Pre-Planning is worth its weight in Gold!!!

Presented By:

Greg Bartlett
Student Researcher
gbartlett.bu@gmail.com

Backyards and Beyond Conference
Denver, CO.
October 26, 2011
Little About Me…

• 1998 Canadian, DND, Civilian Firefighter

• 2004 City of Toronto, Fire Service, Training Specialist

• 2006 Province of Saskatchewan, Provincial Wildfire Prevention Officer

• 2008 Province of Alberta, Wildfire Patrolman

• 2009-Present B.S.c. (A.D.E.S), Student. Brandon University, Manitoba, Canada
Presentation Overview

- Provincial Fire Situation
- Team Responsibility
- Mine Situation
- Team Response
- Environmental Protection Assessment
- Opportunities for Research
- Concluding Remarks
Province of Saskatchewan
Province of Saskatchewan
Provincial Fire Situation Overview
July / 2006

- 9 fire complexes provincially
- Nationally everyone else busy
- Muskose complex 5th in provincial priority
- Limited resources
  - Helicopters
  - Burn teams
  - Air tankers
  - Personnel
Team Responsibility

- Four fires by Deschambault Lake
  - Active suppression
- Protection of mine site, was requested by mine site manager
- No mine safety officer on site
Mine Situation Overview

Partial evacuation in place – 4 fires threatening mine site

- Losing $149,000 per day
  - Transportation
  - Food and lodging
  - Wages
  - Lost production

- Pressure to change policy, as the mine was in compliance
Economic Value

- Infrastructure $200 million (relatively small)
- Remote and isolated
- Most large equipment was brought in on ice roads
Team Response

- Assessment of situation
  - Met mine management
  - Flew over fires with mine management to stress critical risk
  - Listened to concerns
  - Continued good communications

- Assigned Expert Assistance
  - Wildland Urban Interface Specialist
  - Experienced Suppression Leader
Position Responsibilities

- **Wildland Urban Interface, Specialist**
  - Alerted command staff to the hazardous materials & storage issues
  - Reviewed and organized evacuation and suppression plan
  - Managed sprinkler system

- **Suppression Advisor**
  - Managed fuels (Trees)
  - Supervised suppression plan
  - Supervised 20 mine workers drawn from mine rescue team and surface workers
Hazardous Material on Site

- 400,000 Kg (441 tons) sodium cyanide
- 20,000 Kg (22 tons) hydrochloric acid
- 2.5 million liters (660,000 us/gal) of diesel

- Gold mines have toxic chemicals due to the milling process
- Potential to be a “World Class Catastrophe”

*Know Your Stakeholders!!!!*
Air Dispersion Model

- Based on chemicals present
- Four models run
- Three threat zones
  - Life threatening
  - Severe health risks
  - Mild discomfort
E.P. Assessment

- 5 Km (3 miles) evacuation zone
- 10 Km (6 miles) exclusion zone
- Up to 5 Km nothing living
- Many years of clean up required
E.P. Assessment Concerns

- SCBA's only good for 60 minutes
  - No fly zone: 5 km (3 miles) radius, 3000 ft
  - Have to walk into site to assess
  - Logistically impossible to manage, no runway for staging responses.

- Evacuate underground (Emergency Action Plan)
  - 3 days supplies
  - Recommended a full week
Hazardous Material Storage

- VERY POOR
  - Liquid chemicals uphill from solids
  - Stored on wooden pallets
  - Unstable ground/poor practices
  - Standing diesel in containment facilities
Hazardous Material Management

- Do not add water – before or after hazardous materials catch on fire
  - Oxidizers – toxic fumes and toxic steam
  - Incomplete combustion is worse than complete combustion
  - Toxic sludge and runoff

- Let burn – hotter the better

- Evacuate all but skeleton staff
Debrief Recommendations

- Fire staff receive 1st Response Training
  - 12 hour NFPA 471 & 472
- E.P. Officer Liaison position with in Forest Fire Mgt.
- M.O.U.’s developed with private Hazmat Teams. (major cities)
- Hazardous sites identified on Sask. Environment Values at Risk website
- Fire staff access to industry emergency & pre-incident plans
End Results - Mine

- Mine received significant amount of “FREE” consultation
- Mine forced to bring in consultants at their expense
  - Chemical storage
  - Emergency and incident pre-planning
- Interested in receiving some W.U.I. training
Where We Are Today

- Fire Landscape Laboratory Proposal
  Western Economic Diversification Canada

- Technology transfer
  - Research outcomes documented and shared
    - Videos, papers and workshops

- Demonstration sites
  - Education and further research

- Public & Industry Education Opportunities
  - Media involvement
Conclusion

• Simple sprinkler job was much more!
• Fires did not reach mine site
• Good lessons learned
• Built positive relations with mine staff and E.P. staff
• Research partnerships, with Industry and Academics.

WE GOT TO KNOW OUR STAKEHOLDERS!
Questions?