SESSION 1

Shifting Thinking from the 2005 Goals to the 2008 Goals and Remedy Selection

WHAT ARE THE DIFFERENCES BETWEEN THE INFORMATION NEEDED FOR THE 2005 GOALS AND THE 2008 GOALS?

Agenda:
Information Needs for the 2005 vs. 2008 EI Goals

- Current vs. Future Land Use
- EI Characterization vs. Full Characterization of Nature and Extent of Contamination
- Ecological Risks

Land Use Defined

- Land Use is typically defined as either:
  - Residential
    - Household exposure to contaminated media
    - Assumes the most conservative human exposure scenarios (i.e., 30 years and 350 days/year)

  - Industrial
    - Worker exposure scenarios
    - Assumes somewhat less conservative human exposure scenarios (i.e., 20 years and 250 days/year)
    - May assume that groundwater beneath the site is not consumed
    - Can apply to the entire site or specific portions

Current vs. Future Land Use

- 2005 EIs are based on current conditions and known information, thus limiting:
  - Receptor groups
  - Exposure routes
  - Exposure pathways
- Interim measures implemented to achieve 2005 goals may not have considered future land use
  - Ground covers
  - Fencing
  - Informational devices
- To meet 2008 goals, final remedies must be selected and construction of the remedies must be complete at selected sites

Future Land Use Must Be Considered When Selecting Remedies

- It is EPA's policy to consider reasonable expected future land use when:
  - Developing or selecting media cleanup standards
  - Determining receptor groups to be protected by final remedies
  - Evaluating the selection and timing of corrective measures

Multiple Factors Must Be Considered When Making Future Land Use Decisions

- Future industrial land use decisions must consider:
  - Other past, current, or potential on-site activities
  - Adjacent land use
  - Viability of owner/operator
  - Surrounding land use trends/urban encroachment
- Public participation is crucial when making future land use decisions
  - Local planning and zoning commissions
  - Community advisory groups

If Future Land Use is Determined to be Industrial

- There must be a reasonable certainty that the site will remain industrial
- If industrial land use is assumed for media protection standards/risk assessment then corrective measures should include:
  - Enforceable physical controls
  - Enforceable institutional controls
  - Additional enforceable corrective measures if land use changes

Characterization Requirements Differ for 2005 and 2008 Goals

- Full characterization of contamination is not necessarily required to attain a positive CA725 or CA750 EI determination
- Sufficient data needed to evaluate:
  - Current exposures of receptors to all contaminated media
  - Stability of groundwater contamination
  - Selection and implementation of interim measures, if required
- Not necessary to identify contaminant source

Site Investigation Must Be Completed Before a Final Remedy Can Be Selected

- EPA's *RCRA Facility Investigation (RFI) Guidance* (1989) indicates:

  "The Purpose of the RFI is to obtain information to **fully characterize the nature, extent, and rate of migration** of releases of hazardous constituents and to interpret this information to determine whether interim corrective measures and/or a Corrective Measures Study may be necessary."

- Must characterize source material

- Should also address contaminant migration potential

2005 EI Goals Do Not Consider Ecological Impacts

- CA725 EI only addresses human exposures
- CA750 may indirectly evaluate ecological impacts but only if there is groundwater discharge to surface water

Protection of the Environment is a Performance Standard for Selecting a Final Remedy

- Final remedy must protect human health and the environment
- Evaluation of ecological risks can involve:
  - Screening level comparisons of contaminant concentrations in impacted media with ecological benchmarks
  - More detailed ecological risk assessment to characterize ecological exposure and effects
- Ecological risk assessments
  - Integrate available information on the sources of stressors, stressor characteristics, exposure, ecosystems potentially at risk, and ecological effects to predict impacts to ecosystems

Steps in an Ecological Risk Assessment (ERA)

- Problem formulation
- Characterization of exposure and ecological effects
- Risk characterization

Guidance/References

- U.S. Environmental Protection Agency. Risk-Based Clean Closure Memorandum. March 16, 1998.
- U.S. Environmental Protection Agency. RCRA Facility Investigation (RFI) Guidance. July 26, 1989. (OSWER Directive 9502.00-6D).
- U.S. Environmental Protection Agency. Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments. June 1997. (EPA 540-R-97-006).