

Do You Understand Mine Emergencies?



Are You Prepared for a Mine
Emergency?

PARTICIPANT'S GUIDE

MODULE 5: ESCAPE AND EVACUATION

PENN STATE MINER TRAINING PROGRAM
UNIVERSITY PARK, PA
2008



MINER TRAINING PROGRAM

DO YOU UNDERSTAND MINE EMERGENCIES?

ARE YOU PREPARED FOR A MINE EMERGENCY?

Participant's Guide

MODULE 5: ESCAPE AND EVACUATION

Mark Radomsky
Joseph Flick
Joeseph DeSalvo
Larry Grayson
&
Raja Ramani

Funded by DOL, Mine Safety and Health Administration (MSHA Grant 00331235)

12/31/2008

Preface

The history of underground coal in the United States is notable for its successes and failures. In the distant past, coal played a prominent role in our industrial revolution, rail transportation, iron and steel making, and heating needs. Most recently, it has been the source for affordable electricity, and for a myriad of other fuels and products. Extracting and processing coal is challenging, and the miners who work in the industry work in one of the Nation's most hazardous occupations.

Mine emergencies, such as mine explosions, fires, and inundations have been all too common. Too many miners have lost their lives over the years, and many more have suffered serious injuries doing the job that typically provides challenge, high wages, and good benefits.

Recent mine emergencies, such as Jim Walter Resources No. 5 Mine, Sago Mine, Aracoma Alma Mine No 1, and the Darby Mine No. 1 have reminded us that continuous safety and continuous safety improvement is our goal—a challenge to every miner.

Acknowledgements

This material was produced under grant number 00331235 from the Mine Safety and Health Administration, U.S. Department of Labor. It does not necessarily reflect the views or policies of the U.S. Department of Labor, nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. Government.

The training program, titled, *Do you understand mine emergencies? Are you prepared for a mine emergency?* is the result of a 2007/2008 MSHA, Brookwood-Sago Mine Safety Grant. This grant, one of several awarded in 2007 by the Mine Safety and Health Administration, was awarded to the Penn State Miner Training program on September 30, 2007.

The program was the result of a cooperative effort between many mining stakeholders, and consists of an achieved webcast, titled, *Escape and survive*, and the training program referred to above.

These materials are available for a limited time at www.minerstownhall.org, or through the MSHA Academy at www.msha.gov.

We encourage you to help us improve this program. Please don't hesitate to contact us at 814.865.7472, or by contacting any of the authors (See Appendix B).

INTRODUCTION

Purpose

The training program, titled, *Do you understand mine emergencies? Are you prepared for a mine emergency?* was prepared to help miners deal with mine emergencies. The purpose of the training program is to improve your capability to survive a mine emergency, primarily through mine emergency preparedness (MEP). Surviving an emergency depends on many factors, such as size of the mine, location of miners, the scope of the incident, the amount of energy released, the effectiveness of emergency plans, training and good decision-making. Some factors in an emergency can't be controlled. What you can control is your knowledge and skills in emergency preparedness and response. By improving your knowledge of emergency principles, emergency skills, and decision-making capabilities, more miners will be able to survive mine emergencies.

Format/content

This training program uses Internet webcast technology and CD ROM based PowerPoint presentations, an Instructor's and Participant's Guide. The webcast can be accessed through the Internet at www.minerstownhall.org or played from a CD. During the webcast, various expert panelists will comment on mine emergency subjects. Informational slides appear to the right of the speakers to summarize most of the main points. In addition, a series of video clips are "rolled in" at the appropriate times. These realistic clips, shot on location at a working mine, represent a simulated mine emergency and response, and feature donning/switching of the SCSR, and the use of directional lifelines.

This training program consists of six training modules that address the following major mine emergency preparedness issues:

- Mine emergencies
- Emergency response plans
- Self-contained self-rescuers
- Emergency communications and miner tracking
- Escape and evacuation
- Breathable air safe havens/refuge chambers

Each module has a pre-test and a post-test (See Appendix A). You may be given a short test before each lesson to evaluate your knowledge of key points. You may also be given a slightly longer test at the conclusion of the module to evaluate if you grasped the key concepts of the module. If you missed some questions on the pre-test, pay close attention to those parts of the training module.

A few tips to help you with the learning process:

- Take notes
- Ask questions
- Apply your training to your mine
- Talk with other miners
- Think about the layout of your mine during the training
- Make suggestions to improve training
- Ask yourself (and discuss with other miners): “If an emergency were to occur at my mine, how would I apply these principles to escape or evacuate?”

Application

Knowing how to react in an emergency is critical to your survival. Coal mining is serious business! Training is also serious business! Take your training very seriously! Pay attention to training on mine emergencies, and take it very seriously! Thoroughly prepare yourself by finding out about your mine’s most important mine emergency preparedness procedures. In a real emergency your training and your knowledge could help save your life. A few tips to help you think about how to react to mine emergencies:

- Know the contents of your mine Emergency Response Plan.
- Know the contents of your emergency escape and fire-fighting plans.
- Know the layout of your mine and where escapeways, directional lifelines, emergency supplies, extra SCSR’s and refuge chambers are located.
- Know how to report an emergency and provide accurate information.
- Know how to don and switch SCSR units.
- Know where to meet at the first sign of an emergency.
- Know how your mine tracking system works.
- Know how refuge chambers operate.

- Know where you are at all times in the mine, and how to escape from where you are located.

Of course, the best solution to mine emergencies is to have no emergencies! Your daily efforts to work safely, play by the rules, report problems and take care of yourself and your co-workers can go a long way to make “no emergencies” a reality. You must be prepared however for the unexpected and emergencies are unexpected.

Best wishes to you in your training and your mining career. Thank you for all you do to make mining a safer place to work! Never let a chance for something that could save your life pass you by. Learn all you can about mine emergency response! What you know could save your life, or help someone else save theirs!

Module 5

Escape & Evacuation

Participant's Guide

Purpose of the Module

Increase the trainees' knowledge and skills of key aspects for successful escape and evacuation from a mine emergency.

Pre-test

Following the introduction of this module, your instructor will ask you to complete a pre-test. The pre-test will demonstrate your knowledge and understanding of this topic.




Post-test




After completing this module, the instructor will ask you to complete a post-test. By comparing the group scores between the pre- and post-test, the instructor can demonstrate whether the training was effective.






Evaluation




Following completion of the course, you will be asked to provide feedback to the instructor on whether you believe the course achieved its purpose. You will also be asked several questions regarding the design, and implementation of the course. An evaluation form will be used for this purpose.

Introduction	Notes
 <p>DO YOU UNDERSTAND MINE EMERGENCIES? ARE YOU PREPARED FOR A MINE EMERGENCY?</p> <p>MODULE 5: ESCAPE AND EVACUATION</p> <p>R. LARRY GRAYSON PENN STATE UNIVERSITY</p>	
 <p>PURPOSE OF THE MODULE</p> <p>INCREASE THE TRAINEES' KNOWLEDGE AND SKILLS OF KEY ASPECTS FOR SUCCESSFUL ESCAPE AND EVACUATION FROM A MINE EMERGENCY.</p>	
 <p>LEARNING OBJECTIVES</p> <p>DESCRIBE REGULATORY REQUIREMENTS FOR PRIMARY AND SECONDARY ESCAPE WAYS AND LIFELINES</p> <p>IDENTIFY THE SPECIFIC MINE'S LAYOUT OF ESCAPE WAYS AND LOCATIONS OF LIFELINES AND ANY AVAILABLE TAG LINES</p>	

Introduction	Notes
<p style="text-align: right;"></p> <p style="text-align: center;">LEARNING OBJECTIVES</p> <p>DISCUSS REGULATORY REQUIREMENTS FOR DEPICTING ESCAPE WAYS ON MINE MAPS AND WHERE THE MAPS ARE LOCATED AT IN THE SPECIFIC MINE</p> <p>DESCRIBE REQUIREMENTS FOR QUARTERLY FIRE DRILLS AND WALKING ESCAPE WAYS</p>	
<p style="text-align: right;"></p> <p style="text-align: center;">LEARNING OBJECTIVES</p> <p>IDENTIFY THE STAGING AREAS AT DIFFERENT LOCATIONS IN THE SPECIFIC MINE FOR DIFFERENT TYPES OF WORKERS, E.G., ON SECTIONS, ALONG VARIOUS SUBMAINS AND MAINS, ETC.</p> <p>DESCRIBE HOW TO ENSURE THAT ALL WORKERS IN AN AREA ARE ACCOUNTED FOR</p>	
<p style="text-align: right;"></p> <p style="text-align: center;">LEARNING OBJECTIVES</p> <p>DISCUSS WHAT COMMUNICATIONS WILL BE MADE IN CASE OF AN EMERGENCY AND WHAT INFORMATION TO EXCHANGE WHILE COMMUNICATING WITH THE RESPONSIBLE PERSON.</p> <p>DESCRIBE WHEN TO DON AN SCSR (NOTE: DONNING AND SWITCHING PROCEDURES ARE COVERED IN MODULE 3)</p>	

Introduction	Notes
 <p>LEARNING OBJECTIVES</p> <p>DESCRIBE...</p> <ul style="list-style-type: none"> ▪WHEN TO BEGIN AN EVACUATION ▪THE DECISION-MAKING RATIONALE FOR SELECTION OF AN ESCAPE WAY UNDER DIFFERENT EMERGENCY SCENARIOS ▪ DETAILS ABOUT PREPARING FOR ESCAPE ▪ SCENARIOS UNDER WHICH ESCAPE MAY BE IMPOSSIBLE, AND AS A LAST RESORT, WHEN TO SEEK REFUGE. 	
 <p>LEARNING OBJECTIVES</p> <p>DESCRIBE ...</p> <ul style="list-style-type: none"> ▪LOCATIONS (ON SECTIONS, IN ESCAPE WAYS) AND SPACING OF SCSR CACHES IN THE SPECIFIC MINE ▪HOW TO FIND THEM DURING AN EMERGENCY ▪LOCATIONS AND SPACING OF ANY BREATHABLE AIR SAFE HAVENS (REFUGE CHAMBERS). 	
 <p>LEARNING OBJECTIVES</p> <p>DESCRIBE ...</p> <p>ALTERNATIVE, FEASIBLE ESCAPE ROUTES IF THE PRIMARY AND SECONDARY ESCAPE WAYS ARE OR BECOME INACCESSIBLE, AND WHEN TO CHANGE THE ESCAPE ROUTE.</p> <p>WHEN A SAFE AREA HAS BEEN OR MAY BE REACHED, AND WHEN THE SCSR MAY BE TAKEN OFF.</p>	

Introduction and Important Points	Notes
<div data-bbox="191 275 829 800">  <h2 style="text-align: center;">PRIMARY/SECONDARY ESCAPEWAYS AND LIFELINES/TAGLINES</h2> <p>✓ REGULATORY REQUIREMENTS (75.380) (75.1704)</p> <ul style="list-style-type: none"> • ESCAPEWAYS • LIFELINES / TAGLINES • ALTERNATE ESCAPEWAYS • MECHANICAL ESCAPEWAYS   </div>	<p>Be prepared to discuss what your lifelines are made of, and more importantly, where they are located.</p> <p>Be able to ID the type of directional locators that are used, and how they work</p> <p>If mechanical hoists are used at your mine, how would they be used to escape the mine</p>
	
	

Important Points	Notes
<p data-bbox="240 388 763 451">PRIMARY/SECONDARY ESCAPE WAYS AND LIFELINES/TAGLINES</p> <ul style="list-style-type: none"> <li data-bbox="300 499 722 546">✓ REGULATORY REQUIREMENTS (75.380) (75.1704) <li data-bbox="267 573 418 594">• STAIRWAYS <li data-bbox="267 621 621 642">• EXAMINATION OF ESCAPEWAYS <li data-bbox="267 669 557 690">• LOCATIONS OF TAGLINES 	<p data-bbox="880 352 1291 462">Be prepared to locate on your mine map all applicable stairs and ladders used for escape.</p> <p data-bbox="880 541 1315 682">Can you think of any escapeway conditions at your mine that might make your escape more difficult?</p>
<p data-bbox="289 919 717 982">ESCAPEWAYS AND MINE MAPS REGULATORY REQUIREMENTS</p> <ul style="list-style-type: none"> <li data-bbox="232 1031 381 1052">✓ MINE MAPS <li data-bbox="264 1079 597 1100">• LOCATIONS OF ESCAPEWAYS <li data-bbox="264 1127 716 1148">• TEMPORARY NOTATIONS AND REVISIONS <li data-bbox="264 1176 397 1197">• CHANGES 	<p data-bbox="880 930 1282 997">Be prepared to locate escapeways on the mine map.</p> <p data-bbox="880 1077 1323 1144">Ask any questions you may have about map revisions at this time</p>
<p data-bbox="276 1423 727 1549">QUARTERLY MINE EMERGENCY EVACUATION TRAINING- DRILLS/WALKING ESCAPE WAYS REGULATORY REQUIREMENTS</p> <ul style="list-style-type: none"> <li data-bbox="224 1570 354 1591">✓ TRAINING <li data-bbox="251 1619 362 1640">• SCSR'S <li data-bbox="251 1667 488 1688">• ESCAPEWAY DRILLS <li data-bbox="251 1715 613 1736">• FIRE SUPPRESSION EQUIPMENT <li data-bbox="251 1764 544 1785">• EXPECTATIONS TRAINING <li data-bbox="251 1812 638 1833">• RECORDKEEPING REQUIREMENTS  	<p data-bbox="880 1444 1299 1543">Provide three reasons why it is so important to participate in evacuation training and drills?</p> <p data-bbox="880 1591 1295 1659">Be prepared to summarize fire fighting procedures</p> <p data-bbox="880 1707 1323 1774">Be prepared to discuss the value of expectations training.</p>

Important Points

Notes

Cumulative frequencies (in percent) with which miners reported either seeing or smelling smoke underground for any reason

Frequency	A	B	C	Mine			G	Wgtd. avg. all mines
				D	E	F		
At least once per shift	4	7	4	18	16	20	7	11
At least once per week	37	37	32	55	55	71	27	46
At least once per month	63	70	46	67	84	95	67	71
At least once per year	78	80	89	79	100	97	90	88
Less than once per year	96	100	96	100	—	100	97	99
No response	100	—	100	—	—	—	100	100

¹Median frequency for the mine

Figure 3.—Percentage of miners caught off guard by the sight or smell of smoke

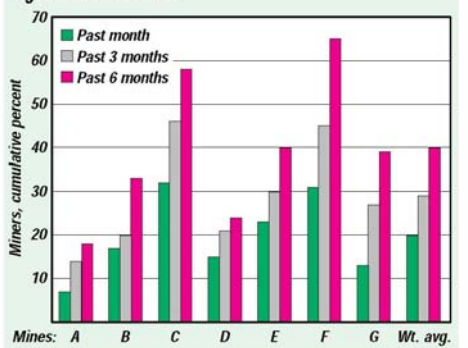
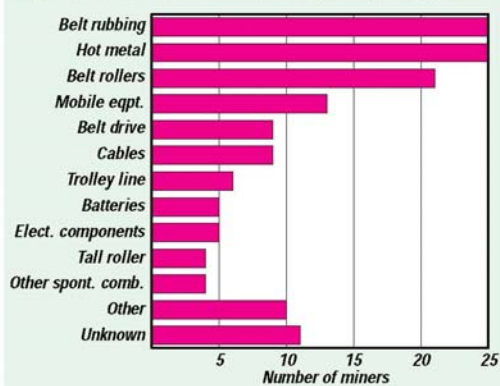


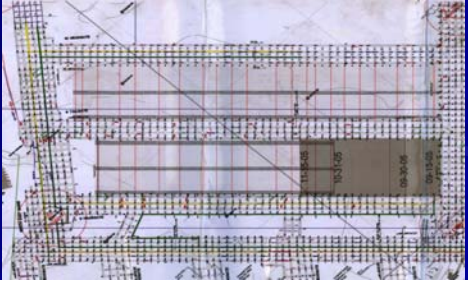
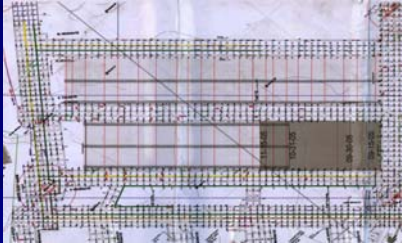


Figure 4.—Source of fire for miners caught off guard by smoke

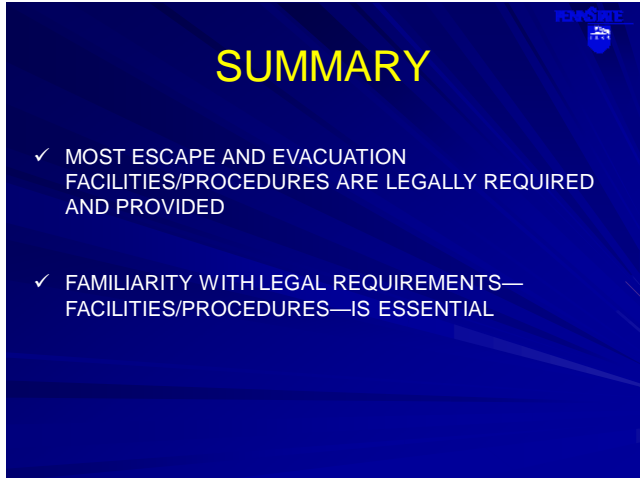
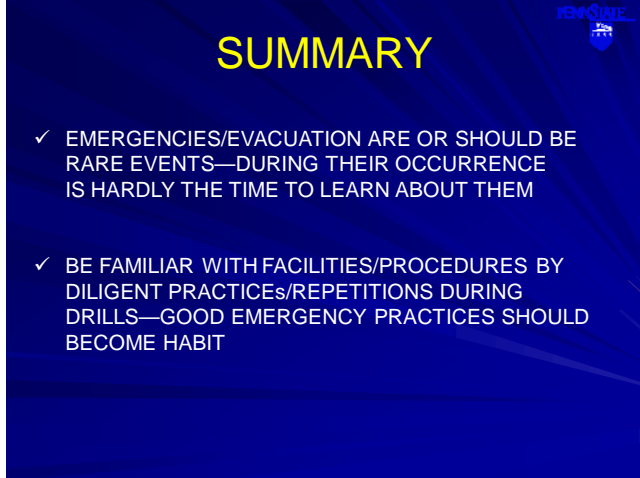


Important Points	Notes
<p data-bbox="253 352 743 415">STAGING AREAS/ACCOUNTING FOR PERSONNEL</p> <ul style="list-style-type: none"> <li data-bbox="220 449 766 499">✓ DEPENDS ON LOCATION IN MINE AND EMERGENCY SCENARIO CAUSING THE THREAT <li data-bbox="253 525 578 550">• WHERE STAGE ON SECTION? <li data-bbox="253 575 428 600">• IN SUBMAINS? <li data-bbox="253 625 386 651">• IN MAINS? <li data-bbox="253 676 367 701">• OTHER? 	<p data-bbox="880 352 1315 424">Be prepared to ID your meeting points.</p>
<p data-bbox="318 869 711 932">RESPONSIBLE PERSON/COMMUNICATIONS</p> <ul style="list-style-type: none"> <li data-bbox="220 991 727 1016">✓ RESPONSIBILITIES OF RESPONSIBLE PERSON <li data-bbox="220 1041 714 1092">✓ TRAINING REQUIREMENTS OF RESPONSIBLE PERSON <li data-bbox="220 1117 701 1167">✓ CRITICAL INFORMATION FOR RESPONSIBLE PERSONS 	<p data-bbox="880 819 1295 890">Please refer to Appendix C (responsible person checklist)</p> <p data-bbox="880 966 1292 1037">Why does the Responsible person need this information?</p>
<p data-bbox="311 1390 704 1453">RESPONSIBLE PERSON/COMMUNICATIONS</p> <ul style="list-style-type: none"> <li data-bbox="214 1512 682 1537">✓ EMERGENCY COMMUNICATION TRIANGLE <ul style="list-style-type: none"> <li data-bbox="272 1562 506 1587">• IDENTIFY YOURSELF <li data-bbox="272 1591 548 1617">• IDENTIFY THE LOCATION <li data-bbox="272 1621 542 1646">• IDENTIFY THE PROBLEM <li data-bbox="214 1663 682 1713">➤ INTERACT AS MORE ACCURATE CRITICAL INFORMATION BECOMES AVAILABLE... 	<p data-bbox="880 1339 1315 1449">Can you think of any strategies that will help miners remember the emergency triangle</p>

Important Points	Notes
<div data-bbox="186 315 852 808"> <p style="text-align: right;"><small>PENNSYLVANIA DEPARTMENT OF REVENUE</small></p> <h2 style="text-align: center;">WHEN TO DON SCSR</h2> <ul style="list-style-type: none"> ✓ WHEN ORDERED ✓ WHEN IN DOUBT ✓ IF WITH OTHER MINERS AND NO COMMUNICATION IS RECEIVED  </div>	
<div data-bbox="186 840 852 1333"> <p style="text-align: right;"><small>PENNSYLVANIA DEPARTMENT OF REVENUE</small></p> <h2 style="text-align: center;">WHEN TO EVACUATE</h2> <ul style="list-style-type: none"> ✓ WHEN ORDERED ✓ WHEN IN DOUBT, AND ESPECIALLY... ✓ WHEN AWAY FROM COMMUNICATIONS ✓ IF WITH OTHER MINERS AND NO COMMUNICATION IS RECEIVED  </div>	
<div data-bbox="186 1344 852 1869"> <p style="text-align: right;"><small>PENNSYLVANIA DEPARTMENT OF REVENUE</small></p> <h2 style="text-align: center;">PREPARING TO EVACUATE</h2> <ul style="list-style-type: none"> ✓ SELECT PROPER ESCAPE WAY <ul style="list-style-type: none"> • PRIMARY, INTAKE ESCAPE WAY • IF PRIMARY BLOCKED  </div>	

Important Points	Notes
<p data-bbox="310 260 657 289">PREPARING TO EVACUATE</p> <ul data-bbox="212 310 714 407" style="list-style-type: none"> ✓ IF PRIMARY AND SECONDARY ESCAPE WAYS ARE BLOCKED ✓ QUESTION: WHERE ARE OTHER ROUTES? 	
<p data-bbox="298 806 708 835">EVACUATION AND DECISIONS</p> <ul data-bbox="212 877 779 1136" style="list-style-type: none"> ✓ ONCE A DECISION IS MADE TO ESCAPE ✓ BEFORE LEAVING ✓ IF SERIOUS CONDITIONS ARE ENCOUNTERED ✓ WHILE TRAVELING THE SECONDARY ESCAPE WAY 	
<p data-bbox="319 1314 686 1377">EVACUATION AND DECISIONS/PREPARATION</p> <ul data-bbox="212 1419 675 1566" style="list-style-type: none"> ✓ IF NO ESCAPE APPEARS FEASIBLE ✓ IF TRAVEL TO THE SAFE HAVEN APPEARS INFEASIBLE 	

Important Points	Notes
 <p>LOCATING SCSRS ALONG ESCAPE WAY</p> <ul style="list-style-type: none"> ✓ ADDITIONAL SCSRS ARE AVAILABLE AT EACH FIXED WORK LOCATION ✓ REMEMBER: SCSR LOCATIONS ARE SPACED AT INTERVALS ALONG THE ESCAPE WAY ACCORDING TO SEAM HEIGHT 	<p>Be prepared to ID the location of all SCSRs</p>
 <p>LOCATING SCSRS ALONG ESCAPE WAY</p> <ul style="list-style-type: none"> ✓ AN SCSR LOCATION IS SECURELY ATTACHED TO THE LIFELINE IN THE ESCAPE WAY ✓ ADDITIONAL SCSRS ARE AVAILABLE AT THE SAME INTERVALS ✓ ADDITIONAL SCSRS ARE AVAILABLE ON MANTRIPS OR MOBILE EQUIPMENT 	<p>Be prepared to discuss how your SCSR caches are identified, what the distance is between caches, and where they are located on the mantrip</p>
 <p>REACHING A SAFE AREA/REMOVING SCSR</p> <ul style="list-style-type: none"> ✓ CHANGE SCSRS AT STORAGE CACHES ✓ DO NOT REMOVE UNTIL YOU REACH OUTSIDE OR FRESH AIR ✓ OTHER REASON TO REMOVE SCSR? 	

Important Points	Notes
 <p>SUMMARY</p> <ul style="list-style-type: none"> ✓ MOST ESCAPE AND EVACUATION FACILITIES/PROCEDURES ARE LEGALLY REQUIRED AND PROVIDED ✓ FAMILIARITY WITH LEGAL REQUIREMENTS—FACILITIES/PROCEDURES—IS ESSENTIAL 	
 <p>SUMMARY</p> <ul style="list-style-type: none"> ✓ EMERGENCIES/EVACUATION ARE OR SHOULD BE RARE EVENTS—DURING THEIR OCCURRENCE IS HARDLY THE TIME TO LEARN ABOUT THEM ✓ BE FAMILIAR WITH FACILITIES/PROCEDURES BY DILIGENT PRACTICES/REPETITIONS DURING DRILLS—GOOD EMERGENCY PRACTICES SHOULD BECOME HABIT 	

APPENDIX A

MODULE 5

ESCAPE AND EVACUATION PRE-TEST

This pre-test consists of four multiple-choice questions and one True or False question. Each multiple-choice question is followed by four choices. Circle the letter that indicates the best choice.

1. Which of the following **is not** a requirement regarding each escapeway?
 - a. Maintained in a safe condition
 - b. Clearly marked to show the route and direction of travel to the surface
 - c. Maintained at least 3 feet wide
 - d. Part of the CO monitoring system

2. Escapeway maps shall show the designated escapeways from the working sections or the miners' work station to the surface.
 - a. True
 - b. False

3. Which of the following **is not** a requirement regarding the posting or accessibility of mine maps?
 - a. In each working section
 - b. In each area where mechanized mining equipment is being installed or removed
 - c. At surface locations of the mine
 - d. In each primary escapeway

4. Which of the following **is not** a requirement for SCSR expectations training?
 - a. Practical experience in donning and transferring SCSRs in smoke or an equivalent environment
 - b. Breathing through a realistic SCSR training unit or device
 - c. Must be performed annually
 - d. SCSR must be worn at least 15 minutes by each miner

5. Which of the following **is not** required regarding mine emergency evacuation training and drills?
- a. Hands on training on all types of self rescue devices in use at the mine
 - b. The importance of not removing the mouthpiece even to communicate until reaching fresh air
 - c. Fire fighting practice
 - d. A realistic escapeway drill

MODULE 5

ESCAPE AND EVACUATION POST-TEST

This post-test consists of one completion question, 7 multiple-choice, and two True or False questions. Each multiple-choice question is followed by four choices. Circle the letter that indicates the best choice.

1. Which of the following **is not** a requirement regarding each escapeway?
 - a. Maintained in a safe condition
 - b. Clearly marked to show the route and direction of travel to the surface
 - c. Maintained at least 3 foot wide
 - d. Part of the CO monitoring system

2. Escape way maps shall show the designated escape ways from the working sections or the miners' work station surface.
 - a. True
 - b. False

3. Which of the following **is not** a requirement regarding the posting or accessibility of mine maps?
 - a. In each working section
 - b. In each area where mechanized mining equipment is being installed or removed
 - c. At surface locations of the mine
 - d. In each primary escapeway

4. Which of the following **is not** a requirement for SCSR expectations training?
 - a. Practical experience in donning and transferring SCSRs in smoke or an equivalent environment
 - b. Breathing through a realistic SCSR training unit or device
 - c. Must be performed annually
 - d. SCSR must be worn at least 15 minutes by each miner

5. Which of the following **is not** required regarding mine emergency evacuation training and drills?
- a. Hands on training on all types of self rescue devices in use at the mine
 - b. The importance of not removing the mouthpiece even to communicate until reaching fresh air
 - c. Fire fighting practice
 - d. A realistic escape way drill
6. Which of the following **is not** a requirement for additional SCSRs?
- a. One additional SCSR for each person at a fixed underground location
 - b. Additional SCSRs along the normal travel ways for persons who do not work at a fixed location
 - c. Available for each person who uses transportation portal to portal
 - d. Two additional required for mine examiners
7. Which of the following **is not** a further requirement for storage of SCSRs?
- a. Each storage unit shall be painted red
 - b. The location of all stored SCSRs shall be indicated on the mine map
 - c. Stored in conspicuous locations that are readily accessible
 - d. Each storage location shall be spaced at 30 minute travel distances
8. Which of the following **is not** a feature/requirement of the continuous durable lifelines required under the MINER Act?
- a. Installed throughout the length of each escape way
 - b. Flame resistant and equipped with directional indicators
 - c. Marked with reflective material every 25 feet
 - d. Installed on the right side of the escapeway
9. The Emergency triangle consists of three parts: Who, Where and What.
- a. True
 - b. False
10. Who is the responsible person on your shift?_____

Back up?_____

APPENDIX B

MARK C. RADOMSKY

E-mail: mcr4@psu.edu

Address: 0212 RES BL WEST
UNIVERSITY PARK

Telephone Number: +1 814 865 6335

JOSEPH P FLICK

E-mail: jpf1@psu.edu

Address: 0213 RES BL WEST
UNIVERSITY PARK

Telephone Number: +1 814 865 7472

JOSEPH NICHOLAS DESALVO

E-mail: jnd10@psu.edu

Address: 0213 RES BL WEST
UNIVERSITY PARK

Telephone Number: +1 814 865 7472

ROBERT LARRY GRAYSON

E-mail: rlg19@psu.edu

Address: 0103A HOSLER BUILDING
UNIVERSITY PARK

Telephone Number: +1 814 863 1644

RAJA V. RAMANI

E-mail: rvr@psu.edu

Address: 0209 RES BL WEST
UNIVERSITY PARK

Telephone Number: +1 814 863 1617