Human Health Risk Assessment at Northern Mines

Contaminated Sites Division
Federal Contaminated Sites Action Plan

- $3.5 billion, 15-year program established in 2005
- Reduce risks to human health and the environment
- Reduce federal financial liabilities
NATIONAL DISTRIBUTION OF FCSAP PROJECTS: 2008-2013
DISTRIBUTION NATIONALE DES PROJETS LIÉS AU PASCF: 2008-2013
Faro Mine
Rose Creek Tailings Area
Health Canada’s FCSAP Mandate

• Health Canada is an *Expert Support* Department

  • Guidance, training and advice on human health risk assessment and public involvement
  • Peer review of human health risk assessments
  • Rank sites for human health risks
  • Fulfill Health Canada's obligations under CEAA as it pertains to the remediation of Contaminated Sites
Why is Risk Assessment Useful?

• Generic guidelines (AL, RL, PL, IL, CL) not consistent with landuse at northern abandoned and orphaned mines

• Guidelines are developed using risk assessment methodology for a “generic” site
  • Site specific considerations
  • Traditional landuse
    • hunting, camping, berry picking, downstream fishing
  • Frequency at the site
  • Bioavailability of substances in soils
• Mount Nansen, Yukon
• Gold and silver mine
- Port Radium, Echo Bay, NWT
- E shore of Great Bear Lake
- remote
- Mining and milling: radium, uranium and silver ores
What Do We Need To Know?

• Who goes to the site?
• Where do they go on site?
• What do they do there?
• How much time do they spend there?
• What foods are consumed from the site – how much and for how long?
Are All Issues Considered?

- Ingestion of Water
- Ingestion of Country Foods
- Inhalation of Vapour and Dust
- • Ingestion of Plants
  • Ingestion/Dermal Contact with Soil
Moose walking through tailings

- Faro Mine, Yukon
- Lead/zinc mine
Health Canada Risk Assessment Guidance

Health Canada. 2004. Federal Contaminated Site Risk Assessment in Canada:
• Part I: Preliminary Quantitative Risk Assessment (PQRA)
• Part II: Toxicological Reference Values
• Part III: Peer Review Checklist
• Part IV: Excel Spreadsheet Tool for PQRA (2008)

Anticipated 2009:
• Updated PQRA guidance
• Detailed Quantitative Risk Assessment (DQRA)
• Vapour Intrusion Guidance
• Environmental Site Assessment
• Country Foods Assessment
• Development of Statement of Work for HHRA
Why Standardize Risk Assessment? Ranking

Figure 8. Cancer Risks Associated With Vinyl Chloride Exposure

Cancer Risks

Differ by factor of 100,000,000

CMHC, 1997
Why Involve Expert Support?

- Technical review of assumptions and calculations
  - Would a toddler accompany a family on a 3-month trip?
  - Are foods only consumed while at the site or through the year?
  - Are buildings used for shelter?
  - Are there significant data gaps?
    - COPCs
    - Media sampled
“So you see, your Honour, given that this was the first time that I drank all year, the 12 drinks that I consumed on the night of September 29 were actually equivalent to about 0.033 drinks per day when amortized evenly over the entire year. As a result, I could not have been impaired and the DUI charge should be thrown out.”

R. Wilson, 2008
Public Involvement

• When and how should the community be involved?
Review Challenges

- Remote, large areas
- Paucity of information
- Many areas impacted, multi-media affected