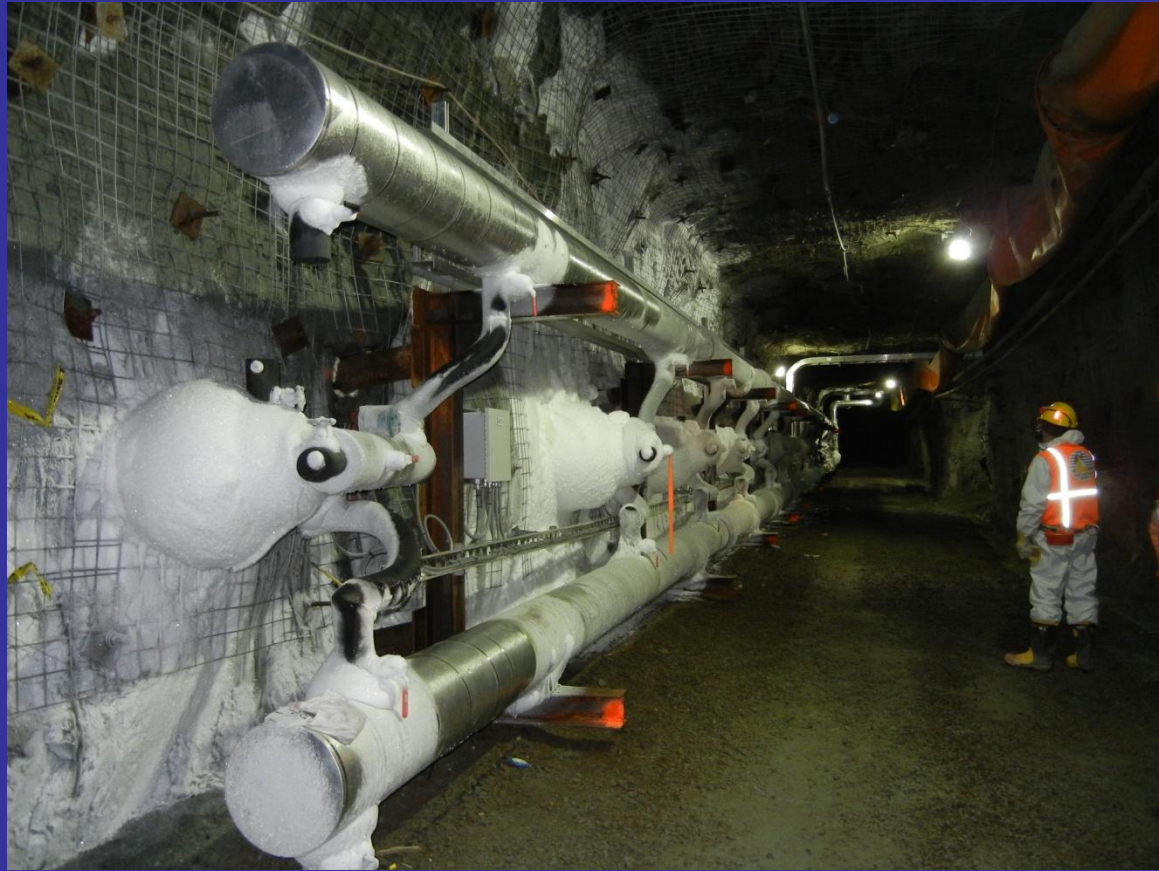


# Giant Mine Remediation Project Environmental Assessment Frozen Block and Underground



*Alternatives North*

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# Presentation Outline

- **Frozen Block Method Trade-Off**
- **Unresolved Technical Issues**
- **Community Involvement?**
- **Conclusions**



# Frozen Block Method

- Little doubt that Frozen Block will help contain arsenic and can be made to work

## TRADE-OFF?

- Frozen Block will require human monitoring and management forever
- Transfer of risk to future generations
- No perpetual care plan
- Not a permanent solution

# Unresolved Technical Issues

- **concern with effects of wetting on integrity of chambers**
  - **Injecting water may cause cracking of walls and ceiling of chambers**
  - **Concerns with reversibility of frozen block with wetting**
- **good news from Freeze Optimization Study**
  - **wetting may not be necessary**
  - **hybrid thermosyphons may work without an active freezing system**

# Community Involvement?

- **No meaningful involvement of the community with Frozen Block method**

## **Past (1999-2005)**

- **no participant funding offered**
- **no involvement in the selection or application of the evaluation criteria**

## **Present**

- **poor communications of results of Freeze Optimization Study**
- **No commitment to involve parties in final design**

# Community Involvement?

## Future?

- **Parties should be involved in selecting evaluation criteria for final design options**
  - Reversibility, can we thaw it out if needed?
  - Minimize energy needs, use low technology
  - Minimize perpetual care requirements
- **public reporting of monitoring results?**
- **public access to 'live' monitoring results**

# Community Involvement?

## Future?

- **Performance criteria or measures of success not identified for final design**
  - **Little progress through Environmental Management Working Group, Frozen Block should be the priority**
  - **Should be comprehensive but easy to understand**
  - **Should provide 'early warning' to community of any problems**

# Community Involvement?

## Future?

- **Freezing arsenic forever is not a permanent solution**
- **Need for a proactive research and development program into a more permanent solution than trying to freeze arsenic forever**
  - **'Freeze it and forget it' approach not acceptable**
  - **10-year technical review makes us wait, does not show a strong commitment to future generations**
  - **Should conduct state of the art review, identify information and technological gaps, allocate funding for competitive proposals to do the work**



# Conclusions

- **Significant public concern with frozen block**
- **Start to think of Frozen Block method as an “interim solution”**
- **A perpetual care plan is needed to monitor and manage Frozen Blocks for long-term**

# Conclusions

- **Start to better involve the community**
  - Final design of the Frozen Block
  - Designing public reporting of monitoring results
  - Setting the performance criteria (measures of success) that include early warning of problems
  - Develop a proactive research and development program for a more permanent solution
- **Preferred method to involve the community and mitigate public concern is through a legally binding Environmental Agreement**