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Oil Sands Research and Information Network (OSRIN)

Phase II Assessments and Phase III Remediation: A Brief History

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RemTech

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Status of Phase II/III work in the Oil Patch in Alberta – A discussion paper

- Reviewed over 2,100 sites in 2012 from many companies

- Post-certification Audits by Alberta Environment & Water and Alberta Sustainable Resource Development (now ESRD)
- Will focus on ESRD data since it is public record.

- Goal is to provoke discussion

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We've come as long way

- 1981 First site, not even knowing what to do
- 1985 Tasted dirt, to see if it was salty or oily
- 1993 Segregation in EPEA of remediation and reclamation

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We've come as long way (cont.)

- 2003 Professional sign off of upstream O&G reclamation certificates
- 2012
  - Phase II standards (though dated)
  - Good labs
  - Suite of disposal facilities
  - Specific post-secondary education programmes

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AUDITS FAILED

- Alberta Environment/SRD Surface Audits
  - 2003-2011 9%
- Alberta Environment/SRD Contamination Audits
  - 2003-2011 28%

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Key Risks

- It would not be acceptable if over a quarter of the bridges built by engineers fall down.
- Consultants, especially those stamping remediation and reclamation certificate applications, are putting themselves at risk of:
  - Damaging their reputation and that of their professional organization
  - Claims by upset clients
  - Extended clean up costs through further damage to the environment

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Key Risks (cont.) This is not going away

- The industry liability period for surface reclamation issues (topography, vegetation, soil texture, drainage etc.) is **25 years**.
- Liability for contamination issues remains with the company **in perpetuity** unless rem cert in place
- This is not going away
  - We can not walk away from our responsibility
  - While just under 100,000 wells have been reclaimed, 275,000 remain to be remediated and reclaimed, not to mention larger facilities and ex-situ sites

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What we noted

- Incomplete delineation yet volume estimates made anyway
  - No field screening
  - Insufficient analytical
  - Poorly done field screening
- Poor reproducibility
  - No georeference or survey data
  - Poorly written methods

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It is not all bad

We also saw some outstanding work:

- 3D modelling
- Rigorous methods
- Good delineation and admission of incomplete delineation
- Remote assessment (air & EM)

Let's make scientific rigour the standard

It is process versus people

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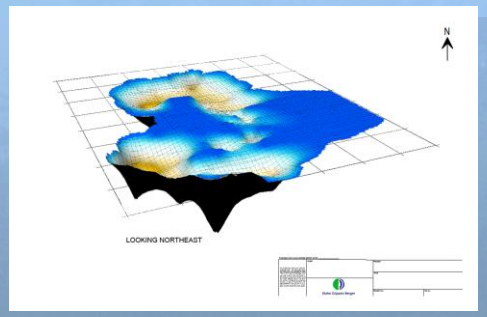
Recommendations

Clients:

- Reject poor scientific performance by
  - Hiring sophisticated internal personnel
  - Developing strict sampling protocols
  - Identify professionals signing off on failed sites and complete lessons learned
- Work with UofA, Vermillion, Mount Royal to improve programmes



Government:

- Continue Audit programme
  - Parse through and present reasons audits failed
- Lead industry in continuing to develop standards
  - Good at consensus
- Mandatory registration of Phase II/III's on the Environment Site Assessment Registry

Consultants:

- Standardize procedures
  - Georeference
  - Field screening
  - Clear methods
- Get rid of the poor performers

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Recommendations

Professional and Technical Organizations:

- Quality Management
- Scientific rigour
- Cross-company Technical Review (i.e. PSMJ Peer Review)
- Standard Operating Procedures
- Consensus
- Annual review with all stakeholders
- Work with UofA, Vermillion, Mount Royal to improve programmes

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Recommendations

The Great Debate:

- Discuss the ‘right’ way to manage contaminated sites.
- responsibility, timing, location (“time value of money”).
- Philosophical, technical and legal debate
- What does ‘polluter pays’ really mean?
- How long can owners of contamination wait to clean up sites?
- Is there a moral hierarchy?
  - cleanup
  - ‘dig and dump’ (long term storage in landfills?),
  - risk management?
- Social, environmental and economic implications?

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