Environment Canada Environnement Canada

Canada

Federal Contaminated Sites Action Plan (FCSAP)

Ecological Risk Assessment Guidance

Geoenvirologic – 6th Annual Symposium
Contaminated Site Risk Assessment

Vancouver, June 2, 2011
Ute Pott
Environment Canada

FCSAP Risk Assessment Guidance

- **Federal Interim Groundwater Guidelines (2010)**
- **Tool for Risk Assessment Validation (TRAV) as part of Site Closure Tool (upcoming FCSAP requirement)**
- **Ecological Risk Assessment Guidance**
- **Site Characterization Guidance**

Interim Federal Groundwater Guidelines

- FCSAP Lead – Environment Canada, Xing Wu (FCSAP Secretariat)
- Contractor: Meridian Environmental Inc.
- Final version released May 2010, update planned for May 2012
- “Interim” guidelines should be used on FCSAP sites until CCME develops groundwater guidelines
- To be used in conjunction with Health Canada Drinking Water Guidelines
- Available by request to xing.wu@ec.gc.ca

Interim Federal Groundwater Guidelines

- Interim Tier 1 and Pathway Specific Tier 2 Groundwater Guidelines for:
  - metals
  - hydrocarbons
  - halogenated aliphatics
  - chlorinated aromatics
  - phenols
  - pesticides
  - other organics

- 3 different land uses: agricultural (incl. wildlands), residential/parkland and commercial/industrial)
- Separate values for fine/coarse soil
- Applies to groundwater at > 10m distance to surface water
- Guidelines do not include drinking water protection!

Interim Federal Groundwater Guidelines

Based on Specific Pathways:

For all land uses:

- Groundwater flow to surface water and exposure to aquatic life
- Direct contact of soil organisms to groundwater
- Vapour generation and human inhalation

For agricultural land use only:

- Groundwater use for irrigation
- Groundwater use for livestock watering
- Groundwater discharging to surface water and subsequent ingestion by wildlife

Interim Federal Groundwater Guidelines

- **Update of Interim Groundwater Guidelines in Progress**
  - Address specifics in criteria for pathway elimination
  - Include updates to Ontario GW guidelines
  - Correct editorial errors in text and tables
  - Clarify analytical methods (total vs. dissolved)

Please forward you input/comments/suggestion to Xing.Wu@ec.gc.ca or Ute.Pott@ec.gc.ca

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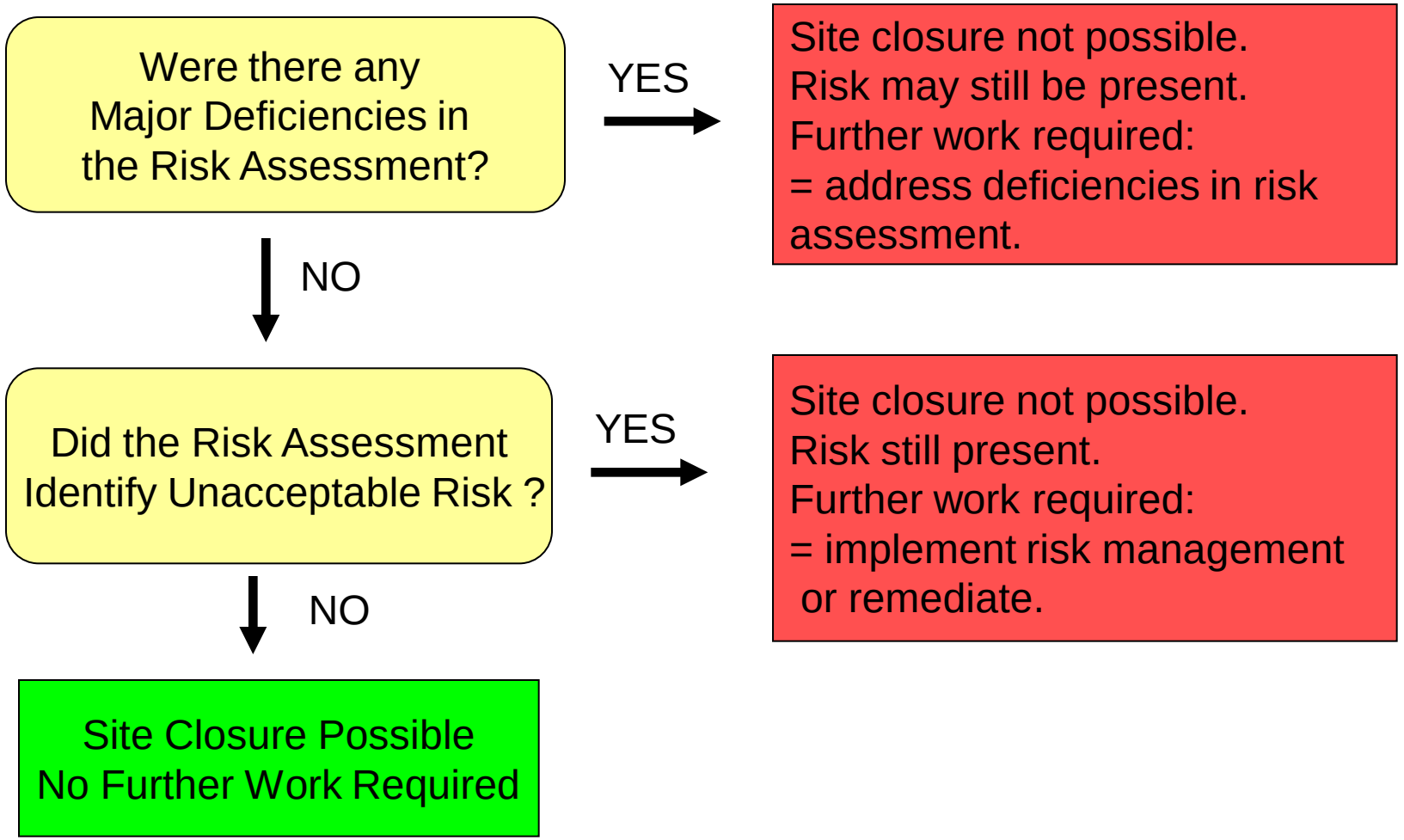
FCSAP Site Closure Process

- Development of FCSAP site closure tool (PWGSC) – expected March 2012
- Spread sheet based tool to document that all work on the site (site assessment, risk assessment, remediation) was completed satisfactorily – Risk has been reduced to acceptable level – no further work is required.
- For sites that used risk assessment as part of their site management approach – Tool for Risk Assessment Validation (TRAV) will be required
- TRAV is developed by a FCSAP Working Group (EC, DFO, HC). Lead: Prairie & Northern Region (Edmonton) and FCSAP Secretariat.

Tool for Risk Assessment Validation



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Ecological Risk Assessment Guidance

- **Comprehensive Ecological Risk Assessment Guidance**
  - Draft Document, Public Review completed May 31st, 2011
  - Addressing Comments, Translation, Final Version – Mar 2012(?)

- **Appendices = Technical Modules**
  - Module A: Toxicity Test Selection & Interpretation
  - Module B: Selection & Development of Toxicity Reference Values
  - Module C: Standardization of Wildlife Receptor Characteristics
  - Module D: Causality Assessment

Ecological Risk Assessment Guidance

- **Module A: Toxicity Test Selection and Interpretation**
- **Module B: Selection and Development of Toxicity Reference Values**
  - Final guidance available now – contact Ute.Pott@ec.gc.ca

- **Module C: Standardization of Wildlife Receptor Characteristics**
- **Module D: Causality Assessment**
  - Draft guidance, translation and public review in 2011/12 pending funding approval
  - Interested in reviewing (Winter 2011) contact Ute.Pott@ec.gc.ca\

Technical Module A: Selecting Toxicity Tests for ERAs

- Overview of Different Roles of Toxicity Testing in Ecological Risk Assessment (Line of Evidence, TRV development, etc.)
- Guidance on Interpretation of Toxicity Test Results in a Risk Assessment Weight-of-Evidence Framework
- **Guidance on Selecting Appropriate Toxicity Tests for Ecological Risk Assessment**
- *Format: Guidance Text and Interactive Excel Tables*

Technical Module A: Selecting Toxicity Tests for ERAs

Key Information in 3 Excel Tables:

- **Table 1:** Demonstrates linkage between receptor types, applicable ecosystem types, test media and what pathways are being simulated
- **Table 2:** Generates a list of all applicable toxicity testing protocols by ecosystems and receptor types
- **Table 3:** Evaluates the suitability of the tests selected in Table 2 :
  - Utility for Risk Assessment
  - Organism/Substrate Characteristics
  - Logistics and Planning

Technical Module A: Selecting Toxicity Tests for ERAs

- Demonstration of EXCEL Tables

Toxicity Module Tables_March 2010.xls

Technical Module B: TRV Selection and Development

- Overview of Different Types of Toxicity Reference Values (TRVs): dose based, tissue/media concentration based
- Use of TRVs in Ecological Risk Assessments
- Guidance on how to select TRVs from published sources
- Guidance on derivation of site specific TRVs

Technical Module B: TRV Selection and Development

Guidance on selecting TRVs from published sources:

Resource list for published TRVs (Table 1):

- Includes: references, derivation methods, ecological endpoints, protection goals and acceptable effect levels inherent in TRV, advantages and limitations.

Guidance on developing site specific TRVs

1. TRVs developed from Literature Toxicity Testing
   - Table 2 provides list of sources for Literature Toxicity Data
   - Discussion of do's and don'ts, uncertainty

2. TRVs developed by modifying Guidelines
   - Table 3 provides list of guideline derivation references

3. TRVs developed from Site Specific Toxicity Testing
   - Provides link to Module A (Toxicity Testing)

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Site Characterization Guidance

- Update of CCME 1993 Site Characterization Guidance
- FCSAP funded CCME soil quality task group to develop new Site Characterization document including:
  - existing HC guidance (soil, groundwater, soil vapour, indoor air)
  - new guidance (sediment, surface water and biological tissues)
- Distribution for public review on CCME list serve – Summer 2011
- EC contract lead: Chris.Allaway@ec.gc.ca

Guidance for ERA - Summary

Interim Federal Groundwater Guidelines

- Contact Xing.Wu@ec.gc.ca

Site Closure/Risk Assessment Validation Tool

- Contact Ute.Pott@ec.gc.ca

Comprehensive ERA Guidance & Technical Modules

- Comprehensive Guidance expected March 2012
- Module A (TOX) and B (TRV) available
- Module C (RECEPTOR) and D (CAUSE): Interested to Review?
- Contact Ute.Pott@ec.gc.ca

Site Characterization Guidance

- CCME Public Review – Summer 2011
- Contact Chris.Allaway@ec.gc.ca

FCSAP Guidance for ERA