The Indiana Chapter of the Air & Waste Management Association – 9th Annual Winter Technical Meeting

New Environmental Cleanup Laws and IDEM Implementation

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Topics Overview

- ***This presentation summarizes key statutory changes to Indiana's remediation programs and the potential impact and implications to proposed remediation rules and the RISC Guidance.***
  - Background
  - House Enrolled Act 1162 [effective July 1, 2009]
  - IDEM transition policy?
  - Challenges [covered in Q&A session]

Background

- August 2007 : “preliminary” draft of RISC Technical Guidance (preference for cleanup)
- November 2007 : comments from key stakeholders selected by IDEM (external RISC work group)
- May 2008 : IDEM response to comments
- June/July 2009 : proposed rule and policy statement on preference for cleanup

Background

- September 2009 : comments from stakeholders to draft remediation rule and multiple meetings on “preference for cleanup” policy
- Indiana Remediation Coalition – group of stakeholders supporting risk-based cleanups
- Winter 2009 : Legislation lobbying/unanimous support for “clarifications” to Indiana’s risk-based statute
- IDEM involvement

House Enrolled Act 1162

- Substantial changes to the Voluntary Remediation Program (VRP) statute; focus on the “Remediation Objectives” (Ind. Code. 13-25-5-8.5).
- Strengthens commitment to risk-based clean-ups.
- Fosters economic development and brownfield redevelopment activities.
- Clarified original intent of risk-based statute.
- Statute passed with unanimous support.

House Enrolled Act 1162

- ***Summary of Key Changes:***
  - *Applies to ALL of IDEM's Remediation Programs*
  - *Site Characterization – how to define N&E*
  - *Risk-based clean-ups – ICs & remedial measures*
  - *Closure:*
    - *Expanded use of ICs (local ordinances)*
    - *Increased flexibility for redeveloping petroleum sites*
    - *ERC law "fix"*
    - *"Conditions Subsequent"*

Applicability

- Extends risk-based principals to all of IDEM's remediation programs
  - RCRA (Ind. Code 13-22)
  - USTs (Ind. Code 13-23)
  - Petroleum facilities (Ind. Code 13-24)
  - State Cleanup (Ind. Code 13-25)
- IFA's Brownfields Program
- Clarifies that these changes are retroactive; potential affect to Transition Policy (discussed later)

Changes to VRP Statute

- ***Characterization Issues***

  1. Ind. Code 13-25-5-8.5(c)(1) states "nature and extent of hazardous substance or petroleum is adequately characterized under the voluntary remediation wok plan, **considering the remediation objectives developed under this section**."
     - **What does this mean?**
     - **Still must "adequately characterize" your sites**
     - **IDEM interpretation**
     - **Impact/implications for residential/industrial sites**

Changes to VRP Statute

- ***Risk-based clean-ups***

  2. Ind. Code 13-25-5-8.5(d)(3) states "risk based remediation objectives shall be based on … (3) levels of hazardous substances and petroleum developed based on site specific risk assessments that take into account site specific factors, **including remedial measures, restrictive covenants, and environmental restrictive ordinances that: (A) manage risk; and (B) control completed or potential exposure pathways."**

  - Response to IDEM's preference for cleanup policy
  - IDEM interpretation
  - Impact/implications for remediation proposals

Changes to VRP Statute

- ***Risk-based clean-ups (cont.)***

  3. Ind. Code 13-25-5-8.5(e) [New Section] states "**The department shall consider and give effect to restrictive covenants and environmental restrictive covenants in evaluating risk based remediation proposals**."

     – This does NOT authorize the "pave and wave" approach
     – Gross misinterpretation/abuse
     – Impact/implications for remediation proposals

Local Ordinances

- ***Local ordinances used to control exposure pathways***
  - Creates new type of ordinance - “Environmental Restrictive Ordinance” (ERO)
  - ERO used in remediation projects.
  - An ERO is a county or municipal ordinance that limits, regulates or prohibits groundwater withdrawal, human consumption or any other use.

Local Ordinances

- ***Local ordinances used to control exposure pathways (continued)***
  - The new law requires that local governments provide advance notice to IDEM before considering the repeal or amendment of an ERO so that IDEM may determine how such action might affect a remediation that relies on the ERO.
  - Model ERO
  - Training and issues with successfully obtaining an ERO
  - IACT issues with how ERO defined

Brownfields Redevelopment

- ***Facilitates petroleum site redevelopment*:**
  - Extends the CERCLA statutory bona fide prospective purchaser (BFPP) and contiguous landowner protections to petroleum sites.
  - In the past, these “safe-harbor” protections only applied to “hazardous substances”, which does not include petroleum.
  - Continuing obligations for petroleum impacted properties

Brownfields Redevelopment

- ***Facilitates petroleum site redevelopment*:**
  - The IFA Brownfields Program can now issue comfort letters to eligible purchasers of petroleum-contaminated sites to inform the purchaser of the steps it needs to take to maintain its status as a non-liable party under state law.
  - City of Connersville CL issued on August 31, 2009
  - Very important development in light of IDEM's new policies for petroleum clean-ups

Real Estate

- ***Changes to ERC law*:**
  1. After June 30, 2009, an ERC must:
     - Limit the use of land or require the maintenance of any ICs as approved by IDEM
     - Run with the land and bind successors
     - Explain how it can be modified or terminated
     - Grant IDEM access to the land
     - Notify transferees
     - Identify the location of the IDEM files related to the property

Real Estate

- ***Changes to ERC law*:**
  2. IDEM is limited to reviewing and approving the "**activities and land use restrictions**" provisions to be included in the ERC, but no longer has the legal authority to review and approve the balance of the ERC.
     - This is a real estate document
     - Model ERC/Template
     - IDEM ERC database
     - IFA Brownfields Program template

Changes to ERC law:

Real Estate

- ***Is an ERC <u>required</u> as part of closure process if leaving contamination at site above residential closure levels?***

Changes to VRP Statute

- ***Conditions Subsequent*:**
  - IDEM has the authority to include conditions that must be performed or maintained after issuance of Certificates of Completion and Covenants not to Sue (known as “conditions subsequent”)
  - Applies to no-further-action determinations
  - Cured a legal interpretation that was preventing this closure feature, particularly in the VRP
  - Impact/implications to VRP (“Gold” vs “Bronze” COC/CNTS)

Transition Policy

- IDEM's transition policy or "grandfathering" policy was first developed for the RISC Guidance (2/'01)
- Policy was tailored to each remediation program – e.g., in VRP tied to date VRA executed
- Policy in state of flux and potentially undergoing a complete overhaul
- Impact/implications to sites enrolled in a remediation program

How do these changes help you achieve closure?

- Efforts to characterize nature and extent can be tailored to land use and remediation objectives
- Developing a Site Conceptual Model and conducting a risk assessment are key tools and form core of new guidance
- Consultants can use professional judgment and demonstrate that COCs are adequately characterized
- Reduces ping-pong with IDEM technical reviewers

How do these changes help you achieve closure?

- Burden on consultant/legal team to present and explain remediation proposal:
  - Clear advantages when you take “reasonable measures” to address “true source areas” and reduce long-term tail obligations

- Ability to achieve quicker closures with “conditions subsequent” option:
  - ERO can be effective for off-site groundwater
  - ERC process was streamlined
  - Other appropriate measures opens door for innovation

Challenges

- Key issue is how to manage future risk for long tail obligations associated with a risk management remedy (metals, petroleum, cVOCs, MGP)
- Expanded set of tools – ERCs, EROs, annual reports, and “other appropriate measures”
- CERCLA Five Year Review?
- Vapor Intrusion can be (IS) a remedy driver
- Need for financial assurance? When, How Much, and How Long?
- How does IDEM plan to incorporate conditions subsequent into closures?

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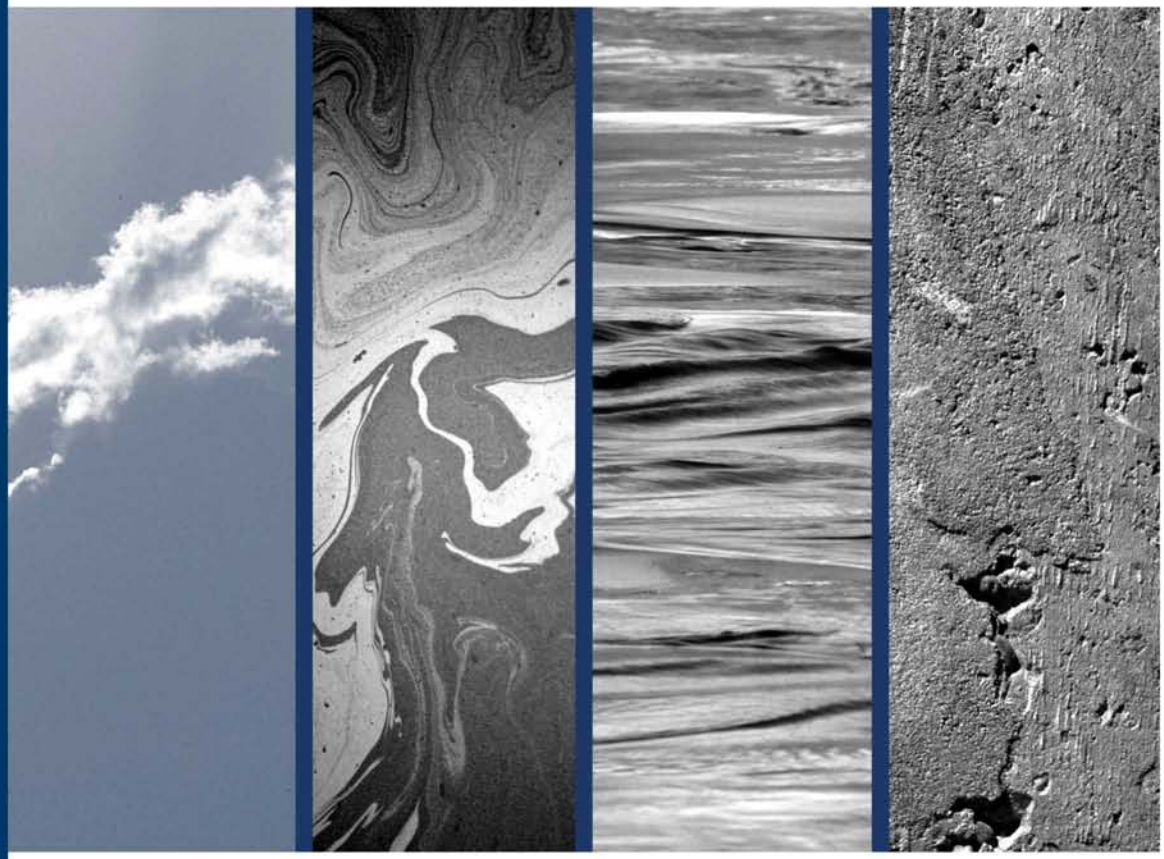

IDEM HEA 1162 Interim Implementation Document

Michael Schutz, LPG

- *Senior Geologist*
- *Transaction/Closure Department Manager*
- *President - MSECA*

IDEM HEA 1162 "Interim Implementation Document"

IDEM will accept closures using 2001 RISC Technical Guide thinking

- HEA 1162 "Interim Implementation Document"
  - Bridge between 2001 RISC Guidance and a future version of RISC Guidance
  - Training document
    - Change the way IDEM staff looks at closures
- Provides framework/procedures to:
  - Evaluate nature & extent of contamination
  - Evaluate remedial options
  - Request Closure

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IDEM HEA 1162
"Interim Implementation Document"

- Always important to address source area
- Standards for Closure
  - Background Values *(naturally occurring concentrations)*
  - Risk Based Remedial Objectives based on:
    - Calculated closure values *(Default Tables)*
    - Site specific values using standard equation
    - Site specific risk assessment
      - » Follow Risk Assessment Guidance for Superfund *(RAGS)*
      - » Other non-default approaches *(including risk management)*

IDEM HEA 1162
"Interim Implementation Document"

- Three general options for closure
  - Demonstrate contaminant concentrations are consistent with background levels
  - Site characterization shows there is no unacceptable risk
    - Contaminant concentrations are below remedial objectives
  - Implement a remedy that achieves no unacceptable risk *(exposure)*

New, or refined, terms

- "Area of exposure control"
  - Area over which a remedy controls exposures
    - Not necessarily property line(s)
  - Examples
    - Area subject to an ERC
    - Area subject to an ERO
    - Common site use (Industrial area)
- Multiple Lines of Evidence
  - Provide facts supporting a position
  - Give IDEM the information to base a decision

New, or refined, terms

- Unconditional Closure
  - Generally meets residential levels
  - No site use restrictions
  - No ongoing monitoring or reporting needed
- Conditional Closure
  - Contaminant concentrations above levels allowing unconditional closure
  - ERC required unless risk evaluation shows it is not necessary (e.g., right-of way areas)
  - Also includes section regarding free product
- Default Closure Levels

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"Interim Implementation Document"

- Key concepts
  - Understanding risk assessment
  - Soil delineation
  - Groundwater delineation
  - Remedy evaluation

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Understanding Risk Assessment

- Carcinogens
  - Closure level based in Slope Factor
    - Statistical chance of causing cancer
    - Relative to a cancer risk of 10^{-5}
  - Baseline cancer risk in United States
    - 40,000 in 100,000 people will get cancer (40%)
    - Cancer risk of 0.4 or $4x10^{-1}$

Understanding Risk Assessment

- Carcinogens
  - Excess cancer risk *(beyond baseline)*
    - EPA considers negligible risk
    - 10^{-6} to 10^{-4} *(0.000001 to 0.0001)*
    - IDEM uses 10^{-5} = 0.00001
      - one additional cancer case for every 100,000 people
      - Cancer risk increases
        - » From 0.40000
        - » To 0.40001

Understanding Risk Assessment

- Non-carcinogens
- Noncancer Hazard Quotient
  - Closure level based on “reference dose” *(RfD)*
    - Daily dose considered safe over a specified time
    - Calculated relative to hazard quotient of 1

Understanding Risk Assessment

- Exposure scenarios used in calculations
  - Exposure duration
  - Exposure frequency
  - Amount ingested, inhaled, absorbed
  - Site conditions *(contaminant fate & transport)*

Understanding Risk Assessment

- Example – Exposure duration
  - Construction worker
    - 45 days
  - Industrial direct contact
    - 250 days per year
    - 25 years

Understanding Risk Assessment

- Multiple layers of conservatism
  - Apply at all sites in Indiana
  - Account for Addativity

Closure Levels

Closure levels are not bright lines

- Professional judgment is important in risk assessment and risk management
- Risks are not realized unless exposure is consistent with exposure scenario used in calculation
- RISC allows flexibility for site specific conditions

Closure Levels

Example - Closure Levels

- PCE *(mg/kg) - Carcinogen*
  - Construction 660
  - Soil Direct Contact *(Ind.)* 16
  - Migration to groundwater *(Ind.)* 0.64
  - Soil Default Closure Level *(Ind.)* 0.64

Eliminate groundwater exposure *(ERC/ERO)*

Eliminate direct soil exposure *(Maintain cover)*

Order of magnitude flexibility *(6.4 closure level – or higher)*

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"Interim Implementation Document"

Understanding and presenting risk

- Conceptual site model (CSM)
  - Always needed
  - Consider all site features
  - Include sufficient site data
  - Updated with new information
- Multiple lines of evidence
- Present realistic and complete scenario
  - Not just information that supports your case

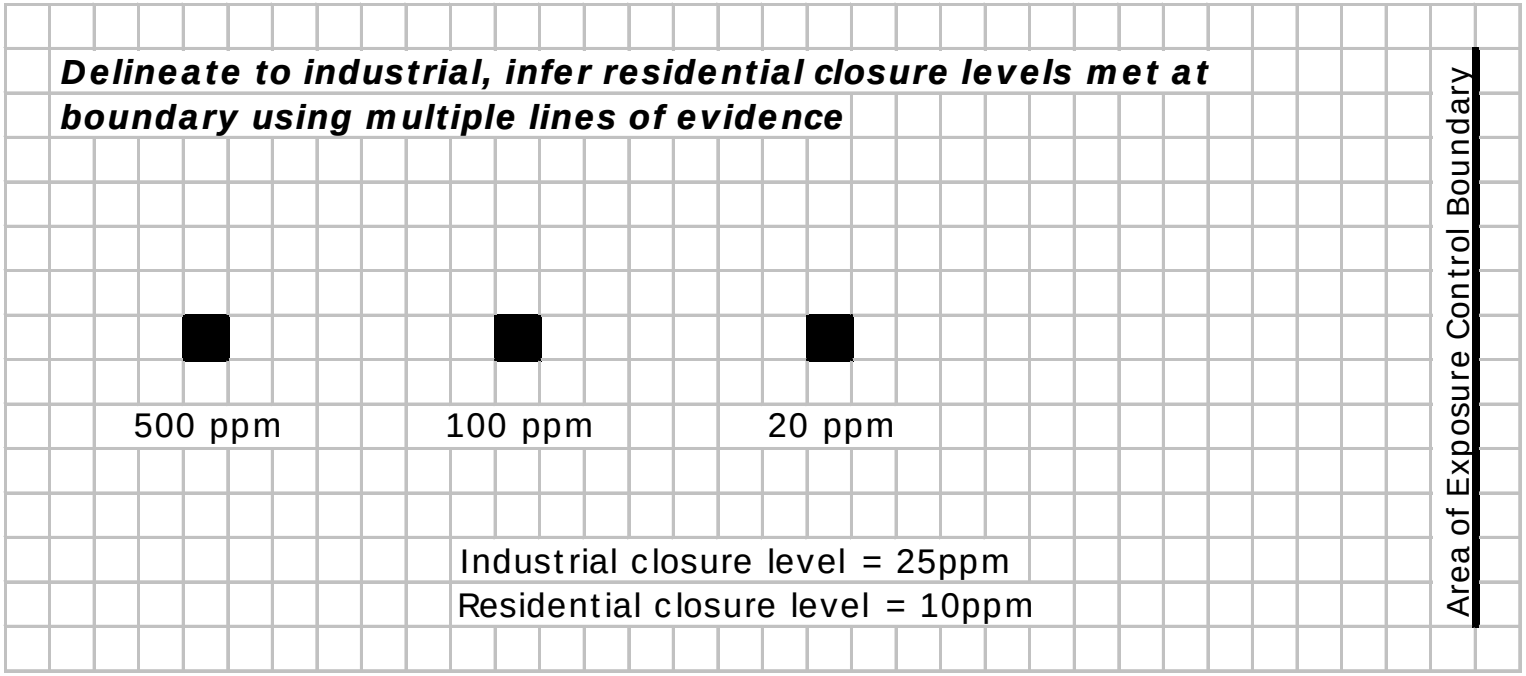
Soil Delineation

- Previously
  - Delineation to residential closure levels
- Now
  - Consider remediation objectives when evaluating delineation needs
  - Delineate extent of on-site impacts to land use closure levels identified in CSM, and
  - Demonstrate that contamination does not go beyond the area of exposure control above residential closure levels (*Sampling or lines of evidence)*

Soil Delineation Example

Soil Scenario 1:

Delineation sampling shows that on-site contaminant concentration levels are below commercial/industrial closure levels, but still exceed residential closure levels. However, the boundary of the area of exposure control is far enough away that an off-site exceedence of residential closure levels is unlikely.



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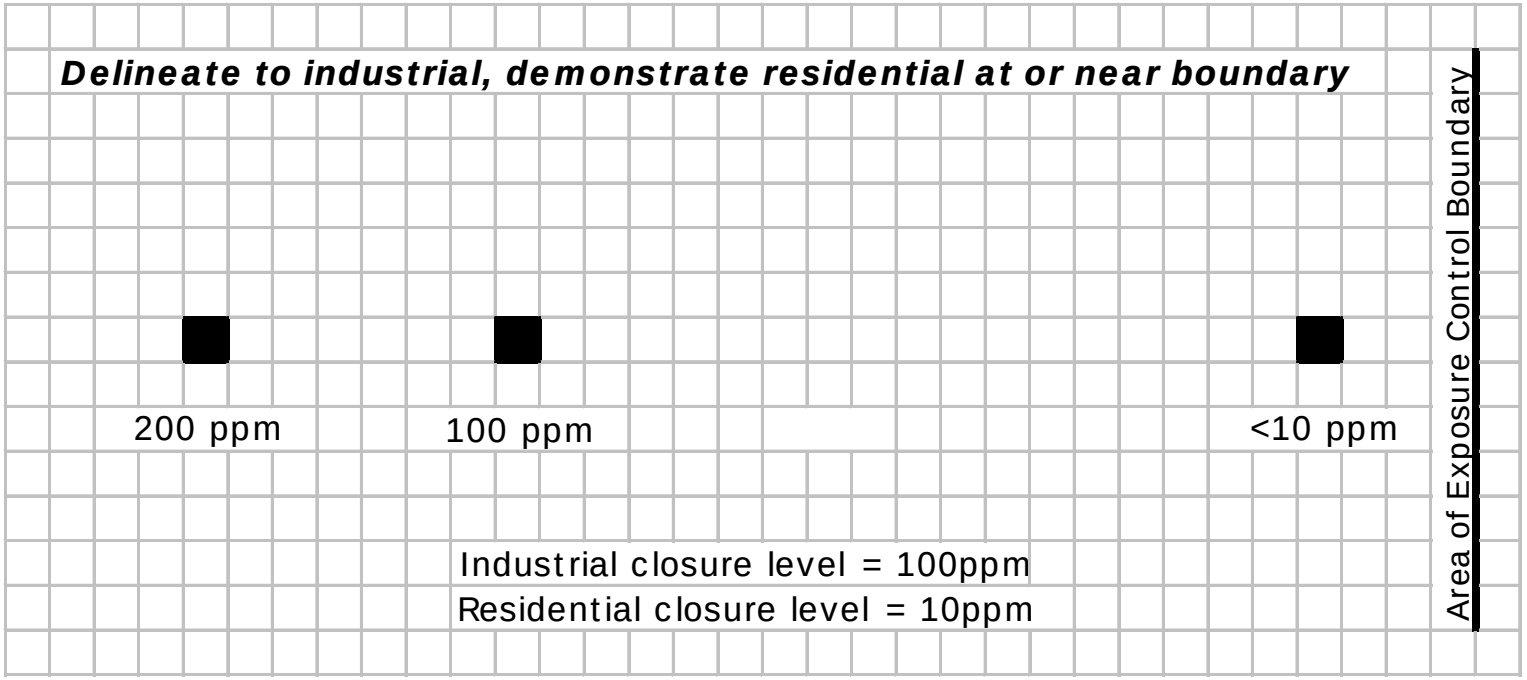
Soil Delineation Example

Soil Scenario 2:

The latest round of sampling adequately delineates contamination to commercial/industrial levels on-site, and additional sampling shows that contaminant concentrations are below residential closure levels along the boundary of exposure control.



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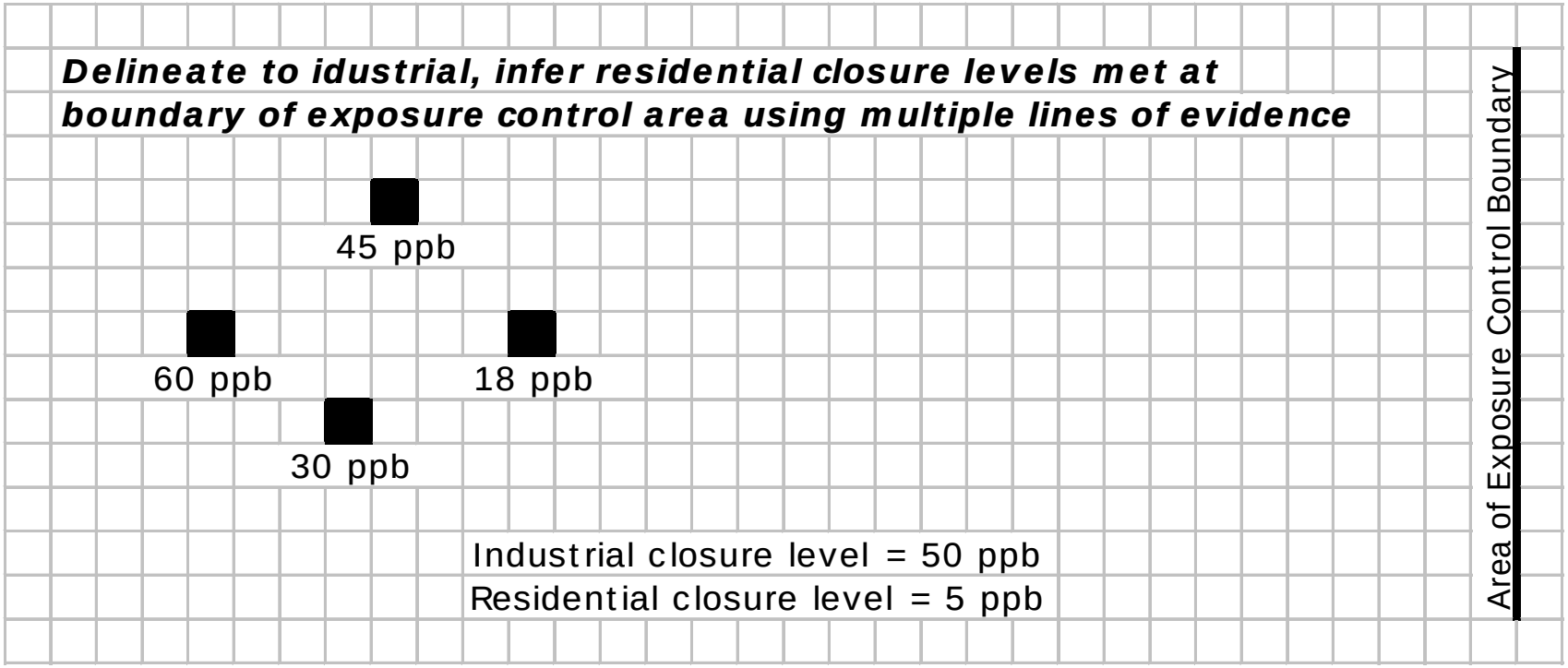
Groundwater Delineation

- Groundwater delineation
  - Consider remediation objectives/site and surrounding land use when evaluating extent
  - Use multiple lines of evidence if not delineating to Residential levels

Groundwater Delineation Example

GW Scenario 1:



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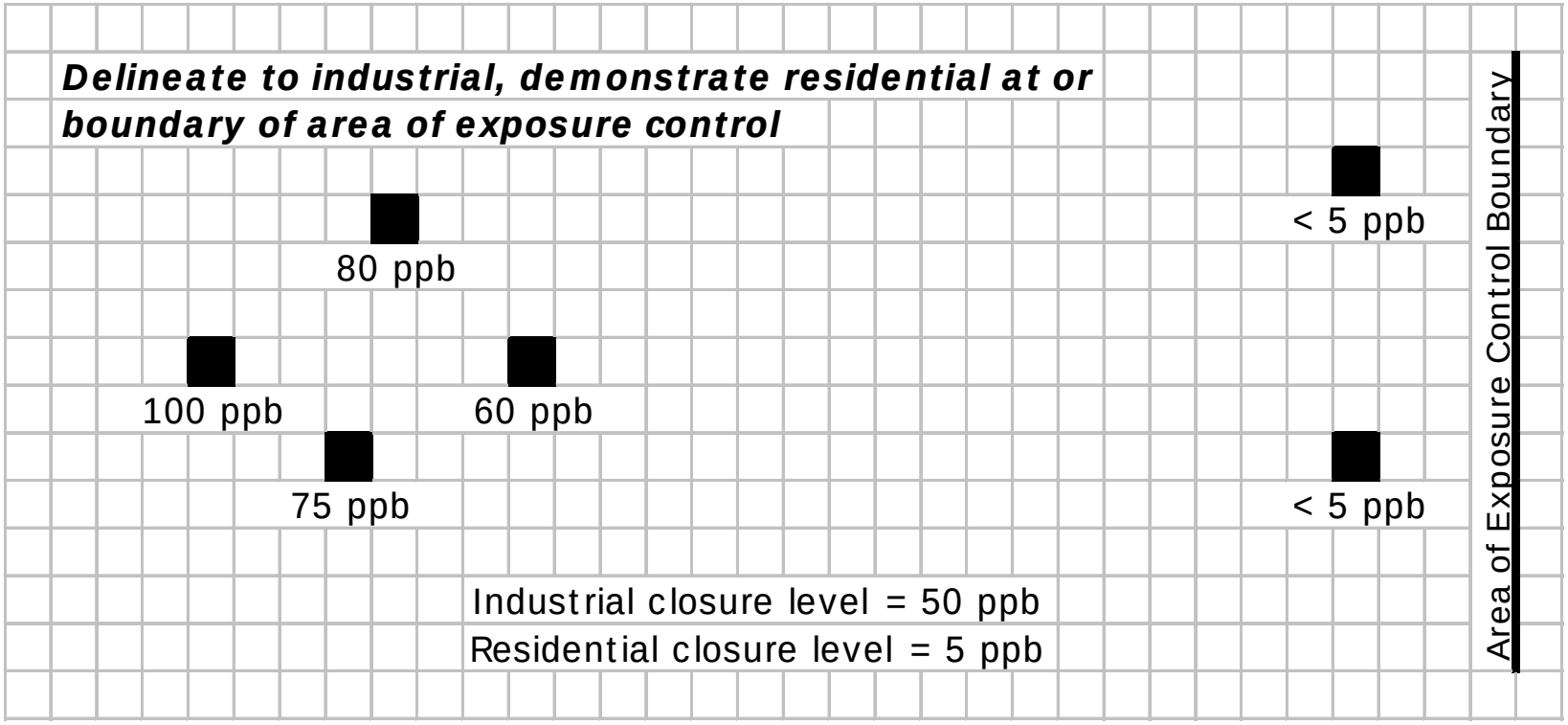
Groundwater Delineation Example

GW Scenario 2:



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Groundwater Delineation Example

GW Scenario 3:

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Multiple Lines of Evidence

Multiple lines of evidence

- COCs
- Dimensions of plume
- Distance to boundary or nearest receptor
  (e.g., 90% of petroleum plumes <400 ft long)
- Magnitude of impacts
- Geology

  (e.g., depth, shallow aquifer viability?)
- EROs or ERCs already in effect

Free Product

- Free Product Considerations
  - Does the free product create or have the potential to create an acutely hazardous condition?
  - Is the free product acting as an ongoing source of groundwater contamination that may impact a receptor?
  - Is there potential for dire contact to free product through excavation, utility work, or other means?
  - Are there potential vapor intrusion issues related to free product

Remedy Evaluation

- General considerations for risk-based remedy
  - Complete cleanup not necessarily required
  - ERCs generally required if impacts remain in-place above Residential levels.
    - Some flexibility
  - Use EROs - so long as they manage risk and control exposure pathways.
    - “professional judgment” will come into play
  - Financial assurance provisions, if necessary

Thank You!!

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HEA 1162: Moving Forward

AWMA

9th Annual Winter Technical Meeting

December 2010

In this Presentation;

- Obtaining closure through traditional means
- IDEM's commitment to internal and external training
- What IDEM needs from consultants to support risk-based decisions
- New Decision Documents
- IDEM's role regarding ERCs and EROs

Traditional Closure Approaches

- The Value of Source Reduction
- Reducing future obligations
- Reducing liability
- Limiting future risk
- Property value impacts

Training

- IDEM is committed to internal and external training
- Consultants Day
- IDEM MSECA collaboration
- Future Guidance

Supporting Risk-Based Decisions

- Complete Conceptual Site Model: utility lines, receptors, exposure pathways, etc.
- Multiple lines of evidence, weight of evidence
- Science-based evidence

Supporting Risk-Based Decisions

cont.-

- Decision documents:
  - *Record of Remedy Selection*
  - *Record of Site Closure*

ERCs and EROs

- IDEM's role:
  - Implementation
  - No Funding or dedicated staff
  - Compliance
  - Future changes to an Institutional Control
  - Financial Assurance

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