



4th International Mine Rescue Conference

"Effective Mine Emergency Operations"

Ostrava, Czech Republic - September 21-24, 2009



"Emergency Preparedness, Planning and Response in Canada's Mining Industry"

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INTRODUCTION

Canada has a landmass of 10 million sq. km. compared to Czech Republic of 78,867 sq. km.

- Mines are remote
- Emergency Response is a challenge



5,000
km



7,000 km



Mining Statistics



70,000 producing mines in the World
140 surface & underground are in Canada

Approx. 50,000 miners working in Canada
1 mining job creates work for 3 others

Mining Statistics



Canadian Mining produces these minerals:

- **Gold**
- **Copper**
- **Nickel**
- **Diamonds**
- **Silver**
- **Lead**
- **Zinc**
- **Coal**
- **Uranium**
- **Lithium**
- **Tantalum**
- **Platinum**
- **Tungsten**
- **Salt**
- **Potash**
- **Spodumene**

Mine Safety

- Responsible and accountable mine operators & stakeholders.
- In Canada, our Injury Statistics are among the best in the world.
- Frequency rate of one (1) time loss injury per 200,000 hours worked.



RESPONSE



RESPONSE

Previous Mine Emergencies

YEAR(s)	MINE	CASUALTY/ RESCUE
1873	Drummond Colliery	70 deaths
1891, 1956, 1958	Springhill Mine	238 deaths
1902	Coal Creek Mine	128 deaths
1967	Balmer Mine	15 deaths
1928	Hollinger Mine	39 deaths
1992	Westray Coal Mine	26 deaths
2006	Mosaic Potash Mine	Rescue 72

RESPONSE

- Lessons learned
- Corrective action taken
- More positive results in recent years, due to change in Canadian safety culture.

Westray Mine

New Safety Law



*"Their light shall always
shine" Memorial*

REQUIRED TO:

- Define to Emergency Response Plan (ERP)
- Standardize; test equipment, rescue & response
- Establish mutual assistance protocols
- Continue to hold Mine Rescue competitions
- More info: www.gov.ns.ca/wd/pubs/westray

PREPAREDNESS



Atomic Energy of Canada Ltd. (AECL)
2009 Manitoba Provincial Mine Rescue Competition
Champions

Paradigm Shifts

- Mine Rescue organization created
- Dialogue
- Mutual assistance
- Improved mine rescue standards
- Standardized competency based training
- Upgraded equipment

Paradigm Shifts

- Non-fire incidents included in emergency plans
- Mine rescue competitions ongoing
- Stakeholders responsible and accountable
- Conferences organized to mine emergency management
- Research / Development
 - Self contained – Portable Mine Refuge Stations
 - Heat, Stress
 - Emergency Simulators
 - Miner's Cap Lamps

Canada's Contribution

Better emergency response is not our prime mandate.

We believe that when we are required to respond to a mine emergency we do so in the most efficient manner possible.

A mine operator's greatest challenge is their ability to prevent a mine emergency from ever occurring.

Canada's Prevention Philosophy

- Catastrophic loss is unacceptable.
- Workers safety is unconditional.
- All stakeholders must ensure Canada's mines are safe and healthy.
- Emergency preparedness, planning and response dialogue is imperative.
- Reasonable and practical laws are necessary.
- Continuous research and development is essential.
- Hazard and risk mitigation is crucial.

Canadian Mine Rescue MODEL

- 13 Jurisdictions
- 10 Provinces-governed by provincial safety and health law
- 3 Territories-regulated by federal safety & health law



Mine Rescue in Canada relies on professional & caring people to protect our miners.

National Western Regional Mine Rescue Committee (NWRMRC)

Fernie Rescue Competition



- Hosts a Bi-Annual Mine Rescue Competition – Fernie, British Columbia
- Established at the completion of the Westray Report

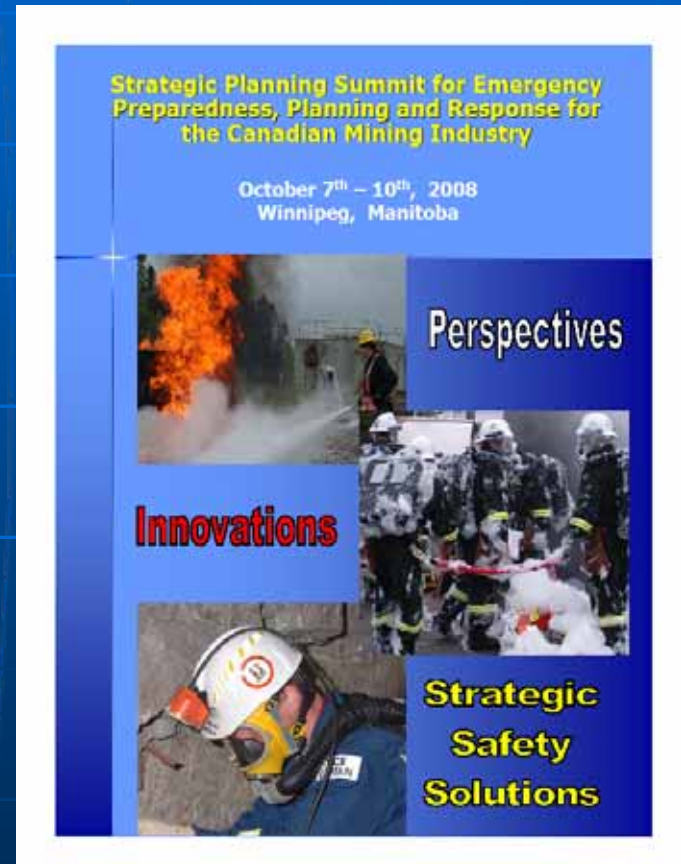


Fernie Mine Rescue Competition

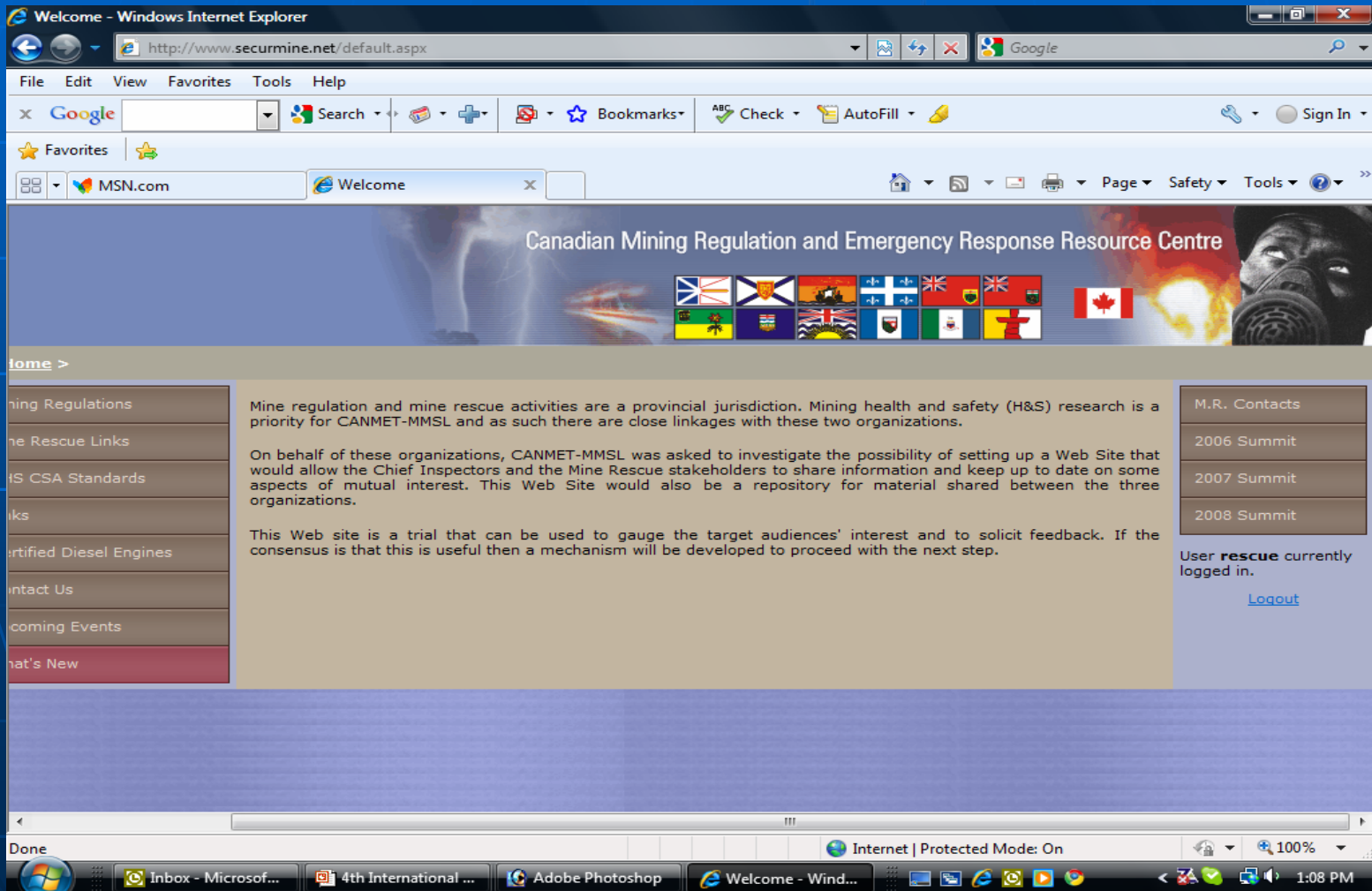
- Fernie, British Columbia, CANADA
- 9th Bi-Annual Mine Rescue Competition
- Teams included:
 - 10 Surface Rescue Teams
 - 10 Underground Rescue Teams
- Challenges were designed to test competency and skill enhancement
- Provided networking opportunities to dialogue with other jurisdictions

Emergency, Response and Planning Summits

- Emergency Preparedness, Planning and Response Summit 2006, 2008 and 2010.
- www.securemine.net
- Sanctioned by Canada's Chief Inspectors of Mines
- Designed to share information



Emergency, Response and Planning Summits



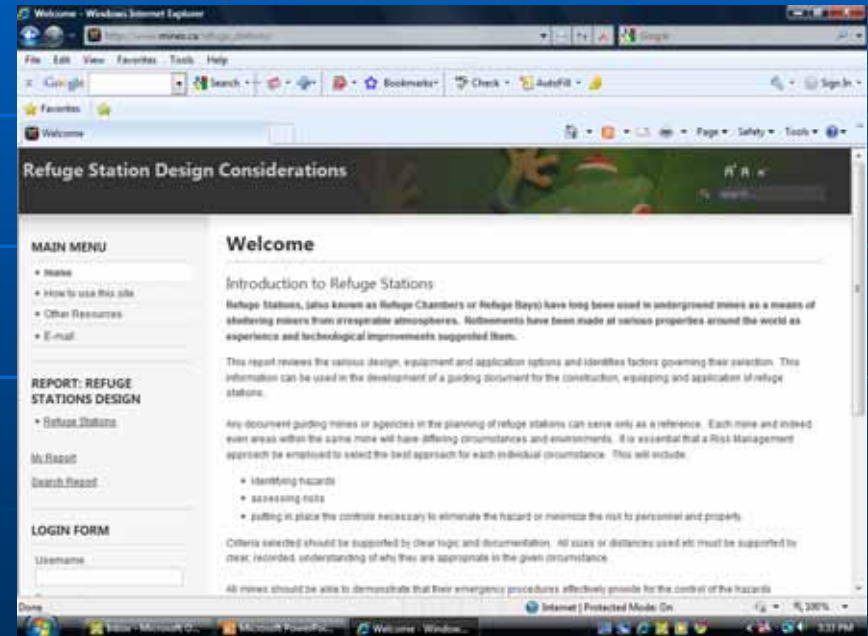
Portable Refuge Station Design

- Mine fire prompted the development of a self-contained portable refuge station
- Scrubs Excess Carbon Dioxide
- Replenish oxygen at a metered rate
- Climate controlled
- www.ranacaregroup.com
- www.northfringe.com



Refuge Station Design Website

- Website will assist mine operators and emergency response personnel with the design of underground refuge stations.
- Current features:
 - Breathable Air
 - Legislation
 - Location
 - Construction
 - Communications
 - Water, Electricity, Lighting
 - Temperature Control



PLANNING



Risk Mitigation Strategy

- Identify Hazards & Deficiencies
- Determine Failure Consequences
- Establish Controls
- Measure Compliance

HAZARD & DEFICIENCY IDENTIFICATION

- Examples:
 - Hazards
 - Fire & explosion
 - Machine guarding
 - Congestion
 - Housekeeping
 - Etc.
 - Deficiencies
 - Inadequate maintenance
 - Supervision
 - Procedures
 - Training
 - Etc.

FAILURE CONSEQUENCES

What can go wrong?

- Historical failure data
- Inspections
- Investigations
- Risk analysis matrixes
- Etc.

Visioning

Stand in the future.

ESTABLISH CONTROLS

How do we make it better?

- Reasonable and practical laws
- Standards
- Guidelines
- Rules
- Verbal directives
- Etc.

All control standards must be communicated effectively to all parties.

COMPLIANCE DETERMINATION

- Measuring
- Auditing
- Inspecting
- Observing
- Interviewing
- Document reviews
- Etc.

PROFICIENCY TESTING

Questions can be applied to your work.

- What is working well?
- What is not working as it should be?
- How can we make it better?

Closing Remarks

All mine operators must understand that response is not the prime objective--- Prevention is the key to avoiding such incidents as the Westray and other world tragedies.

Do Not Be
"A Predictable Path to Disaster"



Thank you