

US Ecology Remedial Investigation

TARGET ANALYTE SCREENING

Presented By: Kelly Black (Neptune & Company)
21 April 2009

WHY ARE WE SCREENING THE TARGET ANALYTES FROM THE SAP?

- More than 50,000 results have been generated so far
- The method-based target analyte approach in the investigation yielded 226 analytes

Method	Analytes
Metals	33
VOCs	84
SVOCs	80
PAHs	14
PCBs	7
Other	8

Media	Results
Soil	27,358
Vapor	12,271
Water	10,571

SCREENING TO SUPPORT "COPC" SELECTION

- ◎ To identify hazardous substances requiring further evaluation, a screen was conducted:
 - Establish appropriate screening levels for soil contact, protectiveness of groundwater, and groundwater
 - Determine the constituents for which further evaluation is necessary

HEALTH RISK SCREENING EVALUATION

- ◎ Calculate screening levels in accordance with MTCA:
 - Soil industrial use WAC 173-340-745
 - Soil residential use WAC 173-340-740
 - Groundwater unrestricted use WAC 173-340-720
 - Protectiveness of groundwater WAC 173-340-747
 - Air WAC 173-340-750

HEALTH RISK SCREENING EVALUATION

◎ General Process:

- Determine if the results are consistent with published background data (Soil Only)
- Calculate an Exposure Point Concentration (EPC) in accordance with MTCA WAC 173-340-740
- Compare the EPC for each constituent against the appropriate screening levels

ECOLOGICAL RISK SCREENING

- ⦿ Although US Ecology is slated for industrial land use, MTCA requires consideration of wildlife

- ⦿ Relevant Points
 - Screening assessment using conservative No Observable Adverse Effect Levels
 - Assumed 100% bioavailability of the constituents
 - Oral ingestion
 - Inhalation of soil vapors for burrowing animals

RISK SCREENING RESULTS

- ◎ Following slides describe the constituents to be further evaluated in the Remedial Investigation

SOIL DIRECT CONTACT

- ◎ No constituents exceeded direct contact screening levels under either industrial (Method C) or unrestricted (Method B) land use.

PROTECTIVENESS OF GROUNDWATER

- ③ Three-phase partitioning model described in WAC 173-340-747 used to calculate protectiveness of groundwater standards (PGS)
 - Used site specific data from the physical properties samples as accommodated in WAC 173-340-747(5)
- ③ No constituents exceeded protectiveness of groundwater criteria at depths less than 15 ft bgs

PROTECTIVENESS OF GROUNDWATER (CONT.)

- ◎ Four constituents exceeded protectiveness of groundwater criteria below 15 ft bgs
 - nitrate – EPC is less than 2x PGS
 - nitrite – detected in only one sample at 3x PGS
 - methylene chloride – two estimated detections in the same borehole at 10x PGS
 - hexavalent chromium – uses an extremely conservative assumption for mobility to water. Using published values it does not fail screen.

GROUNDWATER USE

- ◎ Four constituents exceeded unrestricted groundwater use screening levels
 - Arsenic, hexavalent chromium, and trichloroethene exceeded screening levels in most samples
 - Uranium exceeded the screening level in only one sample (one of four detects). Uranium contamination was present in the blank samples for two of the detects.

SOIL VAPOR SCREENING

- ⦿ Based on MTCA guidance (WAC 173-340-750) many analytes (19) exceeded industrial ambient air use screening levels
- ⦿ These calculations used soil gas data, and assume extremely conservative conditions for air exposure (e.g., confined underground spaces)
- ⦿ Refinement of the assessment of soil gas data and associated risks will be necessary