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Identification of Chemicals of Potential Concern

Military Munitions Support Services Webinar Series

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Introduction

- How chemicals of potential concern (COPC) selection fits in Military Munitions Response Program projects
- Definition of COPCs
- Discussion will include:
  - Initial development of analyte lists
  - Identification of COPCs
  - Current issues
  - Final thoughts
  - Five minute Q/A

Development of Analyte List

- "Preliminary COPCs" are selected based on known or suspected munitions and explosives of concern (MEC) or munitions debris (MD)
  - Analyte list should be tailored to site, especially with regards to metals
  - Analytes may include explosives, metals, PAHs
  - Essential nutrients are generally not included in analyte lists
    - Calcium, iron, magnesium, potassium, and sodium
    - Iron analysis may be justified in some situations
  - Carefully evaluate need for arsenic analysis
    - Arsenic is not a common component of ordnance items
    - Common soil component present at concentrations exceeding screening values

Development of Analyte List, continued

- Special considerations
  - Analyte lists at small arms ranges should be focused on small arms munitions indicator metals (antimony, copper, lead, and zinc) at target/impact areas
    - Analyses at firing lines may include explosives
    - Analyses at skeet ranges may also include polycyclic aromatic hydrocarbons (PAHs)
      - *Not an MC*
      - *Components of clay pigeons*
  - Burn pits
    - Evaluate need for PAH and BTEX

Identification of COPCs

- Metals detected greater than selected background
  - *More in a few minutes!*
- Other preliminary COPCs (e.g., explosives) detected greater than preliminary screening values (PSVs)
- PSVs consist of the more conservative value of the selected human health screening value and the selected ESV
  - U.S. Environmental Protection Agency (USEPA) Regional Screening Levels (RSLs) commonly used
    - Updated biannually
  - State may have own human health screening values and/or ESVs
  - Most current screening values applied at draft report phase

Comparison to Background

- Metals are naturally occurring, so biased concentrations should be compared selected site-specific background concentrations
  - Other preliminary COPCs may be present due to non-military anthropogenic sources and may be compared to background to determine if a release due to military use has occurred
    - For example, PAHs may also be attributable to forest fires, asphalt, industrial emissions
- Current issues
  - Can analytes present at concentrations less than background be removed from further consideration?

Current Issues

- US Department of Defense Manual: Defense Environmental Restoration Program (DERP) Management (Number 4715.20, March 9, 2012) specifically states (p 32) that (USEPA RAGS Part A, based) human health "*Risk assessments should not quantify exposure to naturally occurring substances present at concentrations unaffected by current or past site activities.*"

- State Guidance Varies

Current Issues

- Tri-Service Position Paper on Background Levels in Risk Assessment; USACE CX, Omaha, NE (October 2011), describes the consideration of background levels in identifying and evaluating site-related chemicals and non-site-related chemicals. *"A clear understanding of the chemicals released from a site and site background conditions is an important aspect of this approach:*
  - *Site chemical concentrations should be compared to risk-based screening levels.*
  - *Site chemical concentrations should be compared to background levels.*
  - *Chemicals that are above risk-based screening levels and background levels should be identified as site-related COPCs.*
  - *Chemicals that are above risk-based screening levels, but below background levels should be identified as non-site-related COPCs.*

Current Issues

- EPA Guidance
  - USEPA's Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites (EPA, 2002)
  - "In light of more recent guidance for risk-based screening (EPA, 1996; EPA, 2000) and risk characterization (EPA, 1995c), this policy recommends a baseline risk assessment approach that retains constituents that exceed risk-based screening concentrations. This approach involves addressing site-specific background issues at the end of the risk assessment, in the risk characterization."
  - When concentrations of naturally occurring elements at a site exceed risk-based screening levels, that information should be discussed qualitatively in the risk characterization.

Final Thoughts

- Importance of *early* team discussion and concurrence on potentially contentious issues
  - Identification of Analyte Lists and appropriate MDLs
  - Identification and Use of PSVs
  - Background comparison
    - Where in the process
    - Method of comparison

Questions?