

EFFECTIVE SELF RESCUE TRAINING SAVES LIVES



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SELF RESCUE AND TRAINING

- Self Contained Self Rescuers..(SCSR's) deployed in mines since the 1980s
- 1993...Bureau of Mines published studies recommending improved training protocols including quarterly training
- Miner Act of 2006 expanded the role of training in Safety Management

FORMULA FOR SUCCESSFUL SELF RESCUE

- Reliable, wearable, Self Rescuers Properly deployed.
- Diligent Daily and Quarterly Inspection of Rescue Equipment
- Effective, Comprehensive and Repetitive Performance based Live Training

Effective Training Works

Case in Point...Mine Rescue

- **1993 Bureau of Mines Research bulletin 695....(Mine Rescue)**
 - Circa 1920... Several Miners in succession died wearing oxygen breathing apparatus during Mine Rescue. (little or no training)
 - 1921...Mine Rescue Standards Provided Training baselines.
 - Initial instruction of 20 hours...incl. 9 hours of practice wearing apparatus.
 - Additional instruction and practice be given at least every 6 months.
 - This commitment to training resulted in a drastic reduction of deaths. The end result of this process are the well-trained and effective Mine Rescue Teams who benefit from time tested protocols and frequent opportunities to practice.

Note: Rescue teams benefit from the following conditions.

- Breathing apparatus donned in fresh air.
- Available assistance in donning.
- They know they are entering a potentially dangerous environment.

Regarding SCSR's

- Introduced in 1981
- Intended for use by the rank and file mining population.
- Environment of Self-Rescue
 - Donning environment most likely hazardous
 - Donning assistance is limited
 - Miner enters mine not intending to encounter a hazardous environment.

New Approach to Training Materials

TRAINING MATERIALS

- CSE INTRODUCES NEW SCSR IN 2011 (SRLD)
- NEW TRAINING MATERIALS REQUIRED
- CLEAN SHEET APPROACH
 - Start over
 - Goal...MAXIMIZE TRAINING EFFECTIVENESS

TRAINING MATERIAL DEVELOPMENT PROCESS

- Team Approach... “clean Sheet...open minds”
 - CSE Sales and Service group
 - Customers
 - Industry training Experts
 - CSE technology group
 - Non-mining training experts
 - Governing Agencies

TRAINING MATERIAL DEVELOPMENT PROCESS

- Define Objectives
- Identify Training Documents And Tools
- Enlist Professional Design Team
- Design Test Piece
- Team Evaluation and Feedback
- Refine And Move Forward

OBJECTIVES

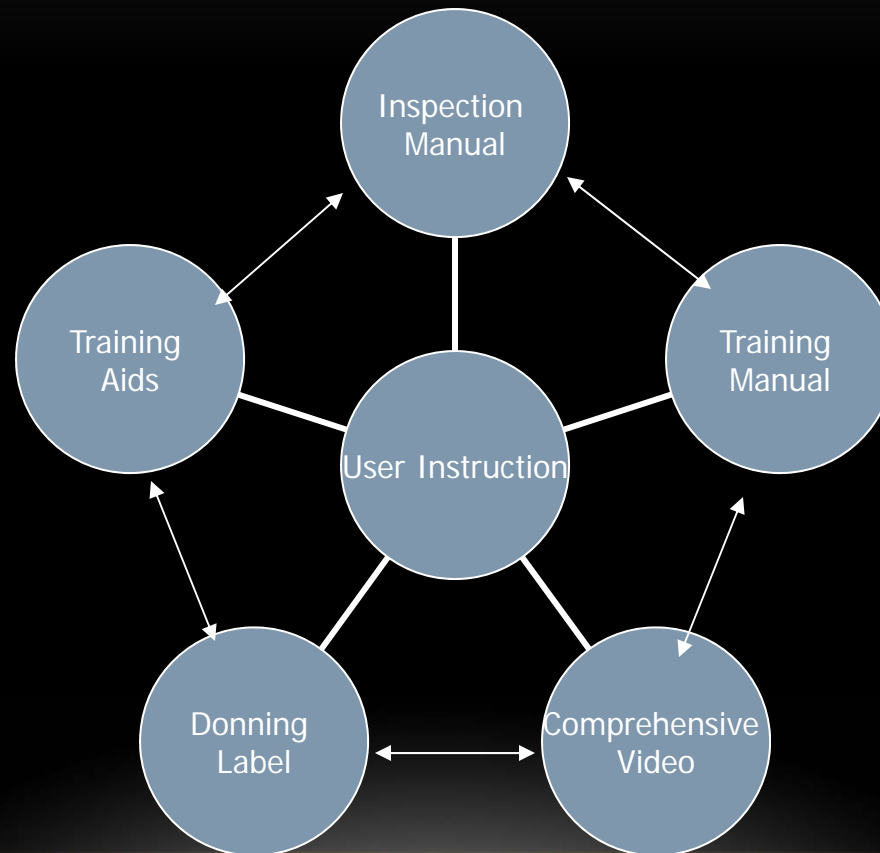
Develop Training Materials That Are:

- Readily available to the miner.
- Rugged
- Easy to understand
- Support and assist the trainer
- Interesting
- Conveying a consistent message.
- Provide for evaluations of proficiency

DOCUMENTS AND TOOLS

- User Instructions
- SCSR Inspection Manual
- Training Manual
- Training DVD
- Donning Label
- Posters
- Training Aids

Tying it All Together



KEY DECISIONS

- User Instructions...keep with the miner
- Action specific pictographs throughout.
- Keep text to a minimum
- Language designed for target audience and consistent throughout
- Create a comprehensive DVD in modules to match training materials.

CARRY ABLE USER INSTRUCTIONS



- Instructions can be carried in pouch or shirt pocket.
- Available (to the miner)
- Protected (from the elements)
- Made from tear-resistant materials.

Folds out from this to this

Inspect your SRLD before every shift

- 5 years old? Model an indicator light? Temperature indicator red?
- Loose parts? Cracked cover? Punctured?
- Seen under water? Burned? Pouch too tight?

Return and replace! Not sure about any of these? Ask your foreman!

1 Open your SRLD

1. Pull down from pouch.
2. Self-test on-off, see surface.
3. Remove top and hold strap tight as you do.
4. Pull down side assembly from strap.
5. Check strap loop.
6. Check trigger lock stop.
7. Check main chamber to bring to rest.
8. Remove and inspect bottom on one.
9. The SRLD cover off.
10. Bottom. Pull cover off.

2 Put it on and start it

Check your head

1. Long neck strap around neck. Do not touch.
2. **WARNING** Keep strap in mouth.
3. Check strap top hanging under neck.
4. Pull down strap and let go. Do nothing but wait.

Modifications allowed

1. Self test pass or clearing buttons.
2. Make an emergency stop.
3. New pull out modification prog. Start head.
4. Insert modification. Copy will work.
5. Update into modification to activate program.
6. Switching will take under way. No self-test possible.
7. Not being handled!

Emergency reaction. Do not stop!

1. Check indicator area.
2. If one other area is lit, keep moving.

Wear a clamp fitted

1. Pull strap tight.
2. Clamp over head.

3 Get ready to move

Open head

1. Put on a program in your program.
2. Head on program? Stop. Head on program.
3. Test program with phone. After program stop.

Strap around

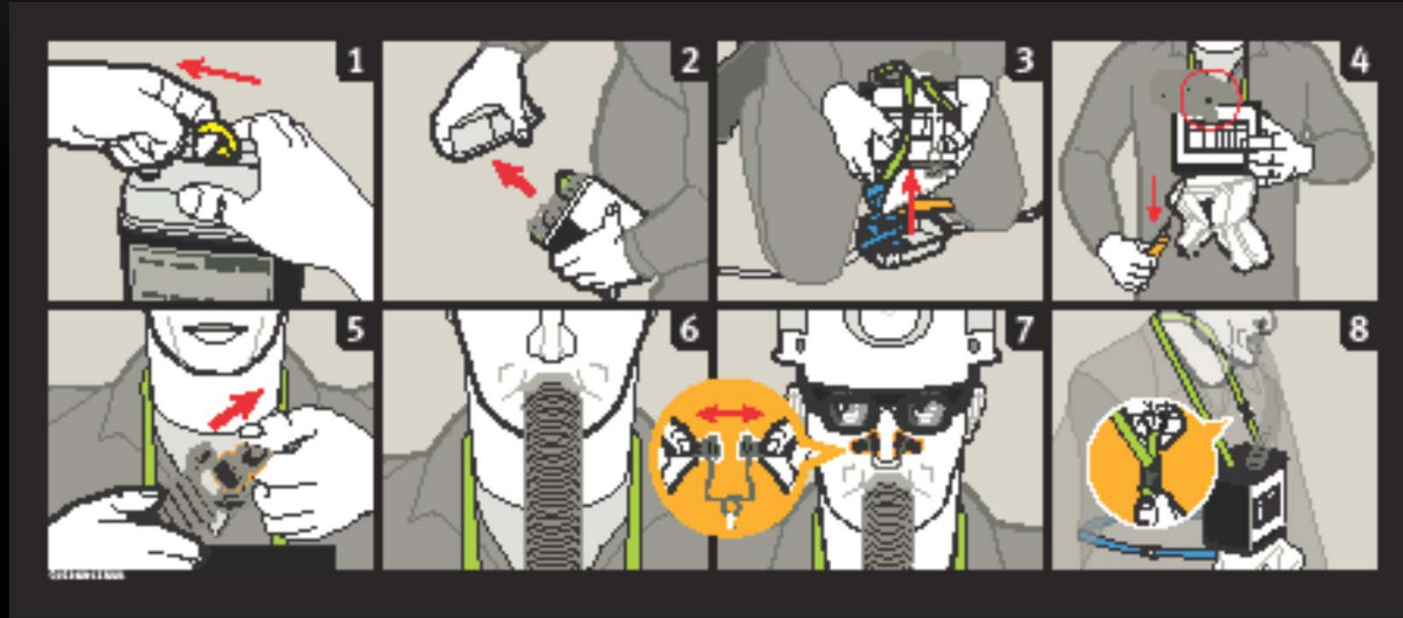
1. Tighten neck strap to take weight of modification and anything from.
2. Push head into around your back and clip to head strap head.
3. Tighten head strap as much as long strap head.

Move and fitted

1. Put head back on.
2. Keep head indicator on.
3. Stop at the gate.
4. Stop. Head back to rest on collar or other rest.

WARNING Don't touch a modification. Start test.

ACTION SPECIFIC PICTOGRAPHS



Easy to understand

- Body specific
- Action Specific
- Consistent in all training materials

INSPECTION MANUAL

- Cover existing CSE SCSR's
- Cover all mandated inspections
- Easy to read and follow.
- Written with the miner and his supervisor in mind.
- Continuity of message and graphics.

TRAINING MANUAL AND DVD

- Manual and DVD script written by same technical writer.
- Easy to read and to present (complete with training aids and useful hints)
- Chapters of manual match chapters in DVD.
- DVD: realistic, interesting, holding attention.

MAKING RESOURCES AVAILABLE

- Pocket User Instructions attached to each SRLD.
- Pictograph Donning label affixed to each SRLD
- Inspection manual shipped with each shipment and available on the CSE website.
- Training manual and DVD sent with each shipment, and available on the CSE website.

CSE SCSR's Have Helped To Save Lives

- There is documented proof that SCSR's have helped to save lives.
- Since 2001 at least 30 miners have successfully exited a hostile environment using CSE SCSR's. Many attribute their success to their individual training.

Note: Referenced escapes based only upon documented use of CSE SCSR's

Cases where miners escaped dangerous situations wearing CSE SCSR's

Mine	Event	Date	Survivors donning SR-100
Jim Walters #5 (1)	Explosion	Sept 2001	1
Fairfax mining #3 (2)	Fire	Sept 2002	1
Webster county Dottiki Mine (3)	Fire	Feb 2004	5
Sago (4)	Explosion	Jan 2006	8
Aracoma Alama #1 (5)	Fire	Jan 2006	12
Darby (6)	Explosion	May 2006	1
Upper Big Branch (7)	Explosion	April 2010	2
Total Survivors donning SR-100			30

SUCCESSFUL RESCUE REFERENCES

- (1) Jim Walters.....MSHA report of investigation CAI-2001-20-2 12/11/2003
- (2) Fairfax #3.....MSHA report of investigation CAI-2002- 8/20/2003
- (3) Webster County ...MSHA report of investigation CAI-2004
- (4) Sago.....MSHA report of investigation CAI-2006-1-12 5/9/2007
Sago interviews Doc10_Memo –on-SCSR’s 5/31/2006
- (5) Aracoma Alma #1...MSHA report of investigation CAI-2006-14-15 2007
- (6) Darby.....MSHA Report of Investigation CAI-2006-27-31 2007
- (7) UBB.....MSHA Report of Investigation CAI-2010-03-31 2011
Tim Blake I-0245 9/30/2010

IN CONCLUSION

- After every mining disaster “lack of training” has been cited as a contributing factor.
- Our industry. Manufacturers, Operators and Government Agencies must execute better to provide “training that works”
- CSE is committed to Effective SCSR training and is showing this commitment by:
 - Development of useful and understandable training resources
 - Providing useful “mental rehearsal” tools such as our carry able User Instructions and matching posters
 - Supplying effective training aids such as our SR-D, SR-T and SRMP.
 - Current development of a new realistic, affordable training device for the industry.

BUREAU OF MINES RESEARCH AND RECOMMENDATIONS FOR SCSR TRAINING A REMINDER

- Initial Training.....Hands-on, Live, Thorough
- Refresher training...min 4 times annually
- Evaluation and feedback...demonstrate proficiency
- Training should be performed in small groups
- Effective training aids are a must.
- Mental rehearsals provided between hands on sessions.
- Continuously sample the workforce for proficiency.

Question: Is this level of training being performed industry wide?

OUR CHALLENGE

- Better training saves lives...a proven fact.
- We have training mandates...however...
- What can the mining community do to take training seriously and do all we can to help our nation's miners to survive in the event of a disaster?