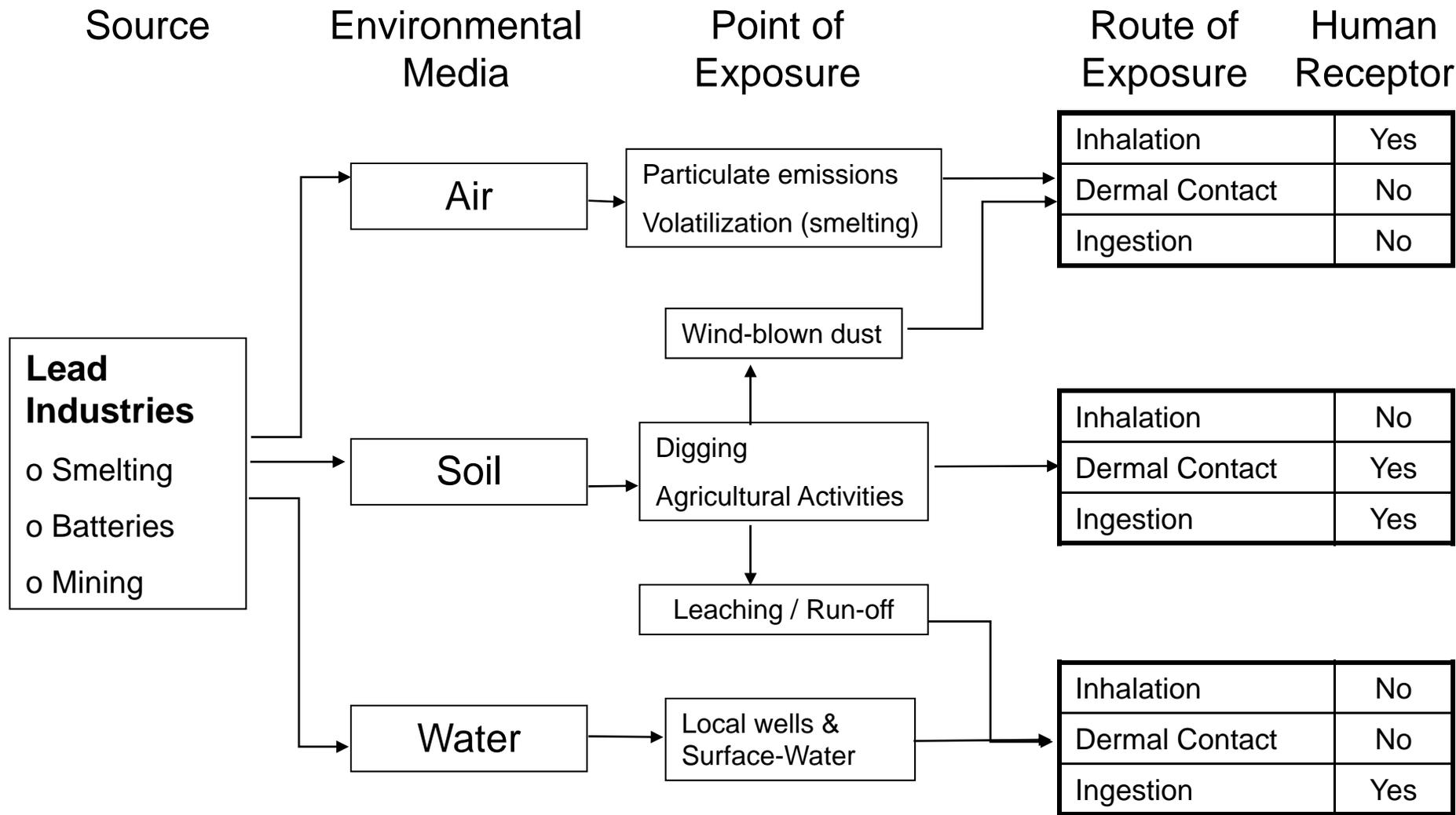




# EHSA Support to MNC-I



## Conceptual Site Model Lead Industries in Mitrovica, Kosovo





# FHSA Support to MNC-I



FOB Marez Burnpit  
13 February 2005  
172 SBCT

Slight distortion due to merging multiple photos

**Bunker**



**FOB Marez Burnpit  
13 February 2005  
172 SBCT PM**







## EHSA Support to MNC-I



### *Soldier Occupational Hazard Assessment (SOHA)*



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



## EHSA Support to MNC-I



### *Soldier Occupational Hazard Assessment (SOHA)*



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



## *Soldier Occupational Hazard Assessment*

# What is SOHA ?



### IH Services

Noise

Heat Stress

Diesel Exhaust

Respirable Dust

Heavy Metals

Weapons –Combustion

Ergonomics



# Direct Assessment Sampling Strategy

<u>HAZARD</u>	<u>Maneuvers Engine Combustion Product?</u>	<u>Live- Fire Weapon Combustion Product?</u>	<u>PRIMARY SAMPLING METHOD</u>
- Carbon monoxide	Yes	Yes	PM 7700 / ACT passive dosimeter
- Nitrogen dioxide	Yes	Yes	PM 7700 / ACT passive dosimeter
- Formaldehyde	Yes	No	ACT Passive dosimeter
- Benzene, toluene, and Xylene (BTX)	No	Yes	Organic vapor monitor
- Respirable Dust	Yes	Yes	MCE filter w/ personal sampling pump
- Sulfur Dioxide	Yes	No	ACT Passive dosimeter
- Noise	Yes	Yes	Personal noise dosimeter
- Heat Stress	Yes	No	Data logging



# Soldier Occupational Hazard Assessment

## *Reducing DNBI through*

Initiating life-cycle exposure evaluations

IH implementation plan

Linking exposure data to soldier medical records