



Confined Space Rescue What Makes “Cents”

Confined Space Rescue – *What makes "cents"*

Whether you are located in a major city or a remote area, an employer is 100% responsible for providing rescue from a confined space. Rescue resources must be effective for the duration of the entry, appropriate for the work tasks and as well as all foreseeable incidents, including medical emergencies. This session will explore what is effective and some common sense cost effective approaches to providing the necessary rescue services.



Who is Jason?



By the End of This Session you Will Understand:

- What the Regulations require in regard to CS Rescue
- The different methods and types of Confined Space Rescue
- Basic strategies that can be implemented to reduce the risk and the resources required when providing CS Rescue



A Perspective

- Confined Space rescue is part of a system. It does not stand alone.
- Well planned rescue standby services can have a much wider impact than just a successful rescue.
- Program, Hazard assessment, Entry Procedure and Rescue Plan must compliment each other.





Rescue Fatalities

B.C. Ambulance Service begins enhanced training after Sullivan Mine tragedy

Written by Greg Joyce, THE CANADIAN PRESS
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VANCOUVER - The B.C. Ambulance Service started a new training program in response to a coroner jury's recommendation following the **deaths of two mine workers and two paramedics** in 2006 at a mine near Kimberley.....



Four workers DIE in confined space of barge

Date of incident: January 2003



During a rescue attempt, the marine service workers and the first firefighter entered the confined space and became victims.



Mushroom Farm



**3
Workers
Died**



In North America **6** out of **10** confined space fatalities are rescuers.



Were these Incidents Preventable? HOW?

- Air Monitoring



- Ventilation



- Rescue





The Key Regulations

9.37 Provision of rescue services

(1) The employer must provide for the services of rescue persons when a worker enters a confined space.

(2) If the rescue persons are employees of another firm, or an agency such as a fire department, there must be a written agreement detailing the services that are to be provided.



EFFECTIVE



- Simply providing rescue services is not enough
- It needs to be **EFFECTIVE**
- Due Diligence



Examples of NON-EFFECTIVE RESCUE

- Lack of/Improper of Training
- Incompetent Team Members
- Lack of/Improper Equipment
- Long Response Times
- Equipment Not Set Up/Immediately Deployable



4.13 Risk assessment

- (1) The employer must conduct a risk assessment in any workplace in which a need to rescue or evacuate workers may arise.*
- (2) If the risk assessment required by subsection (1) shows a need for evacuation or rescue, appropriate written procedures must be developed and implemented, and a worker assigned to coordinate their implementation.*
- (3) Written rescue and evacuation procedures are required for but not limited to
 - (b) work in confined spaces.....**



Looking at the Risks

- Remember, Risk = Likelihood x Consequence
- Confined Spaces deserve special attention
- Accurately identify the risks of the space and the tasks
- The very nature of confined spaces means an incident will likely have a greater consequence for the same activity that occurs outside of the space.





VS





Other Activities/Tasks?



Planning Your Entry, Planning Your Rescue

- Based on the space and the task(s)
- Potential incidents that may occur? Foreseeable?
- Must identify the resources required for RESCUE (Personnel, skills, equipment)
- Entry procedure **must** compliment the planned method of rescue and vice versa





Rescue Factors

How can you reduce the risk?



A Perspective to Consider – The Rescue Quad



**4 Critical Factors that
dictate your rescue
success**



TIME

- Rescue operations are **TIME CRITICAL**
- The time required for initiating the rescue is an important factor
 - “Be Ready to Go” = Quicker, More Effective Rescue
- Time to complete the rescue is dependant on type of emergency



Time

Factors Include:

- Notification of Rescue Team
- Travel Time
- Assessment Time
- Setup Time
- Space Entry
- Patient Locate, Access and Assessment
- Patient Evacuation



THE INJURED WORKER

- The Focal point of the rescue
- Assigned tasks and associated hazards/controls
- How many?
- Where are they located?
- Likely Condition?
- Mechanism of Injury?
- Grab and go or complete package required?



THE SPACE

- Hazards of the space (identified, assessed and controls assigned)
- Size of the space
- Configuration of the space
- Access availability/size



THE RESCUER

- Stress / Emotional Impacts
- Physical Limitations
- Effective Team Operations
- Adequately trained and equipped
- Competency
- Communication
- Complexity of systems chosen and deployed



**The 4 Critical Factors dictate
whether an effective or
ineffective rescue occurs**



FIRE SERVICES





Rescue Planning THE FOUNDATION

Rescue Method and Type

- Identifies the potential complexity of a rescue.
- Dictates the size of the team required.
- Identifies the required skill set.
- Equipment Required?



Rescue Methods/ Rescue Hierarchy

Self Rescue

- The entrant gets out on his/her own.
- Cannot SOLELY rely on this method.



Rescue Method/ Rescue Hierarchy

Non-Entry Rescue

- The extrication can be accomplished without a rescuer entering the space.



Rescue Method/ Rescue Hierarchy

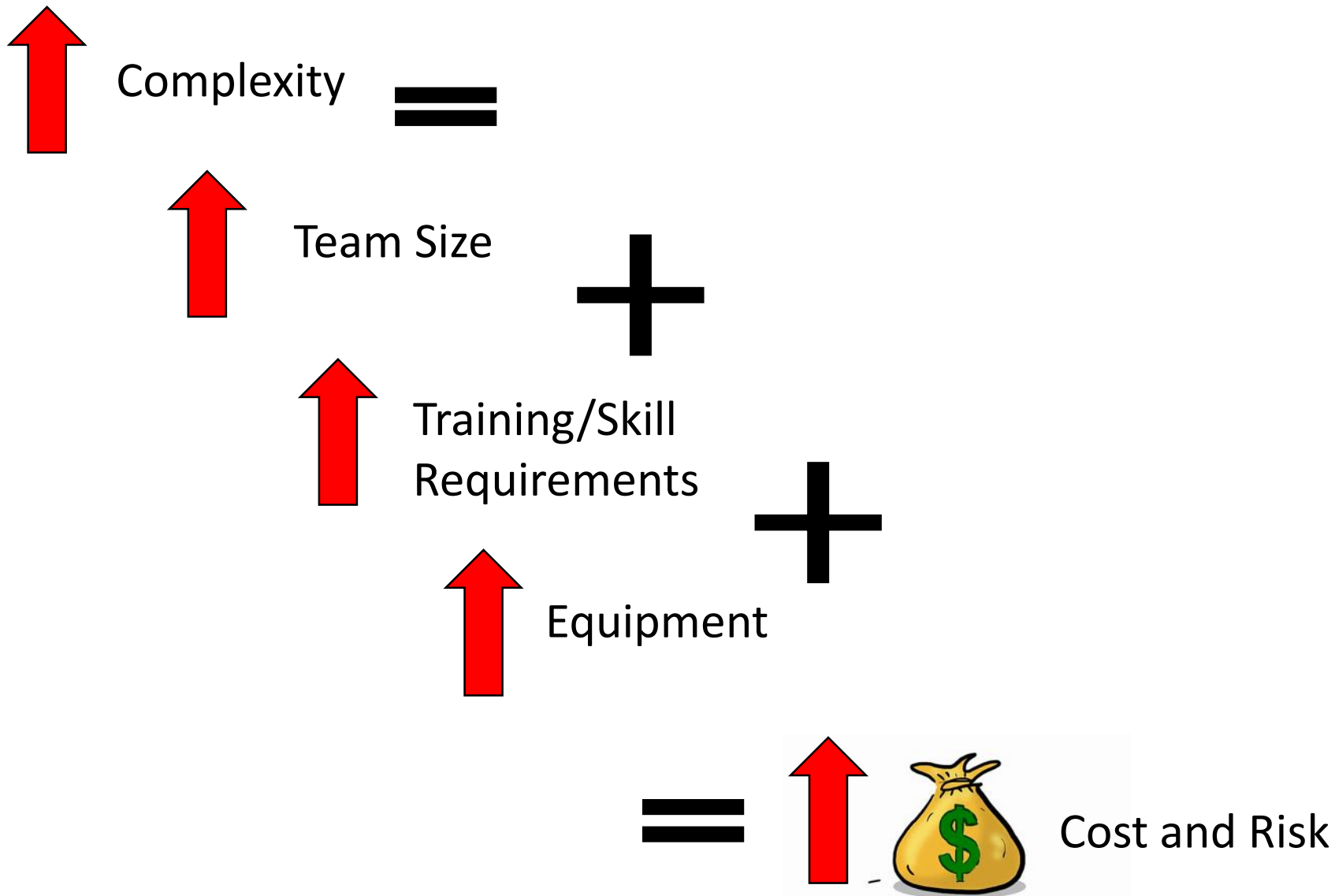
Entry Rescue

- Rescue personnel must enter to access and remove the injured entrant



Why is there a Hierarchy?





Rescue Types

- Vertical
- Horizontal
- Combo



Vertical

- Patient is suspended
- Involves 1 or 2 lines for rescue
(< 10 feet or > 10 feet)
- Can be completed as an Non-Entry or Entry Rescue
- Tripod or high point often required



Horizontal Rescue

- Does not involve suspending the patient
- Single line Rescue Techniques (Fall Protection is NOT required)
- Can be completed as an Non-Entry or Entry Rescue



Combo

- Vert/Horizontal rescue
- Worker location not below access
- Patient is suspended in the space
- Usually an Entry Rescue
- Tripod or high point often required





TEAM PREPARATION

Team Size/ Structure

- Members – Rescue Leader, Standby, Rigger, Rescuer, First Aid
- What is the rescue method - Non-Entry or Entry?
- What are the potential injuries – Potential for a Spinal Injury?
- Equipment to be used – Winch vs. Rope Systems



Team Size/Structure

Regulatory Considerations



WORKING TO MAKE A DIFFERENCE

9.41 Rescue procedures

- (1) Rescue or evacuation from a confined space must be directed by a supervisor who is adequately trained in such procedures or a qualified rescue person
- (3) A rescue worker must not enter a confined space unless there is at least one additional worker located outside to render assistance.



Team Size/Structure

Regulatory Considerations



***For High Hazard/Engulfment/Entrapment/Other
Sig. Health and Safety Factors***

9.45 Additional workers

- If rescue cannot be effected by the standby person(s) using harnesses, lifelines and lifting equipment, then one or more additional workers must be stationed at the entrance to the confined space and these workers must be equipped and capable of entering the space and effecting rescue.



Training

- System based
- Training can span 1 to 4 days
- Students must be taught how to safely enter a confined space and conduct work BEFORE rescue.
- Basic skills taught including roles, responsibilities, communication, rigging, packaging and first aid.
- Records of training must be kept



Training

Regulatory Considerations



WORKING TO MAKE A DIFFERENCE

9.38 Equipment and training

- (1) Every person assigned rescue duties must be properly equipped and adequately trained to carry out such duties.



Training

Regulatory Considerations



WORKING TO MAKE A DIFFERENCE

32.7 First aid

At least one member of a rescue team must be a **first aid attendant trained to immobilize** an injured worker.



Equipment Selection

Based on:

- The configuration/design of the space
- Method and type of rescue
- Potential Injuries
- Potential use for entry AND rescue activities



Documentation

- Hazard Assessment
- Entry Procedure
- Rescue Plan
- Isolation and Lock Out Procedures
- MSDS/SDSs
- Entry Permit
- **WRITTEN RESCUE PLAN**



Documentation

- Must minimize risk
- Potential for injuries/medical emergencies must be considered
- Program can be used for more generally applied controls
- Procedures used for space specific controls



What Should Your Rescue Plan Include?

- Scope/Plan Overview
- Required Roles/Responsibilities
- Required Equipment (General and PPE)
- Set-Up/Before Rescue
- Actions on Initiation of a Rescue



Planning for an Entry

- Drill conducted in the past year for the type of space being entered? Documented?
- Drills include the potential type of injuries?
- Necessary personnel and equipment available?
- The required equipment serviceable (inspected and where required, certified)



DRILLS

Regulatory Considerations



WORKING TO MAKE A DIFFERENCE

9.38 Equipment and training

- (2) A practice drill must be conducted at least annually.



Drills

- Are annual drills enough to maintain competency?
- Scheduling a drill can be difficult and costly
- Infrequent drills do not translate into effective training/learning





RESCUE STANDBY

Preparing for an Entry

- Documents reviewed by the Rescue Team Leader?
- SDSs reviewed by the assigned first aid team member.
- All equipment on site and serviceable?
- Personnel available?



Preparing for an Entry

- Equipment been set-up, in a readily deployable state?
- Rescue personnel donned the required PPE
- Lockout points been secured by potential entry rescue personnel



Toolbox Talk – Discussing the Rescue Plan

- Worker's have a right to know
- Both the entrant and rescue team benefit from discussing the plan before beginning work.



Basic Points of Discussion



1. Identify who are the Team Members and their roles.
2. How will the Plan be initiated.
3. How will an injured entrant will be extricated from the space.
4. Any limitations to the work process that are necessary to insure the plan remains effective.



During the Entry

- Rescue Personnel should not simply wait for an incident to occur
- All personnel must remain active participants in the entry.
- Work towards preventing an incident!





FINAL THOUGHTS

CS Entry – Right Practices

Risk and Cost Reduction

Plan for Non-Entry Rescues

- Reduces Risk to Rescue Team Members
- Decrease the possibility of a spinal injury for vertical entry
- A rescue team of 1 member is adequate
- Minimal training and maintenance of those skills to remain competent
- Minimal equipment and equipment management/maintenance



Use Fall Protection

- Less training for the rescue team
- Less skills maintenance
- Protects the entrant from a potential spinal injury
- If an entrant was to slip during entry, highly likely they will be able to continue with their task(s)
- Simpler/Less Equipment



Drilling

- Conduct a drill immediately before entering the space to begin work – more cost effective
- Have at least shorter quarterly drills, rather than full day one annually – maintain skills
- Micro focused drills are an effective strategy (First Aid Drill, Setting Up Winch, etc.)



Fine Tuning Entry Procedures, The Little things count

- No free climbing in the confined space (i.e. over pipes)
- Wear a harness at all times
- Wear a helmet with a chin strap



Simplify

- Rely on a smaller rescue team
- Reduce the need to enter the space
- Minimize the equipment required
- Less training required to perform the necessary rescues
- Less effort to keep your rescue team competent

