



THE UNIVERSITY OF ARIZONA  
MEL & ENID ZUCKERMAN COLLEGE OF PUBLIC HEALTH

# Mountain West Preparedness & Emergency Response Learning Center

## **Incident Command, Escape & Rescue: A Competency-Based Training Program in Emergency Preparedness and Response**

**Training Manual**



This material was produced under grant number BS-27763-15-60-R-4 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.

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# Pre-Conference Workshop



**Developed and Hosted**

**by**

***The Mountain West Preparedness and Emergency Response Learning Center***

**Piloted as a 6-hour workshop at the 12<sup>th</sup> Annual Mine Safety & Health  
Conference**

**South Point Hotel**

**Las Vegas, NV**

**Monday, October 24, 2016**

## Learning Objectives

1. Understand emergency response system planning and organizational command and control.
2. Recognize your role in emergency preparedness and response efforts.
3. Understand how to manage and assess information to maintain situational awareness in emergencies.
4. Maintain good communication and interpersonal skills to manage emergency information in a coordinated fashion.
5. Take protective actions to minimize exposure to hazards and impeding threats.
6. Understand the principles of crisis management and implement strategies to improve communications among teams of individuals.

## Workshop Agenda

<b>7:30 am – 8:00 am</b>	<b>Registration</b>
<b>8:00 am – 8:15 am</b>	<b>Welcome &amp; Introductions</b>
<b>8:15 am – 8:30 am</b>	<b>Competency Self-Assessment (Pre)</b>
<b>8:30 am – 9:15 am</b>	<b><i>Harry's Hard Choices (HHC) Game Play Tutorial</i></b> <i>Michael Peltier</i> <i>University of Arizona-Lowell Institute for Mineral Resources</i>
<b>9:15 am – 10:00 am</b>	<b><i>The Foundation: Leadership, Management &amp; Decision Making</i></b>  <b>Emergency management system for the U.S. mining industry</b> <i>Brenda Granillo</i> <i>University of Arizona- MWPERLC</i>
<b>10:00 am – 10:15 pm</b>	<b><i>Break</i></b>
<b>10:15 pm – 11:15 pm</b>	<b><i>The Psychosocial Approach- A Formula for Understanding Brain &amp; Behavior</i></b>
<b>11:15 pm – 11:30 pm</b>	<b><i>Your Personality Type</i></b>

**11:30 pm – 12:00 pm**      ***The Communications Challenge-Emotional & Social Intelligence***

**Stress and Tunnel Vision**

*Brenda Granillo*

*University of Arizona- MWPERLC*

**Non-Verbal Communications**

*Staci Martin*

*University of Arizona- MWPERLC*

**12:00 pm – 1:00 pm**      **LUNCH (On Your Own)**

**1:00 pm – 1:45 pm**      ***Communicating Effectively***

**Emergency Communications Triangle**

*Staci Martin*

*University of Arizona- MWPERLC*

**Principles of Crisis and Emergency Risk Communications**

*Staci Martin*

*University of Arizona- MWPERLC*

**1:45 pm – 2:45 pm**      ***Situational Awareness***

**Hazard Recognition**

*David R. Brown, CEO, IS, IU*

*Mine Safety Assistance LLC*

*Steve Gravely*

*University of Arizona-Lowell Institute for Mineral Resources*

**2:45 pm – 3:00 pm**      **Break**

**3:00 pm - 3:45 pm**      ***Team Dynamics -HHC Game Play***

**3:45 pm- 4:00 pm**      **Competency Self-Assessment (Post)& Adjourn**

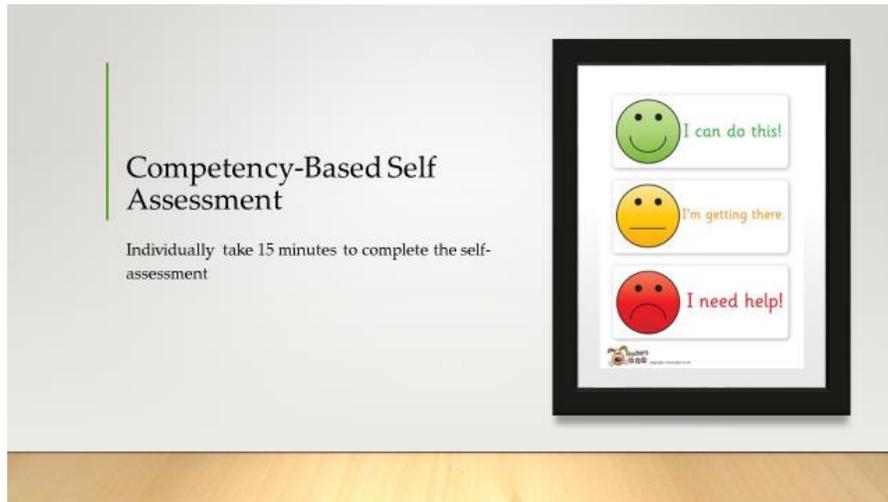
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# Competency Self-Assessment



## Pre-Training Assessment of Competencies

ID # \_\_\_\_\_

Today's Date (Month/Day/Year): \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

Age Range (mark with an X): 18-29: \_\_\_ 30-39: \_\_\_ 40-49: \_\_\_ 50-59: \_\_\_ 60-69: \_\_\_ 70-79: \_\_\_ 80+: \_\_\_

Gender: Male \_\_\_ Female \_\_\_

What is your current job title and/or profession?  
\_\_\_\_\_

How long have you been employed in the mining industry? \_\_\_\_\_ (months/years)

How long have you been employed in your current position? \_\_\_\_\_ (months/years)

Have you completed the following training (s) prior to this training:

Newly Employed Inexperienced Miner? Yes No      If yes, when (Month/Year) \_\_\_\_\_

Current Annual Refresher? Yes No      If yes, when (Month/Year) \_\_\_\_\_

Experienced Miner? Yes No      If yes, when (Month/Year) \_\_\_\_\_

Hazard Training? Yes No      If yes, when (Month/Year) \_\_\_\_\_

Please circle the appropriate number for your level of response.

How <u>competent</u> do you feel in your ability to:	COMPETENCE <i>BEFORE</i> THE TRAINING				
	Very Low	Low	Moderate	High	Very High
A. I understand my mine's coordinated operational structure during an emergency response effort.	1	2	3	4	5
B. I am familiar with my mine's emergency response plan and understand my role.	1	2	3	4	5
C. I am able to manage stress and can recognize signs and symptoms of acute stress/distress among my coworkers.	1	2	3	4	5
D. I am able to maintain situational awareness and demonstrate accountability to deliver enhanced information to reinforce ongoing lifesaving and life-sustaining activities to meet basic human needs and stabilize the incident.	1	2	3	4	5
E. I am able to assess information related to an emergency and recognize hazards to mitigate potential cascading effects	1	2	3	4	5
F. I am able to maintain good interpersonal listening and speaking skills to promote collaboration and cooperation to solve safety concerns.	1	2	3	4	5
G. I use principles of crisis and risk communication to ensure information is concise and clearly understood among underground mine team.	1	2	3	4	5
H. I can use psychological first aid to diminish physiological stress response and facilitate function and action toward self-escape and survivability	1	2	3	4	5
I. I am able to establish and maintain different types of communication (i.e. interoperable voice, data, etc.).	1	2	3	4	5
J. I am able to relay and document the six categories of critical information that should be provided during emergency communications: Who, Where, What, Miners, Event, and Response.	1	2	3	4	5
K. I am able to communicate information on the course of action and implementation to the relevant people.	1	2	3	4	5
L. I am able to ensure the capacity for timely communications in support of security, situational awareness, and operations by any and all means available.	1	2	3	4	5
M. I understand my mine communications plan to include protocols for family reunification, media control, & external management teams.	1	2	3	4	5

N. I can identify threats and immediate hazards during a mine emergency (explosions, hazardous spill, etc.) and implement primary response methods to control the hazard and minimize injury and /or death.	1	2	3	4	5
O. I am able to maintain familiarity with emergency escape route(s) according to mine site procedures.	1	2	3	4	5
P. I am able to select most appropriate action for dealing with the situation (i.e. hazard) according to mine site emergency response plans and procedures.	1	2	3	4	5
Q. I am able to continuously monitor threat/hazard and reassess controls (i.e. ventilation) in place to ensure the safety of personnel in the vicinity of threat (i.e. fire).	1	2	3	4	5
R. I can perform primary and secondary assessments of miners (i.e. each team member) condition to recognize and implement life support measures.	1	2	3	4	5
S. I understand and apply the hierarchy of controls to reduce and/or eliminate immediate risks.	1	2	3	4	5
T. I am able to use appropriate personal protective equipment and apply appropriate procedures (i.e. self-rescue equipment, confined spaces, noise, isolation, etc.) for managing hazards, risks, and emergencies	1	2	3	4	5
U. I am able to recognize, access, and respond to alarms and warning devices according to mine site procedures.	1	2	3	4	5
V. I am able to report unresolved threats to physical and mental health through the chain of command.	1	2	3	4	5
W. I employ protective behaviors according to changing conditions, personal limitations, and threats.	1	2	3	4	5
X. I am familiar conducting health and safety hazard assessments and ensure the availability and dissemination of guidance and resources (i.e. deploying hazardous materials teams).	1	2	3	4	5
Y. I am able to take precautions to safeguard workers and maintain standards of health, fitness and well-being.	1	2	3	4	5
Z. I am able to focus on timely restoration of mine infrastructure and revitalization post incident to promote resilience of miner health, and environmental fabric of community (i.e. social, cultural, historic, and economy, etc.).	1	2	3	4	5

AA. I able to participate in risk and disaster resilience assessments so that mine community (decision makers, responders, and community members) can take informed action to reduce their entity's risk and increase their resilience.	1	2	3	4	5
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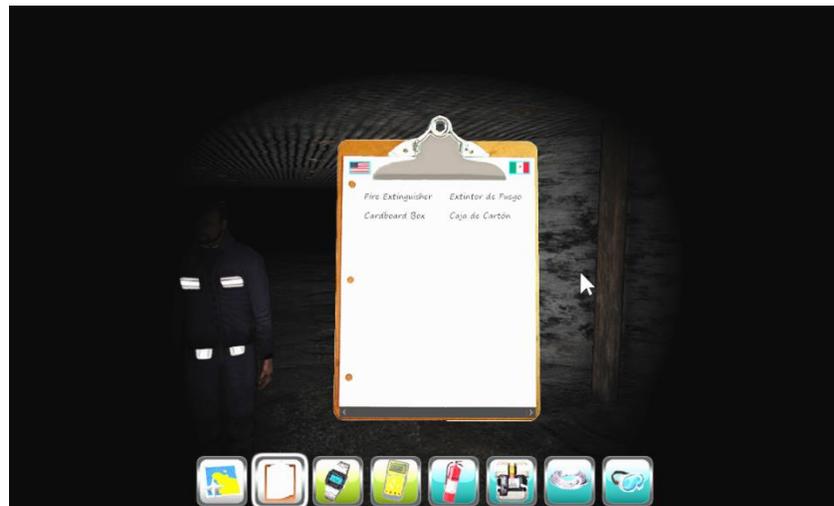
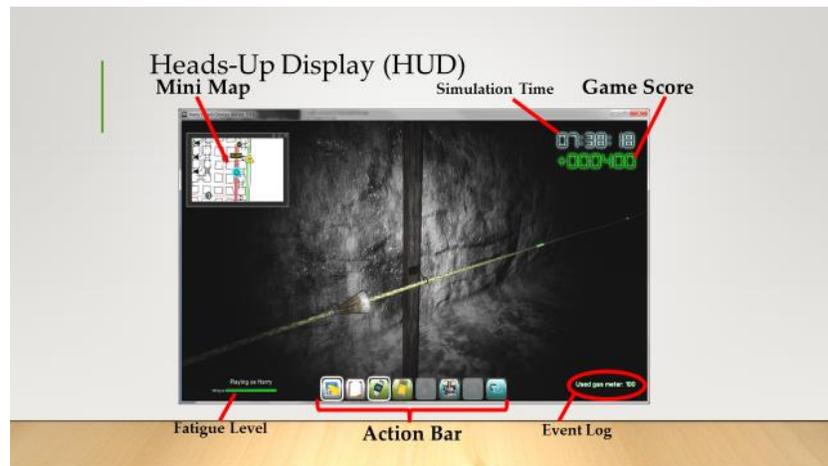
## Harry's Hard Choices

Pre-Session Tutorial

### Harry's Hard Choices

Computer gaming training tool to tests players' decision making in response to various disaster events.





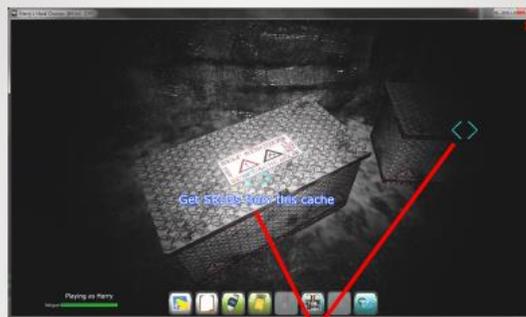
## Using Escapeway Lines



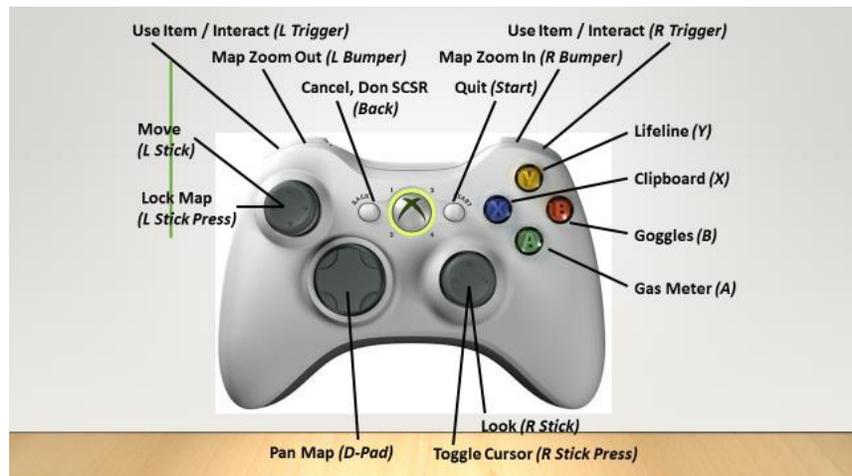
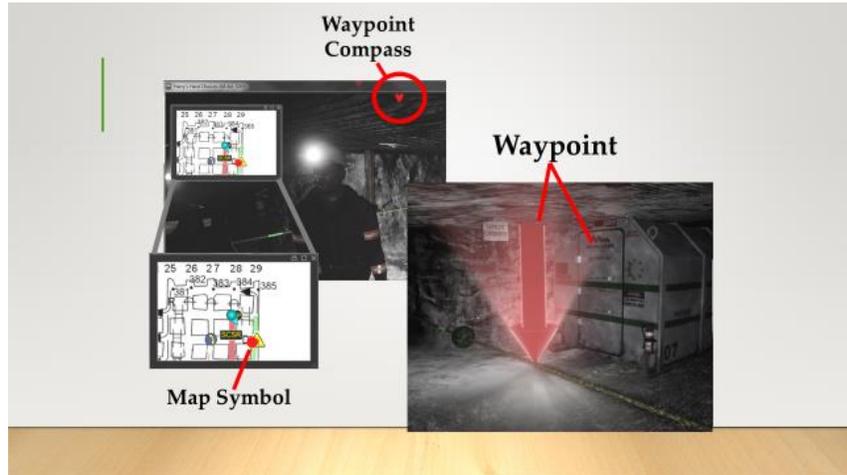
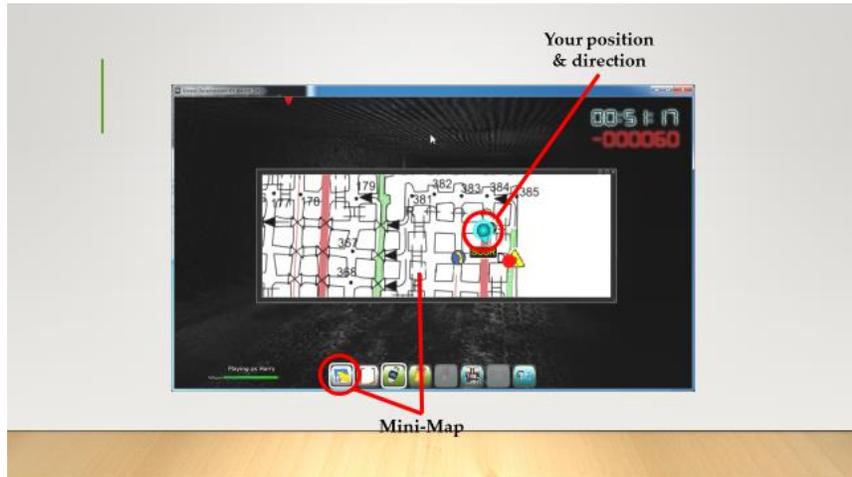
Clip to Escapeway Line

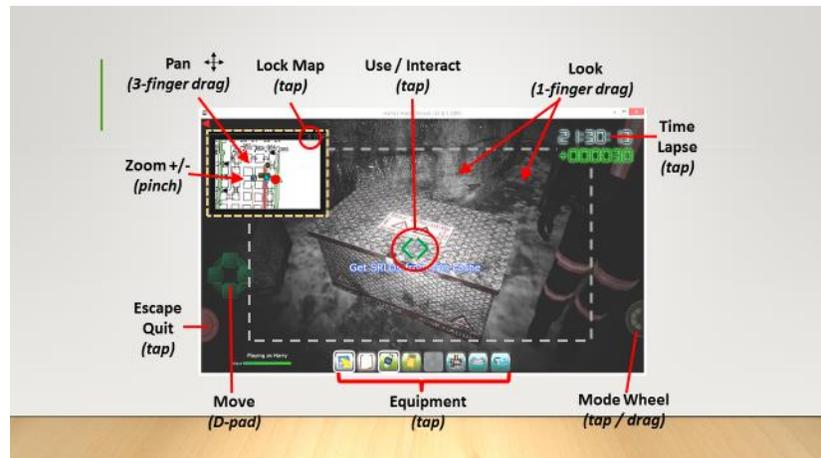
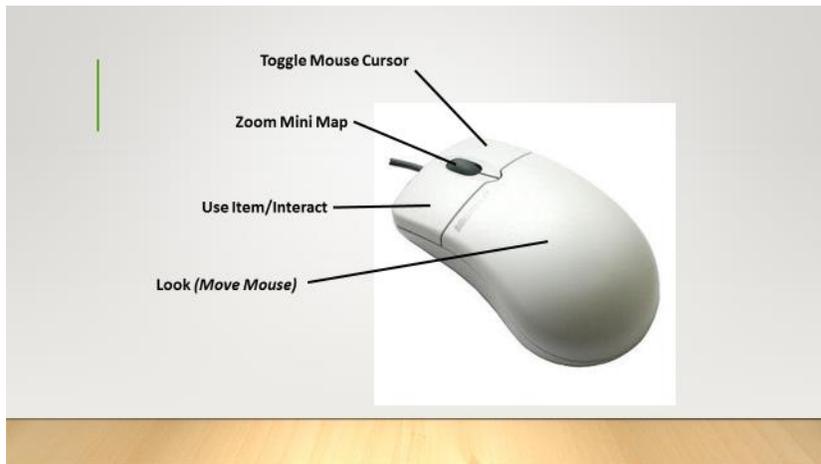
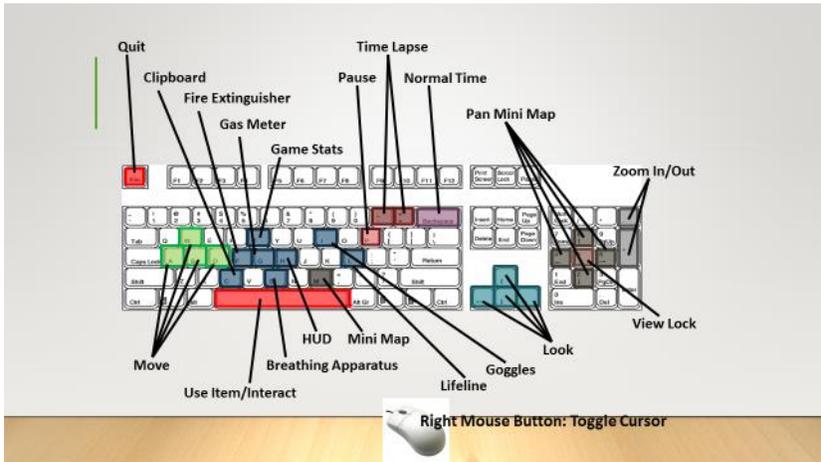


Interact with characters



Interact with equipment





I. The Foundation: Leadership, Management, & Decision Making



TRUE OR FALSE? HOW ABOUT PARTIALLY TRUE?

A comprehensive, mine-specific emergency preparedness and response system is critical to effective rescue/recovery operations.

## MSHA

- Mine Emergency Preparedness and Response Stakeholder Meeting, May 11, 2010, National Mine Health and Safety Academy Beckley, WV
- The Mine Safety and Health Administration (MSHA) orders mine emergency management requirements for mine operators, including designation and training for responsible persons and the development of mine emergency response plans. To minimize the impact of mine emergencies, it is crucial for companies to be adequately prepared to manage them.

## MSHA

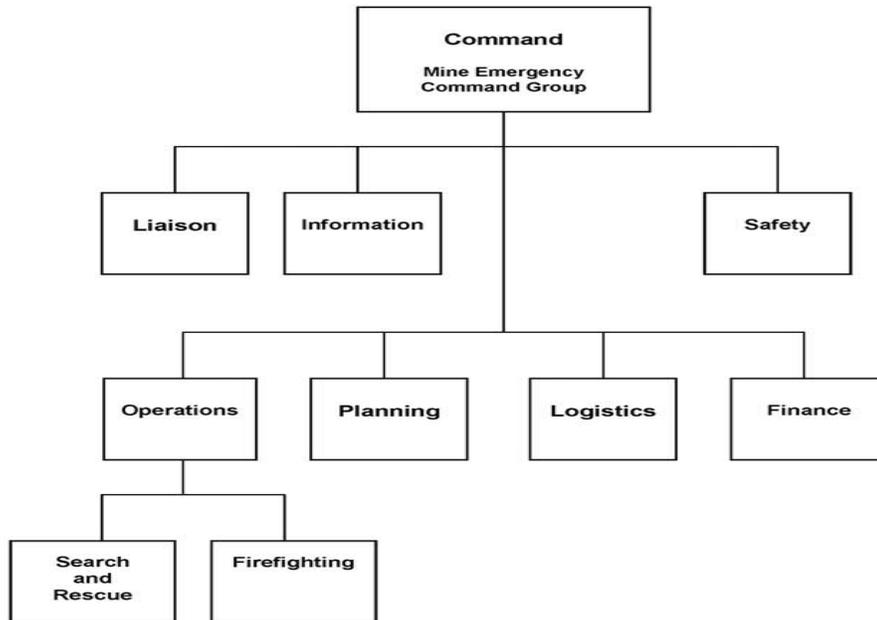
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### Provide Risk Assessments/Mitigation

- Plan for Contingencies in ERPs (What If If's)
- Provide Training
- Plan ahead
- Develop a Mine Emergency Organizational Structure

A series of tragic events over the course of a decade demonstrate the need for competency in managing mine emergencies at all levels in the mining community. These events were Brookwood in 2001 (13 fatalities), followed by Sago (2006, 12 fatalities), Darby (2006, 5 fatalities), Aracoma (2006, 2 fatalities), Crandall Canyon (2007, 6 fatalities), and Upper Big Branch (2010, 29 fatalities). The Mine Safety and Health Administration (MSHA) orders mine emergency management requirements for mine operators, including designation and training for responsible persons and the development of mine emergency response plans. To minimize the impact of mine emergencies, it is crucial for companies to be adequately prepared to manage them.

## Mine Emergency Command System



A comprehensive, mine-specific emergency preparedness and response system is critical to effective rescue/recovery operations. Based on the standard Incident Command System (ICS), which has been adopted by fire departments, search and rescue organizations, and other government agencies,

### **A Mine Emergency Command System:**

- Is an organizational structure designed to respond to any mine emergency.
- Establishes a common framework based on the ICS.
- Creates controls in dealing with:
  - Personnel
  - Facilities
  - Equipment
  - Communications
- Can be established and expanded depending upon the changing conditions of the emergency.
- Is staffed and operated by qualified personnel from a variety of agencies.
- The Mine Emergency Command System establishes a common framework and practical procedures for controlling all aspects of a mine emergency.

## NIOSH

- Researchers from the Office of Mine Safety and Health Research (OMSHR) have conducted a series of group and individual interviews to learn what happens in the first crucial moments of a mine emergency.
- Results from focus groups and interviews about the initial moments of a mine emergency indicate that there are common themes in initial response, which include the importance of mine emergency planning and training, quantity and quality of communication that provides information for decision-making, leadership and trust, and individual personal issues.

The subjects represented underground mines in several commodities and were located throughout the U.S. They included on-site responders, mine rescue team members, and experts in mine emergency response with extensive experience in managing mine disasters. The goal is to learn lessons from these experts that can be passed on to future responders. The loss of critical mine emergency management knowledge as a result of the departure of employees with firsthand experience in mine emergency response has also been explored.

OMSHR has assessed the need for written mine emergency response plans. A variety of plans were studied and guidance was developed for mine operators. Researchers also studied past mine emergencies and used examples from these events to highlight the importance of emergency response planning.

Knowing there will always be the possibility of mine emergency events, it is critical for mine officials at all levels to have the knowledge, skills, and ability to step in and manage response to the event thoroughly and efficiently. Recently, the Mine Rescue and Escape Training Laboratory was created at NIOSH's Pittsburgh campus. With the inauguration of this laboratory, researchers are poised to investigate how virtual reality (VR) technologies can be used for teaching critical mine emergency response skills including emergency management. As part of this effort, researchers will develop training for command center leaders that incorporates virtual reality components.

Broad questions to be answered by this work include:

How can VR training techniques be used to train command center leaders?

How can command center training contribute to the development of integrated live, virtual, and constructive training simulation for mine emergency response?

This work will build on past NIOSH findings on command center training, coaching and leadership skills, and crisis decision-making.



Self-Escape skills are improving, but the emphasis on developing individual miner evacuation skills has not received the resources nor the attention needed (extend the short leg of the stool). Self-escape from adverse events in underground mines is inherently not a solo effort, even in the case of a single individual escaping alone. It is a broader effort of multiple teams and personnel acting in concert.

Safe-Rescue is functional but has wide variations between individual team capabilities. Rescue would benefit from better prioritization, combining of resources, and a focus on real-life training and rapid response methods rather than contests, while maintaining the safety of rescuers (strengthen the weak part of the leg).

Incident Command is broken; it is neither well-defined, consistent with non-mining national practice, nor are managers and technical advisors taught thoroughly or drilled regularly throughout the industry as is needed to be effective during an incident. Incident command requires renewed commitment (fix the broken leg).

[Your Notes:](#)

## Emergency Management in U.S. Mining Industry

- The U.S. mining industry has a number of ongoing programs and procedures that promote planning for emergencies.
  - mine emergency and fire
  - evacuation plans
  - mine emergency response development (MERD) exercises
  - quarterly escape way drills, and emergency response plans (ERPs).

The slide features a title 'Emergency Management in U.S. Mining Industry' on the left side, followed by a bulleted list of programs: 'mine emergency and fire', 'evacuation plans', 'mine emergency response development (MERD) exercises', and 'quarterly escape way drills, and emergency response plans (ERPs)'. Below the list is a section header 'WHY THE GAPS THEN?' in bold. The slide has a light gray background with a vertical green line to the left of the title and a wooden-texture footer.

[Your Notes](#)

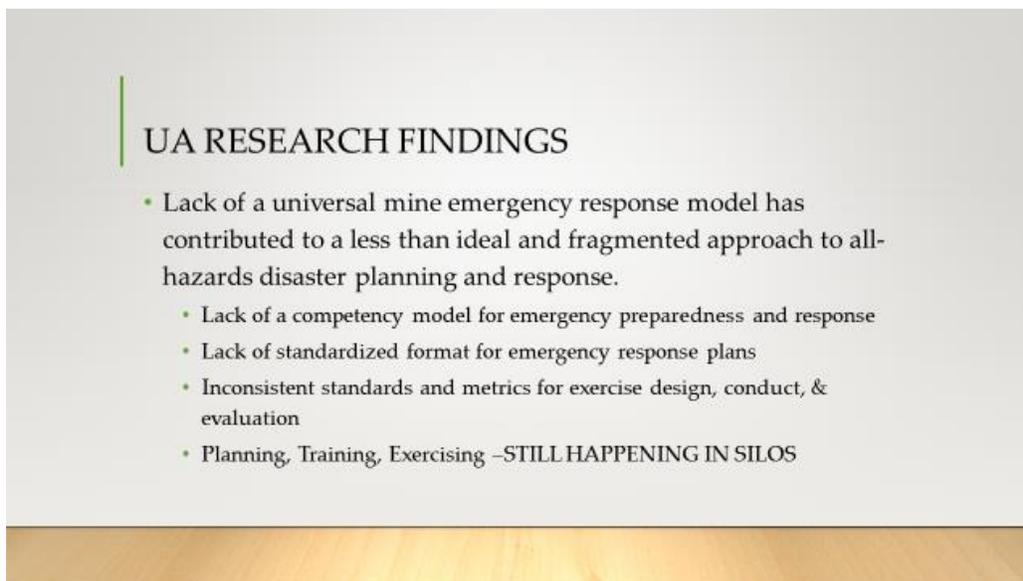
The capacity to provide adequate escape training appears to be inconsistent across the mining industry and often oriented toward 'checking the box' of minimal compliance with federal and state training criteria because of the cost and difficulty of devising effective exercises (Committee on Mine Safety, 2013 report).

## Committee on Mine Safety, 2013 report

- CONCLUSION: Efforts on the part of mine operators and other industry stakeholders to empower self-escape in a mine emergency—to include, but not be limited to, training, technology, equipment, and emergency response plans—need to be fully integrated and coordinated, using a human-systems integration approach, to establish unified, efficient, and effective protocols.

### Improving Self-Escape from Underground Coal Mines (ESSENTIAL COMPONENTS OF SELF-ESCAPE)

Training appears to be inconsistent across the mining industry and often oriented toward ‘checking the box’ of minimal compliance with federal and state training criteria because of the cost and difficulty of devising effective exercises.



#### UA RESEARCH FINDINGS

- Lack of a universal mine emergency response model has contributed to a less than ideal and fragmented approach to all-hazards disaster planning and response.
  - Lack of a competency model for emergency preparedness and response
  - Lack of standardized format for emergency response plans
  - Inconsistent standards and metrics for exercise design, conduct, & evaluation
  - Planning, Training, Exercising –STILL HAPPENING IN SILOS

**HOW DO WE FIX IT?**

**DON'T REINVENT THE WHEEL**

Your Notes

## Homeland Security Presidential Directive/ HSPD-5

Homeland Security Presidential Directive/ HSPD-5

- February 28, 2003: The Secretary of Homeland Security
- To enhance the ability of the United States to manage domestic incidents by establishing a single, comprehensive national incident management system
- Develop a national response framework



The diagram illustrates the structure of HSPD-5. At the top is the Presidential Seal of the United States, with the text 'HSPD-5' in a red box to its right. Two blue arrows point downwards from the HSPD-5 box to two separate boxes below. The left box is labeled 'NIMS' and the right box is labeled 'NRF'. Both boxes feature a stylized American flag background.

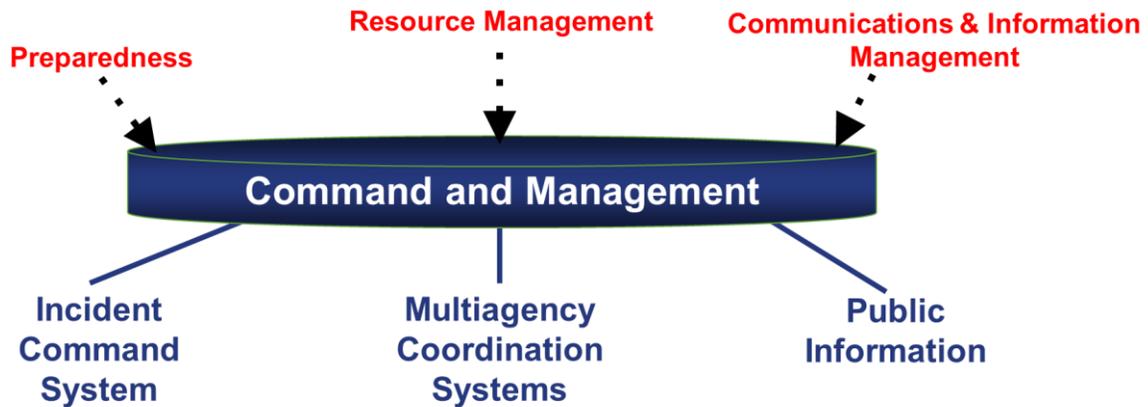
### National Incident Management System (NIMS)

- NIMS is a comprehensive, national approach to incident management that is applicable at all jurisdictional levels and across functional disciplines. It is intended to:
  - Be applicable across a full spectrum of potential incidents, hazards, and impacts, regardless of size, location or complexity
  - Improve coordination and cooperation between public and private entities in a variety of incident management activities
  - Provide a common standard for overall incident management

Homeland Security Presidential Directive 5 (HSPD-5) established a single, comprehensive approach to incident management.

[Your Notes](#)

## Command and Management Elements



This unit is divided into three sections covering each of the Command and Management elements:

- Incident Command System
- Multiagency Coordination Systems
- Public Information
- the NIMS Command and Management component facilitates incident management by building upon all of the components covered in the previous lessons

### Incident Command System (ICS)

- The **Incident Command System (ICS)** is a standardized approach to the command, control, and coordination of emergency response providing a common hierarchy within which responders from multiple agencies can be effective.
- ICS was initially developed to address problems of inter-agency responses to wildfires in California and Arizona but is now a component of the **National Incident Management System (NIMS)** in the US, where it has evolved into use in All-Hazards situations, ranging from active shootings to HazMat scenes. In addition, ICS has acted as a pattern for similar approaches internationally.

[Your Notes](#)

## Other Preparedness Efforts

Other Preparedness Efforts



- **HSPD-7: Critical Infrastructure Identification, Prioritization, and Protection** established the U.S. policy for “enhancing protection of the Nation’s critical infrastructure and key resources.”
- **HSPD-8: National Preparedness** directed DHS to develop a common, unified approach to “strengthen the preparedness of the United States to prevent and respond to threatened or actual domestic terrorist attacks, major disasters, and other emergencies.”

Homeland Security Presidential Directive 5 (HSPD-5) established a single, comprehensive approach to incident management. Present the following key points about additional Homeland Security Presidential Directives linked to national preparedness

[Your Notes](#)

## Preparedness Cycle



FEMA:

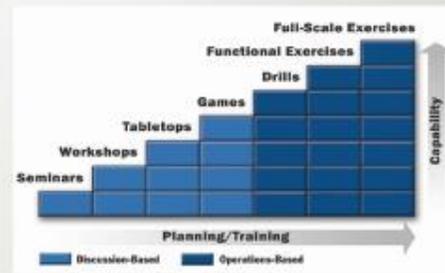
The National Preparedness System outlines an organized process for everyone in the [whole community](#) to move forward with their preparedness activities and achieve the [National Preparedness Goal](#). **“A secure and resilient nation with the capabilities required across the whole community to prevent, protect against, mitigate, respond to, and recover from the threats and hazards that pose the greatest risk.”**

For 37 years, FEMA's mission remains: to lead America to prepare for, prevent, respond to and recover from disasters with a vision of "A Nation Prepared." *On April 1, 1979, President Jimmy Carter signed the executive order that created the Federal Emergency Management Agency (FEMA). From day one, FEMA has remained committed to protecting and serving the American people. That commitment to the people we serve and the belief in our survivor centric mission will never change.*

On March 1, 2003, the Federal Emergency Management Agency (FEMA) became part of the [U.S. Department of Homeland Security \(DHS\)](#).

## HSEEP

- The Homeland Security Exercise and Evaluation Program (HSEEP) provides a set of guiding principles for exercise programs, as well as a common approach to exercise program management, design and development, conduct, evaluation, and improvement planning.

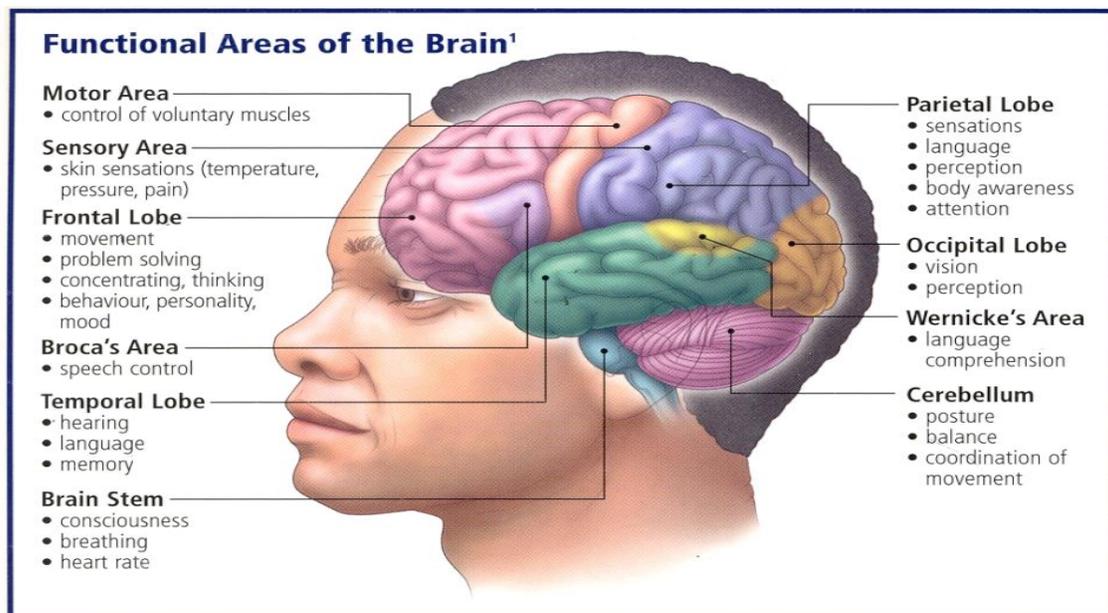


[Your Notes](#)

## II. Psychosocial Approach: A Formula for Understanding Brain & Behavior



Our brain has structures and systems designed to keep us alive so we survive long enough to have progeny that will perpetuate our species. We survive to a great degree by finding ways to interact with the environment.



The brain does this by producing behavior. What we say and do to respond to and effect changes on the environment so that we will ensure our safety and well being

## The Brain and Our Survival: PTEM=B

- **P = Perception (occurs in the 3 back lobes of the cerebral cortex: occipital (vision), temporal (hearing), and parietal (touch))**
- **T = Thinking (occurs in the frontal lobes)**
- **E = Emotions (which is produced by our thinking)**
- **M = Memories (which are stored in the brain and composed of our perceptions, thoughts, and emotions).**

The 4 brain functions combine to produce our BEHAVIOR

The brain does this through an interaction of four systems

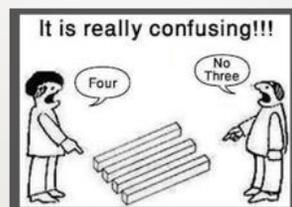
<p>PERCEPTION</p> <ul style="list-style-type: none"><li>• The brain has 5 senses that receive information:<ul style="list-style-type: none"><li>• 2 chemical senses: Taste &amp; Smell</li><li>• 3 physical senses: Vision, Hearing, and Touch</li></ul></li><li>• The brain's analysis of these 3 physical senses produces our PERCEPTION</li></ul>	<p>Question?</p> <p>If two people perceive the same event, will their perception be exactly the same?</p> <p><b>NO</b></p>
--	--

[Your Notes](#)

## WHY? Two kinds of long-term factual memories

- Episodic Declarative Memories
  - Sequential autobiographical events of our lives (What you had for breakfast this morning? )
- Semantic Declarative Memories
  - Memories not linked to a specific event in time (What the make and model of the car you drive?)
- These memory networks flavor and bias the perceptual system

## THE BRAIN DOESN'T PERCEIVE THE REAL WORLD: IT PERCEIVES THE WORLD IT'S LEARNED TO PERCEIVE AND WANTS TO PERCEIVE



In other words, through memory-biased perceptions, the brain creates its own reality.

[Your Notes](#)

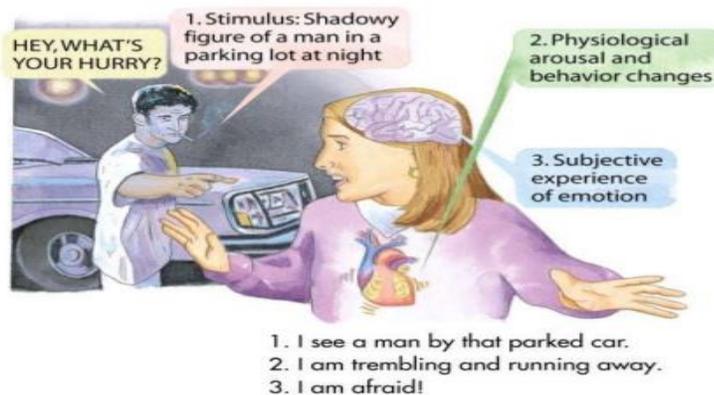
## THINKING

- Occurs in the frontal lobe of the brain
- Frontal lobe also plans, organizes, and carries out all of our actions
- Holds on to short term memory
- Plays a larger role in our “consciousness”
- Understands symbols and concepts
- Regulates attention
- Controls impulses
- Creates our EMOTIONS

After the brain perceives an event, it thinks about the perception

## COGNITIVE APPRAISALS

- $P + T = \text{COGNITIVE APPRAISALS}$
- Each individual will have a unique cognitive appraisal of the world



[Your Notes](#)

## EMOTIONS

- Emotions are produced by our cognitive appraisals
- As a basic model, our thinking creates our emotions
- Emotions are internal brain states that exist to ensure our survival
  - Positive emotions motivate behavior toward getting things we desire in order to help us thrive and survive
  - Negative emotions motivate us to avoid or defend ourselves against things that would threaten our personal and social existence
- A great advancement in the human frontal lobe is that our thoughts have the capacity to control our emotions.
- CBT, mindfulness, etc

### Cognitive-Appraisal Theory of Emotion



Figure 12.4, page 329

Richard Lazarus (1991)

[Your Notes](#)

## Cognitive Appraisal Approach

### *Primary Appraisal*

An initial evaluation of whether an event is...

- (1) irrelevant to you
- (2) relevant but not threatening
- (3) stressful

### *Secondary Appraisal*

An evaluation of your coping resources & options for dealing with the stressor

Other factors?

## **MEMORY**

- Our whole pattern of thinking, feeling, behaving—called our personality—is based on overload and memorized actions.
- Both positive and negative emotional memories are stored as powerful networks in the brain because of their influence on our survival.
- Memories affect each individual's perception and thinking in a unique way to produce emotions and behaviors that become characteristics of that person.

## **EACH PERSON'S UNIQUE PTEM = PERSONALITY**

Many cognitive neuroscientists believe we are nothing but our memories. Our whole pattern of thinking, feeling, behaving—called our personality—is based on overload and memorized actions.

[Your Notes](#)

## Your Personality Type



### Five Minute Personality Test

Choose the item in each line that is most like you and put a 4. Then pick the item that is next most like you and put a 3. Then 2 and then 1 which is least like you. Do this across the page for each list of descriptors.

1. ___ Likes authority	___ Enthusiastic	___ Sensitive Feelings	___ Likes Instruction
2. ___ Takes Charge	___ Takes Risks	___ Loyal	___ Accurate
3. ___ Determined	___ Visionary	___ Calm	___ Consistent
4. ___ Enterprising	___ Verbal	___ Enjoys Routine	___ Predictable
5. ___ Competitive	___ Promoter	___ Dislikes Change	___ Practical
6. ___ Problem Solver	___ Enjoys Popularity	___ Gives in To Others	___ Factual
7. ___ Productive	___ Fun-loving	___ Avoids Confrontations	___ Responsible
8. ___ Bold	___ Likes Variety	___ Sensitive	___ Prefers Perfection
9. ___ Decision Maker	___ Spontaneous	___ Nurturing	___ Detail Oriented
10. ___ Persistent	___ Inspirational	___ Peace Maker	___ Analytical
Totals			

**Lion**- This personality likes to lead. The lion is good at making decisions and is very goal-oriented. They enjoy challenges, difficult assignments, and opportunity for advancement. Because lions are thinking of the goal, they can step on people to reach it. Lions can be very aggressive and competitive. Lions must learn not to be too bossy or to take charge in other's affairs. Strength: Goal-oriented, strong, direct Weakness: Argumentative, too dictatorial Limitation: Doesn't understand that directness can hurt others, hard time expressing grace

**Otter**- Otters are very social creature. Otter personalities love people. They enjoy being popular and influencing and motivating others. Otter can sometimes be hurt when people do not like them. Otter personalities usually have lots of friends, but not deep relationships. They love to goof-off. (They are notorious for messy rooms.) Otters like to hurry and finish jobs. (Jobs are not often done well.) The otter personality is like Tigger in Winnie The Pooh. Strength: People person, open, positive Weakness: Talks too much, too permissive Limitation: Remembering past commitments, follow through with discipline

**Golden Retriever**- Good at making friends. Very loyal. Retriever personalities do not like big changes. They look for security. Can be very sensitive. Very caring. Has deep relationships, but usually only a couple of close friends. Wants to be loved by everyone. Looks for appreciation. Works best in a limited situation with a steady work pattern. Strength: Accommodating, calm, affirming Weakness: Indecisive, indifferent, unable to express emotional, too soft on other people Limitation: Seeing the need to be more assertive, holding others accountable

**Beaver**- Organized. Beavers think that there is a right way to do everything and they want to do it exact that way. Beaver personalities are very creative. They desire to solve everything. Desire to take their time and do it right. Beavers do not like sudden changes. They need reassurance. Strength: High standards, order, respect Weakness: Unrealistic expectations of self & others, too perfect. Limitation: Seeing the optimistic side of things, expressing flexibility

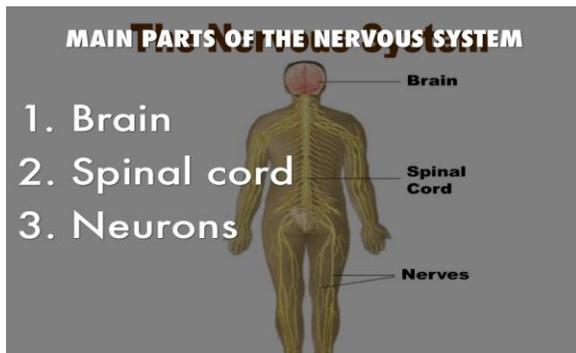
# Personality Interpretations

	The Lion	The Otter	The Golden Retriever	The Beaver
<b>Relational Strengths:</b>	Takes charge. Problem solver. Competitive. Enjoys change. Confrontational.	Optimistic. Energetic. Motivators. Future oriented.	Warm & Relational. Loyal. Enjoys Routine. Peace-Maker. Sensitive Feelings.	Accurate and precise. Quality control. Discerning. Analytical.
<b>Strengths Out of Balance:</b>	Too direct or impatient. Too busy. Cold blooded. Impulsive or takes big risks. Insensitive to others.	Unrealistic or day-dreamer. Impatient or over bearing. Manipulator or pushy. Avoids details or lacks follow-through.	Attract the hurting. Missed opportunities. Stays in a rut. Sacrifice own feelings for harmony. Easily hurt or holds a grudge.	Too critical or too strict. Too controlling. Too negative of new opportunities. Lose overview.
<b>Communication Style:</b>	Direct or blunt. One-way. Weakness: Not as good a listener.	Can inspire others. Optimistic or enthusiastic. One-way. Weakness: High energy can manipulate others.	Indirect. Two-way. Great listener. Weakness: Uses too many words or provides too many details.	Factual. Two-way. Great listener (tasks). Weakness: Desire for detail and precision can frustrate others.
<b>Relational Needs:</b>	Personal attention & recognition for what they do. Areas where he or she can be in charge. Opportunity to solve problems. Freedom to change. Challenging activities.	Approval. Opportunity to verbalize. Visibility. Social recognition.	Emotional security. Agreeable Environment.	Quality. Exact expectations.
<b>Relational Balance:</b>	Add softness. Become a great listener.	Be attentive to mate's needs. There is such a thing as too much optimism.	Learn to say "NO" ... establish emotional boundaries. Learn to confront when own feelings are hurt.	Total support is not always possible. Thorough explanation isn't everything

### III. The Communications Challenge: Emotional & Social Intelligence

#### The 3 Nervous Systems & The Stress Response

- Central Nervous System: Brain & Spinal Cord
- Peripheral Nervous System: Connects brain and spinal cord of CNS to organs of the body
- Autonomic Nervous System: Sympathetic and Parasympathetic Nervous Division: The Yin & Yang of Stress



The autonomic nervous system is more involuntary and automatic but can be controlled (by relaxation training, meditation, etc.). Parasympathetic is only activated when sympathetic is NOT activated and has the opposite effects.

Parasympathetic: relaxation, body repair and restoration, slower heart rate, constriction of pupils, lower blood pressure, lower glucose, decreased pain perception

Sympathetic: The Stress Response

## Sympathetic Division- The “Stress” Response

- Named by Roman physician Galen as providing *sympathy* between thinking (brain) and feeling (visceral organs).
- Stress response activates in an automatic and immediate fashion to:
  1. Physiological threats like injuries
  2. Real perceived imminent threats like someone coming at you with a knife
  3. Imaginary or anticipated threats or emergencies, including just worrying

*The stress system does NOT know the difference*

*between real and imagined threats and responds in the same manner*

Mediates the “Four F’s of Behavior”

- FEAR
- FREEZE
- FIGHT
- FLIGHT

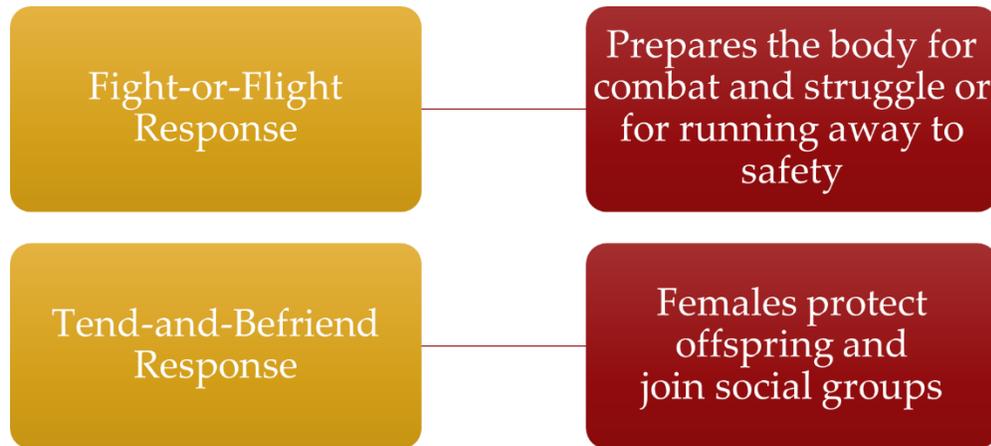


***Creates states of fear, anxiety, anger, vigilance, activation, arousal, and mobilization***

Amygdala fear (flight) and anger (fear) initiate and drive the stress response

Blood pressure rises, heart beats faster, blood glucose rises, pain threshold rises, pupils dilate, etc.

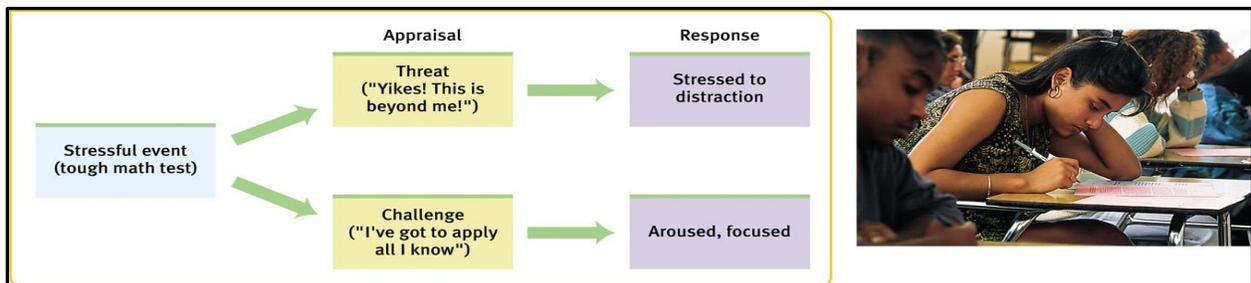
## Emergency Reaction to Acute Stress



Tend and Befriend Theory ---Dr. Shelley E. Taylor University of California, Los Angeles (2011)-research has shown that women do not react to stress with fight or flight so common in male stress response. Tending to others children and befriending for support, evolutionary benefit as banding together for defense and taking care of children helped survival in ancient past.

## Stress

- The process by which we perceive & respond to certain events (known as *stressors*) that we appraise as threatening and/or challenging
  - Stress is not...
    - A simple stimulus or response
    - Necessarily a negative thing



## Stress and Tunnel Vision

## Type I Emotional Thinking

- Negative emotions from stress cause cognitive tunnel vision
- Our behavioral response to the threat is determined by over learned, habitual emotional procedures memories that automatically kick in
- Emotions control and limit thinking

### **Type II Rational Thinking**

- Analytic processes of problem solving and creativity
- Helps to inhibit and control emotions
- Typically, the cognitive pattern associated with positive emotions
- *Humans have the intellectual capacity to resist and control our impulses, including strong emotional impulses like anger and fear*

### Stress Activity (Group Exercise)

*Refer to Appendix A: Stress Activity*

## 7 Basic Forms of Intelligence

7 Basic Forms of Intelligence

- Verbal
- Mathematical Logical
- Spatial Capacity
- Kinesthetic
- Musical
- Intrapsychic Capacity
- Interpersonal Skills

Emotional and Social Intelligence

Dr. Howard Gardner research stated with a broader concept of intelligence . Each person will vary individually in their capacities within each domain of these multiple intelligence. The last two contain a set of brain functions that underlie the concepts of emotional and social intelligence

## Emotional Intelligence

Emotional Intelligence

- First proposed in 1990 by two researchers, Peter Salovey of Yale University and John Mayer of the University of New Hampshire (later popularized by Daniel Goleman).

1. Knowing One's Emotions
2. Managing Emotions
3. Motivating Oneself
4. Recognizing Emotions in Others
5. Managing Relationships

Researchers believed that other factors other than intellectual intelligence were important in contributing to the success in life. Not everyone with a high IQ is successful in life.

[Your Notes](#)

## Social Intelligence

Daniel Goleman's research on the ability of a person to understand and effectively manage interpersonal relationships with others.

- 2 Main Components:
  1. Social Awareness-Perceiving how another person feels
    1. Primal Empathy
    2. Attunement
    3. Empathetic Accuracy
    4. Social Cognition
  2. Social Facility –Going beyond social awareness to enable the person to produce and maintain smooth and compatible interactions with other people.
    1. Synchrony
    2. Self-presentation
    3. Influence
    4. Concern

## IV. Communicating Effectively

*DON'T SHOOT THE MESSENGER!*

### Interpersonal Communications: Nonverbal, Voice, & Verbal

- Interactions between two people are based on communication. Interpersonal communication researchers have found that there are three elements critical to effective communication.
  1. The nonverbal or visual part of the message.
  2. Your voice tone and vocal element.
  3. The verbal content or the words that you choose.
- Research shows the more consistency there is among the three elements, the more believable the communication is.

#### What is Non-verbal Communication?

- Communication without words
- Communication Visually
  - Signs
  - Symbols
  - Maps
  - Posters
  - colors
- Communication with apparent behaviors:
  - Facial expressions, eyes, touching, tone of voice, spatial distance, and posture



#### Non-Verbal Communication in Crisis and Emergency

- In the event of an emergency, donning your SCSR will require you to use effective non-verbal communication.
- How you communicate:
  - Cap Lamp signals
  - Note writing-pen & paper, chalk, or rock dust
  - Nonverbal hand signals

## Nonverbal Communication Activity

You and your group/partner will be given a situation to relay to another group, using the non-verbal communication signals for mine emergency you will successfully lead the team to safety.

The team with the fastest and most correct response will.....

## NIOSH Mine Emergency Escape Training: Nonverbal Communication

1. Yes/Good Idea (thumbs up)
2. No/Bad Idea (thumbs down)
3. You/It/Them/There (point at person(s) or thing(s))
4. I/Me (point at yourself)
5. We/Us (point finger up, move in circular motion)
6. Stop/Stay Here (arm straight out, angled toward floor, palm facing forward)
7. Go This Way (arm at side, extend outward from waist indicating direction, palm facing out)
8. Don't Know/Don't Understand (hold both hands out with palms up, shrug)
9. SCSR (put hand in front of face, palm facing you)
10. Refuge Chamber/Barricade (touch fingertips to make triangle in front of chest)
11. Gas Detector/Gas Readings (simulate holding gas detector up to the roof)
12. A Problem (palm facing forward, move hand to and away from top of head)
13. Follow Me/Come This Way (bend lower arm to bring hand up toward self; beckoning motion)
14. Slow Down (slowly lower hand, palm facing down)
15. Evacuate (move bent arms back and forth next to body; running motion)
16. Lifeline/Tether (arm at side with elbow bent 90 degrees to front, move hand as if grasping line)

### Nonverbal Communication Activity

*Refer to Appendix B: NIOSH TOOL Activity Cards 1-3*

## The Emergency Communication Triangle

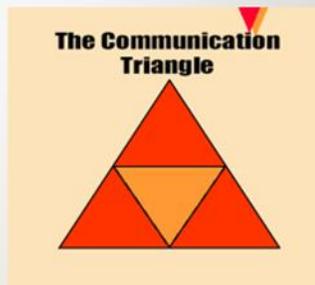


Effective Mine  
Emergency  
Communication

## The Critical Information

- Who? Where? What?
- Miners? Event? Response?

NIOSH: Safety and Communication  
<http://www.cdc.gov/niosh/pdfs/99-157.pdf>



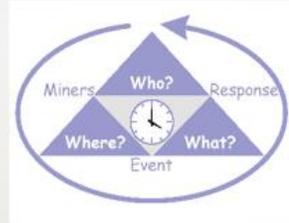
## How Do We Communicate?

- Mine Phones
- Land Line telephones
- Radio
- Word of Mouth
- Head Lamps
- All ways in which to communicate but how do we communicate?

## However, What Do We Communicate?

Who?  
What?  
Where?

Details:  
Miners, Event,  
Response



Emergency Communications: Why is effective communication a training topic?

The more communication becomes detail oriented the more it becomes **effective**

- Effective communication:
  - Reduces confusion ↓
  - Increases confidence in decision-making ↑
  - Ends the exchange of wrong information and the space for rumors ✕
  - Increases the prospect of success ↑

### Common sense versus details

#### Common Sense, Right?

- In 2003 study conducted in Western Pennsylvania, 48 mine workers who had escaped three serious mine fires were interviewed and after their stories were collected and analyzed, it prevailed that common sense was not entirely enough when it came to emergency communication. Throughout the study it was noted:
- The Who, The Where, and the What provide invaluable context, time, and information often left out when just relying on “common sense” in emergency communications.

## How would these be communicated?

WHO	WHERE	WHAT

## Who

- Identify who you are
  - Will create a difference in how others communicate with you
  - Experienced miner versus inexperienced miner
  - Knowing who you are creates a space for the right kind of communication to happen

## Where?

- Attention to Details: it is the little things that change everything
  - "there is a fire on the belt"

Research specific to this study found that out of the three fires and the evacuation of more than 60 miners through thick smoke, the 48 miners that were interviewed- only 2 actually knew the location of the fire.

The researchers commented that the dispatcher and the person who found the fire knew the location but as a result of non-communication, decisions were made about escape routes without that crucial piece of information. Lack of information and poor communication increases the stress level of an already potentially dangerous situation thus possibly affecting the decision-making process.

## What?

- The smallest details
- Common sense not enough?
- Losing valuable time
- The “What” in the message: “come on down to the dinner hole. We’re going out”

### Case Study: The What

During a serious mine fire, a warning message was given for everyone on the section to evacuate. Miners who had been near the phone when the call came in went to gather the others on their crew. One of these miners, a shuttle car operator, ducked under the check curtain and yelled to the miner operator saying, "Come on down to the mantrip. We're going out." Since the belt was down and it was close to quitting time, the miner operator and his helper thought they were just leaving the section a little early. They completed their normal end of shift routine (backing the continuous miner out of the cut, setting jacks, tightening check curtains, and disconnecting the power) before reporting to the mantrip. Thus, valuable time was lost.

Mallett, L., Vaught, C. and Brnich, M. The Emergency Communication Triangle. National Institute for Occupational Safety and Health, Publication Number 99-157, October 1999.

### The Details

- Miners: is anyone hurt? Is everyone accounted for? When and where was a missing person last seen?
- Event: do you require a first aid kit or an ambulance? Should we call for mine rescue teams or just a couple of fire extinguishers?
- Response: What has been done so far? How many people on the scene? What equipment is needed?

### Communicating Details Scenario Activity

#### PARTNER ACTIVITY

Provide one of the following scenarios to paired groups:

### **Scenario #1**

There is an explosion causing a massive roof fall out by where you are working. Debris is blocking the escape way. There are 7 other miners with you. One has fallen and twisted his ankle.

### **Scenario #2**

A gas meter alarm sounds. The readout is indicating high levels of carbon monoxide. It is approximately three hours into your shift. There are 11 miners working around your area. 1 miner is complaining of shortness of breath and a tight chest.

### **Scenario #3**

Smoke from unknown source begins to fill the area where you are working just as your shift begins. There are 13 in your work area. Two miners have left the area to investigate where the smoke is coming from.

### **Scenario #4**

A stuck belt roller on a conveyor belt created enough friction and heat. A fire occurs. The smoke is heavy and dangerous levels of carbon monoxide traveling towards your work station. There are 7 people in your general area. 3 more working nearby. One of your co-workers is a member of your site's fire brigade.

### **Scenario #5**

A truck driver delivering multiple sections of polyurethane pipe was struck by a section of pipe during the unloading process. While a forklift was removing sections of the pipe, a single, unsecured section of pipe rolled off on the driver's side of the truck and struck the driver. Each section of pipe was approximately 50' long and weighed approximately 1,750 pounds. Miners began first aid but the driver was unresponsive.

### **Scenario #6**

At a sand and gravel mine, two miners were working in a pit next to an abandoned roadway embankment, which partially bound an old pit. Waste clay and sand had been placed in the old pit for reclamation purposes. The embankment failed the tailings and slurry engulfing both miners.

### **Scenario Activity Instructions:**

You and your partner have each been given a scenario:

- First, place the information in the order of importance and secondly, develop how to relate the information based on the communication triangle.
- Next you and your partner will share your communication triangle information with another pair and they will formulate a response based on what you have communicated.

## Principles of Crisis and Emergency Risk Communications

“CERC is a way to talk to people, a set of principles that allow us, in the heat of a crisis when the unthinkable happens, to be able to get a message through to people in a way that they can actually understand it and act on it.”

Dr. Barbara Reynolds, Centers for Disease Control and Prevention

### Crisis Communication

- The term crisis, as outlined in the 2014 Crisis and Emergency Communication manual, is used to define the “communication activities of an organization or agency facing a crisis”.
- This type of communication generally happens *after* a crisis occurs and there is a need to communicate information about the situation to stakeholders, partners, and the public.
- Crisis communications may also be used in reference to any type of public alert system or notification that informs the public about an event.

### Risk Communications

- Risk communication originated in the environmental health field. “Through risk communication, the communicator hopes to provide the receiver information about the expected type (good or bad) and magnitude (weak or strong) of an outcome from a behavior or exposure.”
- In the health field, risk communication often involves discussion about an adverse outcome and the probability of that outcome occurring for an individual. For example, risk communication can help an individual decide whether to vaccinate their child against measles. The messaging will help convey the risks associated with getting the disease and offer steps to reduce the chances of becoming ill.

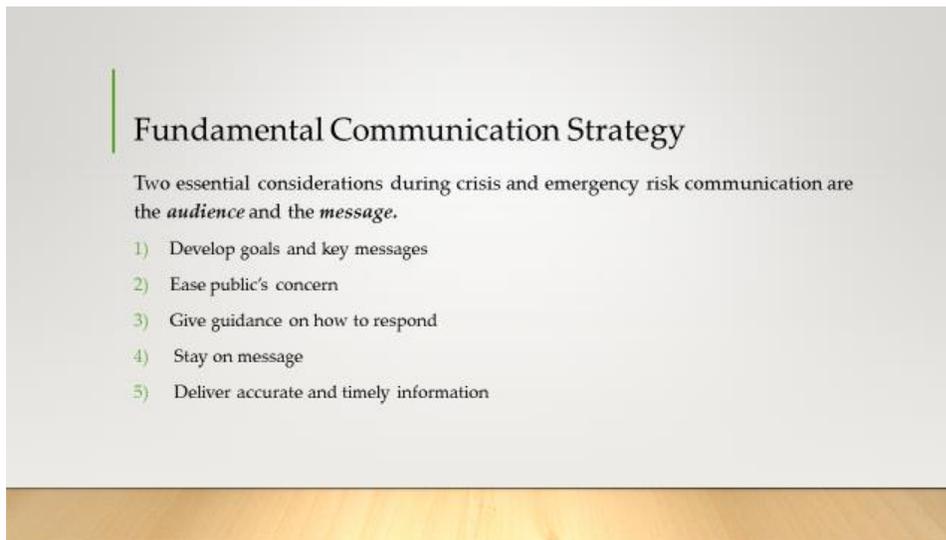
### Key Communication Principles

- **Be First:** Crises are time-sensitive. Communicating information quickly is almost always important.
- **Be Right:** Accuracy establishes credibility. Information can include what is known, what is not known, and what is being done to fill in the gaps.
- **Be Credible:** Honesty and truthfulness should not be compromised during crises.
- **Express Empathy:** Crises create harm, and the suffering should be acknowledged in words. Addressing people’s feelings, and the challenges they face, builds trust and rapport.
- **Promote Action:** Giving people meaningful things to do calms anxiety, helps restore order, and promotes a restored sense of control.
- **Show Respect:** Respectful communication is particularly important when people feel vulnerable. Respectful communication promotes cooperation and rapport.

Source DHHS, CDC. (2014). Crisis and Emergency Risk Communication – 2014 Edition. Retrieved from <http://stacks.cdc.gov/view/cdc/25531>

## Plan Your Communications Plan

- Communication is a critical tool in addressing the needs of a community post disaster. It is important for the communication aspects of emergency response to be integrated into all aspects of crisis management.
- The communication plan should be integrated into the overall mine emergency response plan and be understood by all leadership.
- Finally, it is important that your mine share the communication plan with other partnering agencies so that policies and procedures can be aligned and stakeholders can collaborate with each other.



A communications goal of “educating the public on the complexities of bio-terrorism and preparing them for any eventuality” is ***not realistic***;

informing the public of the problem and specific dangers, providing guidance on appropriate responses, and easing concerns are achievable goals.

Source: (U.S. Department of Health and Human Services, SAMHSA, 2002)

## Developing Goals and Key Messages

- Communication failure is often due to a lack of clear goals and key messages that support the spokesperson delivering the message during a crisis. Setting goals and identifying vital messages are decisions that should be made prior to issuing any public comment, especially during a crisis.
- It can be a challenge to write a message to delivery to the public and the media. The initial message must be provided shortly after the event occurs and it must be accurate. When

information is still unknown, it is important to explain the process being undertaken to gather additional facts

#### **Further Training on CERC**

- Working with the Media
- Constructing messages to the media and the public
- Working directly with the public
- Managing information related to an emergency
- Integrating Social Media into your Communications Plan

## V. Situational Awareness

### Hazard Recognition

#### Situational Awareness and Your Senses

- Sight
- Hearing
- Smell
- Touch & Taste

“As a Scout, you should make it a point to see and observe more than the average person.” —*Scout Field Book*, 1948

#### **IF YOU SEE IT ....YOU OWN IT!**



#### **30 CFR**

- RULES TO LIVE BY
- TOP 20 CITATIONS FOR YOUR INDUSTRY
- COMPANY VIOLATIONS
- RELY ON OTHERS EXPERIENCE

### **It's Not About the Incident**

- The incident is just the beginning of a story
- Your life and everyone around you is affected by an injury



[Your Notes](#)

## Hazards



Do you see any hazards here?

[Your Notes](#)

## WHY IS IT IMPORTANT?



**PREVENTION**



**SOME HAZARDS ARE EASILY IDENTIFIED**



SOME ARE NOT



**ELECTRICAL – FIVE MOST CITED**





**YOUR SAFETY CULTURE**



## **SAFETY COMMITTEE AUDITS**

- TRAIN YOUR COMMITTEE MEMBERS
- LIMIT THE NUMBER OF PARTICIPANTS ON YOUR AUDITS
- LIMIT YOUR TIME
- LIMIT YOUR INSPECTION AREAS
- RESOLUTION TO ISSUES FOUND ON INSPECTION

A WISE MAN SAID USE

### **“COMMON SENSE”**

WHEN PERFORMING A JOB.

A WISER MAN SAID USE

### **“GOOD SENSE”**

WHEN PERFORMING A JOB.

## Understanding the Human Brain –Where Risk Assessment All Starts

- The Brain receives and processes millions of bits of information every minute (1850 bits / every moment (1/18th second)).
- Our conscious mind can only process about 0.3% of this information or “5-9 bits”.
- This means that our brain, by design, misses 99% of all information that is potentially received.
- Why is this?
- How does the brain know what is important?
- How will this affect how I make decisions in conducting tasks?
- The limitations of the conscious mind is one of the reasons that observations and risk assessments are so important!
- More importantly, it also helps us understand the limitations of our UNCONSCIOUS mind...our attitudes, habits, values and experience/memories. Some of these are BLIND SPOTS!

### Brains Information Processing

- The Brain decides what is most important at the moment bases on 4 Criteria...What is DIPI!
- **Dangerous** – Information about things, people or experiences that threaten physical survival, personal values or self-esteem (i.e. Rattlesnake, Vehicle on wrong side of the road)
- **Important** – Information that is significant based on the each individuals perception of its value, ( i.e. Family, relationships)
- **Pleasurable** – Events, objects and experiences that are enjoyable
- **Interesting** – Different or unusual, people, objects and event that are consciously processed.

WHAT MAKES A PERSON DRIVE 55 MPH IN A 35 MPH ZONE?

WHAT MAKES A PERSON CROSS A TRAIN TRACK WHEN THEY SEE A TRAIN APPROACHING IN THE DISTANCE?

WHAT HAPPENS IS WE WEIGH OUT THE RISK IN OUR MINDS.

SOMEWHERE BETWEEN OUR BRAIN AND REACTION, WE ARE MAKING A CONSCIOUS CHOICE FROM WHICH WE ARE ULTIMATELY RESPONSIBLE

### **Task Risk- Power of Observation**

- Knowing the limitations and attributes of the brain. Risk management is primarily about observation of the hazards and then applying the correct controls and tools.
- The KEYS to making good observations are (engage the brain):
  - Taking the time to look up, down and around your work area
  - Understanding what hazards are and what you are looking for
  - Having more than one set of eyes on the task
- The main topic being taught today is what to do with your observations, knowledge and the risk processes to achieve a ZERO HARM outcome.

Observation is where all risk assessments start. The next slides are purposefully not about mining but about the observational process. These are animated so that you don't reveal all the answers until you ask the questions. This will also help to get the trainees engaged. Call on everyone in the room...especially the quiet ones.

[Your Notes](#)

## The Power of Observation



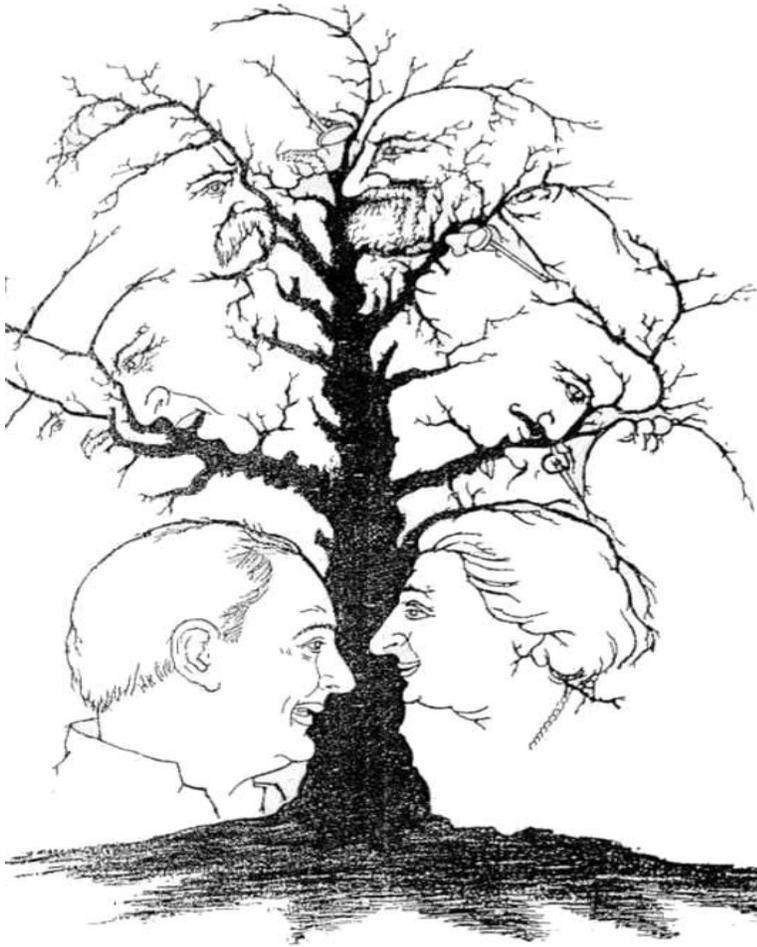
*Observation is key for effective risk management*

The Power of Observation in conducting risk management. Who saw the face in 1-2 seconds? This is sometimes all you get to see a hazard!

[Your Notes](#)

## The Power of Observation

What do we see? How many faces are there?



What do you see hidden in the photo?



Another image with a hidden face and animals.

The face is in the front of the image, with green grass growing on it.

You will also be able to identify a number of faces in the rock formations.

You can see a baboon face, a fish, a cat. What else can you observe? There are over 40 in the picture if you had time to look

**More importantly, what don't you see...why do some see the shapes immediately and why do some only see them when pointed out?**

### **The "Art of Vision"**

***In the land of the blind, the one eyed man is king. It's one of those sayings that seems universally acknowledged for its truth, and equally universally ignored.***

***After all, haven't most people got two good eyes?***

***The thing is, the saying isn't about how many eyes you've got, or how good they are, it's about how well you use them***

Vision is the art of seeing things invisible to others

And why does so much of what's in front of us seem invisible?

- people only see what they are prepared to see (Ralph Waldo Emerson)
- what we see depends mainly on what we look for (John Lubbock)

One of the strangest things about being a human is the way we must unconsciously ignore most of the information available to our senses

We must do this to continue functioning - otherwise we would probably end up like those old-fashioned sci-fi robots - all flashing lights, warning buzzers and smoke pouring from our ears as we shout overload - overload!

So, the ability to be blind to most of what we see and deaf to most of what we hear is quite useful. It helps us get by in life.

Unfortunately, there is a flip side, because we also miss a lot of important stuff. Whatever our role we tend to be so busy just getting along that we rarely make the time to sit up and really take notice. So, in this land of the blind we may well be with the blind.

Those that have taken the time to properly look around them have a tremendous advantage.

### **Habit of not looking**

We are in the habit of not looking, of not hearing - of not noticing. Making the decision to change that habit can offer immense paybacks.

By exercising our Power of Observation, we will be able to see the things invisible to others.

**Here are just a few of the benefits of enhanced observation skills:**

Better understanding our team members and understanding their strengths and areas where they require support

Improved decision-making skills

Recognizing and emulating 'success behavior' (whatever your own definition of 'success' is)

Learning the best ways to help people

Learning the best ways to influence people

Finding new ways to solve persistent problems

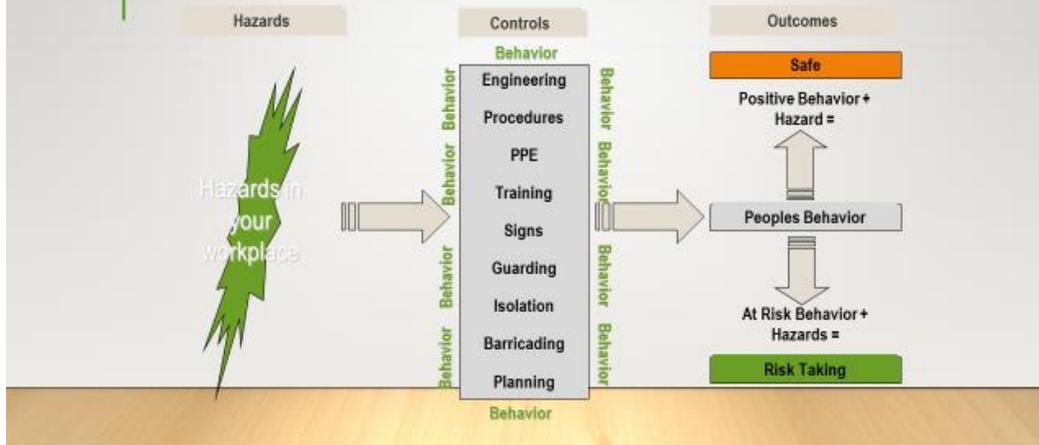
Seeing opportunities and problems before they happen

See hazards and correct them before someone is injured

**The Power of Observation – Quick Test**

How many sides does a STOP sign have? 8 6	How many stars on the US Flag? 52 50
Do books generally have even numbered pages on the left or right side? Left Right	There are 12 buttons on a touch phone. What 2 symbols bear no digits? * and # @ and #
How many lug nuts are on a standard car wheel? 5 7	How many curves in a standard paperclip? 2 3

## The Process Of Observation

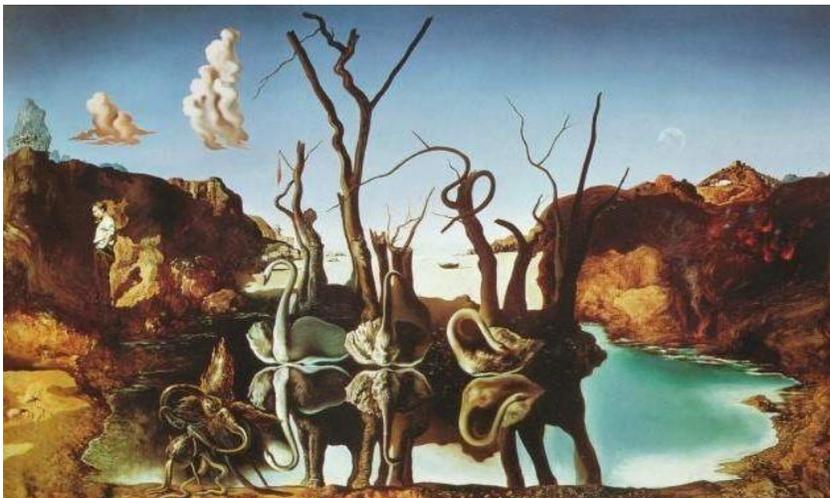


### Courage to Intervene

- Improve your power of observation
- Have the courage to intervene when unsafe behaviors or hazards are observed
- Use the correct task risk tools all the time.

*The standard you set is the standard you walk past*

Do you see swans or elephants?



Different people inherently see different things immediately. You must really look to see both. Do you see the man in the upper left?

## Definition of an Accident

- Any unplanned and unanticipated event that results in personal injury and/or property damage.



## Understand ways in which accidents happen on the job!

Herbert William Heinrich

- Travelers Insurance - 1930
- Industrial Accident Prevention
- 88-10-2 Heinrich Law
  - ✓ 88% unsafe acts of employees
  - ✓ 10% unsafe conditions
  - ✓ 2% unpreventable



[Your notes](#)

## "SLAM" Risks



### Environmental factors

- Weather
- Dusts, gases and vapors
- Noise
- Illumination



### Personal Factors

- Safety motivation and awareness
- Knowledge and training
- Physical and mental state
- Reaction time

[Your Notes](#)

## Causes

### Unsafe Conditions

- Sliding or falling material at bins, hoppers and dump points
- Pressure lines and vessels
- Inadequate supports or guards
- Poor housekeeping
- Poor illumination
- Hazardous highwalls, spoil banks, and water pools
- Fire and explosion hazards
- Defective tools, equipment, or supplies
- Congestion of work place
- Inadequate warning systems
- Bad weather
- Excessive noise
- Absence of berms along haulageways and dump sites

### Direct Causes:

Unplanned release of energy and/or hazardous material such as falls of rock or materials, failing brakes, or removal of air hose without first bleeding the line.

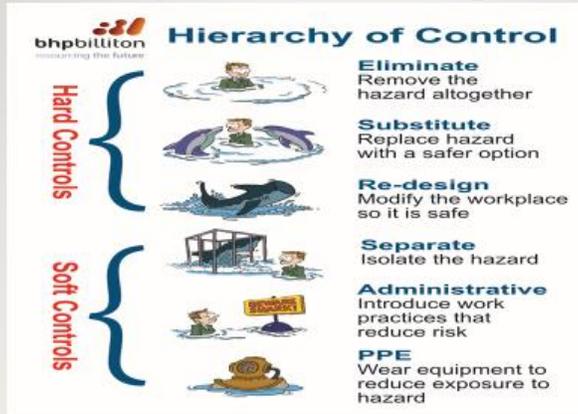
### Miners' responsibilities:

- Reporting hazards
- Tagging unsafe equipment
- Eliminating known hazards
- Warning others
- Avoiding areas of hazards



[Your Notes](#)

## Hierarchy of Control - Simplified



**Accidents are avoidable  
when everyone works  
together to prevent  
them.**

# HAZARD RECOGNITION

WHERE DO WE START

- 30 CFR
- RULES TO LIVE BY
- TOP 20 CITATIONS FOR YOUR INDUSTRY
- COMPANY VIOLATIONS
- RELY ON OTHERS EXPERIENCE

WHY IS IT IMPORTANT?



PREVENTION



SOME HAZARDS ARE EASILY IDENTIFIED



Your Notes



SOME ARE NOT



Your Notes



ELECTRICAL – FIVE MOST CITED



[Your Notes](#)



## YOUR SAFETY CULTURE



### SAFETY COMMITTEE AUDITS

- TRAIN YOUR COMMITTEE MEMBERS
- LIMIT THE NUMBER OF PARTICIPANTS ON YOUR AUDITS
- LIMIT YOUR TIME
- LIMIT YOUR INSPECTION AREAS
- RESOLUTION TO ISSUES FOUND ON INSPECTION

**Post-Training Assessment of Competencies**

ID # \_\_\_\_\_

Please circle the appropriate number for your level of response.

How <u>competent</u> do you feel in your ability to:	COMPETENCE <i>AFTER</i> THE TRAINING				
	Very Low	Low	Moderate	High	Very High
BB. I understand my mine’s coordinated operational structure during an emergency response effort.	1	2	3	4	5
CC. I am familiar with my mine’s emergency response plan and understand my role.	1	2	3	4	5
DD. I am able to manage stress and can recognize signs and symptoms of acute stress/distress among my coworkers.	1	2	3	4	5
EE. .I am able to maintain situational awareness and demonstrate accountability to deliver enhanced information to reinforce ongoing lifesaving and life-sustaining activities to meet basic human needs and stabilize the incident.	1	2	3	4	5
FF. I am able to assess information related to an emergency and recognize hazards to mitigate potential cascading effects	1	2	3	4	5
GG. I am able to maintain good interpersonal listening and speaking skills to promote collaboration and cooperation to solve safety concerns.	1	2	3	4	5
HH. I use principles of crisis and risk communication to ensure information is concise and clearly understood among underground mine team.	1	2	3	4	5
II. I can use psychological first aid to diminish physiological stress response and facilitate function and action toward self-escape and survivability	1	2	3	4	5
JJ. I am able to establish and maintain different types of communication (i.e. interoperable voice, data, etc.).	1	2	3	4	5
KK. I am able to relay and document the six categories of critical information that should be provided during emergency communications: Who, Where, What, Miners, Event, and Response.	1	2	3	4	5
LL. I am able to communicate information on the course of action and implementation to the relevant people.	1	2	3	4	5
MM. I am able to ensure the capacity for timely communications in support of security,	1	2	3	4	5

situational awareness, and operations by any and all means available.					
NN. I understand my mine communications plan to include protocols for family reunification, media control, & external management teams.	1	2	3	4	5
OO. I can identify threats and immediate hazards during a mine emergency (explosions, hazardous spill, etc.) and implement primary response methods to control the hazard and minimize injury and /or death.	1	2	3	4	5
PP. I am able to maintain familiarity with emergency escape route(s) according to mine site procedures.	1	2	3	4	5
QQ. I am able to select most appropriate action for dealing with the situation (i.e. hazard) according to mine site emergency response plans and procedures.	1	2	3	4	5
RR. I am able to continuously monitor threat/hazard and reassess controls (i.e. ventilation) in place to ensure the safety of personnel in the vicinity of threat (i.e. fire).	1	2	3	4	5
SS. I can perform primary and secondary assessments of miners (i.e. each team member) condition to recognize and implement life support measures.	1	2	3	4	5
TT. I understand and apply the hierarchy of controls to reduce and/or eliminate immediate risks.	1	2	3	4	5
UU. I am able to use appropriate personal protective equipment and apply appropriate procedures (i.e. self-rescue equipment, confined spaces, noise, isolation, etc.) for managing hazards, risks, and emergencies	1	2	3	4	5
VV. I am able to recognize, access, and respond to alarms and warning devices according to mine site procedures.	1	2	3	4	5
WW. I am able to report unresolved threats to physical and mental health through the chain of command.	1	2	3	4	5
XX. I employ protective behaviors according to changing conditions, personal limitations, and threats.	1	2	3	4	5
YY. I am familiar conducting health and safety hazard assessments and ensure the availability and dissemination of guidance and resources (i.e. deploying hazardous materials teams).	1	2	3	4	5
ZZ. I am able to take precautions to safeguard workers and maintain standards of health, fitness and well-being.	1	2	3	4	5

AAA. I am able to focus on timely restoration of mine infrastructure and revitalization post incident to promote resilience of miner health, and environmental fabric of community (i.e. social, cultural, historic, and economy, etc.).	1	2	3	4	5
BBB. I able to participate in risk and disaster resilience assessments so that mine community (decision makers, responders, and community members) can take informed action to reduce their entity's risk and increase their resilience.	1	2	3	4	5

1. **What did you like the most about this Training?** (Please write your answer below)

2. **What did you like the least about this Training?** (Please write your answer below)

3. **Please tell us what your personality type is?** \_\_\_\_\_



## *Appendix A: Stress Activity*



## STRESS MANAGEMENT

### **OPENING ACTIVITY– Stress Test**

This is a simple opening activity to get the group talking about stress. The directions are easy:

- Everyone get pen and paper. Tear the paper into 6 pieces
- On each piece of paper, everyone should write about 6 situations that stress them out. (One per paper)
- Gather the papers and pick them one by one. As a paper is picked, the stressor should be read aloud. Then everyone in the group should vote, by show of hands, if they find that situation stressful in their personal viewpoint or not.
  - Discuss after each vote: Why do some people find this situations stressful, while others do not? In other words, why doesn't this issue bother some people? (Get opinions and discuss)
- Continue for as long as you want or until the cards are done.

### **Final Discussion Questions (Review at the end of the activity):**

- What situations seemed to stress out the most people? Why?
- What situations were most unique and why?
- What seems to be the key reason why some things stress some people out but not others? (A lot of what has to do with stress management is based on the answer to this challenging question)



**STRESS MANAGEMENT TOOLS:** There are a lot of ways that people use to try to manage stress that may not be so good on a long term basis (Even if they may seem effective in the short run) – Let’s consider a few:

**Poor Coping Mechanisms** (These may not work in the long run or may even cause more stress later): Try to come up with reasons why these poor coping mechanisms may feel good in the short term and then identify why they may not be such good long term solutions:

The first one below is partially complete. **Try to fill out the rest** - (Questions are **CAPITALIZED IN BOLD**)

<b>Poor Coping Mechanism</b>	<b>Why It May Work Short Term</b>	<b>Possible Long Term Complications</b>
Drug or alcohol use	<ul style="list-style-type: none"> <li>➤ Feels good</li> <li>➤ Relaxing,</li> <li>➤ Gets your mind off of things</li> </ul>	<p><b>WHY IS THIS USUALLY NOT A LONG TERM SOLUTION?(Examples -)</b></p> <ul style="list-style-type: none"> <li>➤ Dependence – Eventually “needing” substances to reduce stress</li> <li>➤ Tolerance – Need more and more over time for the same effect</li> <li>➤ Inconvenient – Can’t get high at work, for example</li> <li>➤ Consequences – Arrests, Family problems, etc.</li> <li>➤ Expensive</li> </ul> <p><b>OTHERS? (List Below) -</b></p>
Suppression (Holding it in/Ignoring)	<ul style="list-style-type: none"> <li>➤ Sometimes if we ignore it the stress goes away</li> </ul>	<p><b>WHY IS THIS USUALLY NOT A LONG TERM SOLUTION?</b></p>
Passivity (Waiting for others to help)	<ul style="list-style-type: none"> <li>➤ Thankfully sometimes other people do help</li> </ul>	<p><b>WHY IS THIS USUALLY NOT A LONG TERM SOLUTION?</b></p>
Acting Out: <ul style="list-style-type: none"> <li>➤ Revenge</li> <li>➤ Verbal or Physical Aggression</li> <li>➤ Destruction of Property</li> </ul>	<ul style="list-style-type: none"> <li>➤ It may feel good while you are doing it</li> </ul>	<p><b>WHY IS THIS USUALLY NOT A LONG TERM SOLUTION?</b></p>
Blaming/Complaining	<ul style="list-style-type: none"> <li>➤ Gets things off your chest temporarily</li> </ul>	<p><b>WHY IS THIS USUALLY NOT A LONG TERM SOLUTION?</b></p>



**Stress Management (continued) – Effective Coping Skills** – (These may take more persistent practice than “quick fixes” but over the long term they can be very effective) – **DISCUSS:**

1. RELAXATION:

- Counting (Believe it or not, counting to 10 before reacting can make a huge difference if you practice it)
- Deep Breathing
- Squeeze a Stress Ball
- Relaxation Audio/Video
- Scheduled relaxing activities: take bath, go for a walk, positive and relaxing hobbies, etc. (“Me” time)
- Learn to take one minute vacations – (Knowing when to take a break can be critically helpful when stress arises)
- Visual/Mental Imagery (i.e. Put yourself on the beach)

2. POSITIVE MENTAL ATTITUDE (PMA)

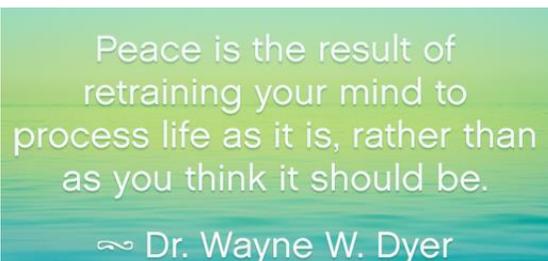
- Learn to be grateful for what you have – (You can lower stress by putting things in perspective – It could be worse!)
- Enjoy your achievements – (You can lower stress by appreciating what you have accomplished so far)
- Plan good things for your future (Trips, goals, etc.)
- Acceptance – (Learn to accept the things you cannot change)
- Cognitive Reframing – (Is it really that bad? Are you possibly blowing things out of proportion based on emotion?)
- Positive Self Talk – (Instead of listening to negative thoughts, how can you replace these with positive messages?)
- Resolve Cognitive Dissonance – (Do you need to clear your conscience? Secrets, lies and guilt can cause stress)
- Conflict Resolution/Letting go – (Holding on to resentments is stressful. Do you need to learn to forgive?)
- Anger management – (Anger and stress can go hand in hand, Learn to cope with anger and watch stress decrease)

3. SUPPORT:

- What supports are available to you when you feel stress or anxiety? Are there people who can fill that “crisis helper” role for you that will willingly be there for you when you may be overwhelmed with stress?

**Which of the above stood out the most to you as areas you need to work on? Do you have any specific examples from your own life?**

**What can you start working on today or in the near future to begin using these tools for stress management in your life?**

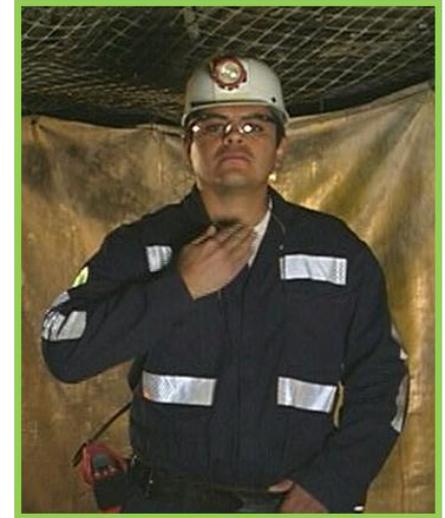


*Appendix B: NIOSH TOOL Activity Cards 1-3*

Move  
bent arms  
back and  
forth next  
to body  
to body  
(running  
motion)



Bend lower  
arm to  
bring hand  
up toward  
self;  
beckoning  
motion



Simulate  
holding  
gas  
detector  
up to  
the roof



Arm at side,  
extend  
outward  
from waist  
indicating  
direction,  
palm facing  
out



Follow Me/  
Come This  
Way

Activity 1  
Card 13 of 16

Evacuate

Activity 1  
Card 15 of 16

Go This Way

Activity 1  
Card 7 of 16

Gas  
Detector/  
Gas Readings

Activity 1  
Card 11 of 16

Point at  
yourself



Arm at side,  
elbow bent  
90° to front,  
move hand  
as if  
grasping  
line



Thumbs  
Down



Palm facing  
forward,  
move hand  
to and away  
from top of  
head



Lifeline/  
Tether

Activity 1  
Card 16 of 16

I/  
Me

Activity 1  
Card 4 of 16

A Problem

Activity 1  
Card 12 of 16

No/  
Bad Idea

Activity 1  
Card 2 of 16

Touch  
fingertips  
to make  
triangle  
in front  
of chest



Put hand  
in front  
of face,  
palm  
facing  
you



Slowly  
lower  
palm,  
face  
down



Hold both  
hands out  
with palms  
up, shrug



SCSR

Activity 1  
Card 9 of 16

Refuge  
Chamber/  
Barricade

Activity 1  
Card 10 of 16

Don't  
Know/Don't  
Understand

Activity 1  
Card 8 of 16

Slow Down

Activity 1  
Card 14 of 16

Arm  
straight  
out, angled  
toward  
floor, palm  
facing  
forward



Point  
finger up,  
move in  
circular  
motion



Thumbs  
Up



Point at  
person(s)  
or  
thing(s)



We/  
Us

Activity 1  
Card 5 of 16

Stop/Stay  
Here

Activity 1  
Card 6 of 16

You/ It/  
Them/  
There

Activity 1  
Card 3 of 16

Yes/  
Good Idea

Activity 1  
Card 1 of 16

Slow down. I'm  
having a problem.  
We should go this  
way to the refuge  
chamber.

We need to go to  
the lifeline. Follow  
me. Keep your  
SCSR on.

I checked the gas  
reading. We  
should go this way  
to the refuge  
chamber.

We should all go this  
way to the refuge  
chamber. Follow me.  
We need to slow  
down.

**Activity 2**  
**Card 2 of 16**

**Activity 2**  
**Card 1 of 16**

**Activity 2**  
**Card 4 of 16**

**Activity 2**  
**Card 3 of 16**

We need to  
evacuate. Keep  
your SCSR on. I will  
take a gas reading.

Stop. He's having a  
problem. We need  
to slow down.

Stop. There is a  
problem. We cannot  
evacuate. We should  
go to the refuge  
chamber.

Stay here. I need  
to take a gas  
reading.

**Activity 2**  
**Card 6 of 16**

**Activity 2**  
**Card 5 of 16**

**Activity 2**  
**Card 8 of 16**

**Activity 2**  
**Card 7 of 16**

We need to go this way to the lifeline and evacuate. Keep your SCSR on.

Stop. Keep your SCSR on. We should go this way to find the lifeline.

We need to go this way to evacuate.  
Slow down and keep your SCSR on.

He is having a problem. I will stay here at the refuge chamber with him.  
You should evacuate.

**Activity 2**  
**Card 10 of 16**

**Activity 2**  
**Card 9 of 16**

**Activity 2**  
**Card 12 of 16**

**Activity 2**  
**Card 11 of 16**

Stop. We should  
not go to the  
refuge chamber.  
We need to  
evacuate.

We need to  
evacuate. Follow  
me. We will go this  
way.

I am having a  
problem. We need  
to slow down.

I don't understand.  
We should not go  
to the refuge  
chamber. We  
should evacuate.

**Activity 2**  
**Card 14 of 16**

**Activity 2**  
**Card 13 of 16**

**Activity 2**  
**Card 16 of 16**

**Activity 2**  
**Card 15 of 16**

**Instructions:**

- Divide the cards equally between group members.
- Do not let your partner(s) see your cards.
- The key words that you should make sure to communicate are underlined.
- Use the nonverbal signals you learned during the training session to appropriately communicate with your partner(s) the phrase that is on each card.
- Have your partner(s) guess what signal was communicated. Go over anything that your partner was unable to understand.
- Switch back and forth between being the one who communicates a message nonverbally and the one who guesses what was communicated.
- Remember, you are not able to talk and can only use hand signals.

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- Remember, you are not able to talk and can only use hand signals.

**Activity 2  
Instructions**

**Activity 2  
Instructions**

**Activity 2  
Instructions**

**Activity 2  
Instructions**

Group 1

Card 1

Activity 3

Group 1

Card 2

Activity 3

Group 1

Card 3

Activity 3

Group 1

Card 4

Activity 3

There is a fire in the mine, but your brother is working further inby and you refuse to evacuate without him. You want to go inby to warn the group of miners he is working with before you all start to evacuate.

There is a fire in the mine. Because there is heavy smoke you have donned your SCSR. You think the best option is to have your fellow miners don their SCSRs, find the lifeline, and evacuate.

There is a fire in the mine. The smoke is becoming heavy and dense.

There is a fire in the mine. The smoke is becoming heavy and dense.

Group 1

Card 5

Activity 3

Group 1

Card 6

Activity 3

Group 2

Card 1

Activity 3

Group 2

Card 2

Activity 3

There is a fire in the mine. The smoke is becoming heavy and dense.

There is a fire in the mine. The smoke is becoming heavy and dense.

There has been an explosion in an inactive area of the mine. You twisted your ankle and are not sure you can walk out of the mine. You want to go to the refuge chamber.

There has been an explosion in an inactive area of the mine. You are not yet seeing smoke, but gas readings indicate high levels of CO so you don your SCSR. You need to get your fellow miners to don their SCSRs and evacuate the mine.

Group 2

Card 3

Activity 3

Group 2

Card 4

Activity 3

Group 2

Card 5

Activity 3

Group 2

Card 6

Activity 3

A call comes into your section saying that there has been an explosion in an inactive area of the mine. You have not yet seen smoke and you do not have a gas meter.

A call comes into your section saying that there has been an explosion in an inactive area of the mine. You have not yet seen smoke and you do not have a gas meter.

A call comes into your section saying that there has been an explosion in an inactive area of the mine. You have not yet seen smoke and you do not have a gas meter.

A call comes into your section saying that there has been an explosion in an inactive area of the mine. You have not yet seen smoke and you do not have a gas meter.

Group 3

Card 1

Activity 3

Group 3

Card 2

Activity 3

Group 3

Card 3

Activity 3

Group 3

Card 4

Activity 3

There has been an explosion in the mine and all escapeways are blocked. You hate the idea of entering a refuge chamber and there is no way anyone is going to convince you to enter one.

There has been an explosion in the mine and you and your fellow miners are trying to evacuate. You find that there has been a roof fall and it appears that all escapeways are blocked. There is no smoke, but gas readings indicate that the air is bad. You think the best option would be to deploy and enter the refuge chamber.

There has been an explosion in the mine causing a massive roof fall. Debris is blocking all escapeways.

There has been an explosion in the mine causing a massive roof fall. Debris is blocking all escapeways.

Group 3

Card 5

Activity 3

Group 3

Card 6

Activity 3

Group 4

Card 1

Activity 3

Group 4

Card 2

Activity 3

There has been an explosion in the mine causing a massive roof fall. Debris is blocking all escapeways.

There has been an explosion in the mine causing a massive roof fall. Debris is blocking all escapeways.

You have heart problems and are finding it very difficult to breathe through your SCSR. You don't think you can make it out and want to enter the refuge chamber.

There has been an explosion and the roof of the mine collapsed outby where you are working. Smoke is slowly entering the area in which you are working so you need to get everyone to don their SCSRs. You think that by working together with your fellow miners you can clear away enough of the collapsed material to get through and evacuate the mine.

Group 4

Card 3

Activity 3

Group 4

Card 4

Activity 3

Group 4

Card 5

Activity 3

Group 4

Card 6

Activity 3

There has been an explosion causing a massive roof fall outby where you were working.

There has been an explosion causing a massive roof fall outby where you were working.

There has been an explosion causing a massive roof fall outby where you were working.

There has been an explosion causing a massive roof fall outby where you were working.

Group 5

Card 1

Activity 3

Group 5

Card 2

Activity 3

Group 5

Card 3

Activity 3

Group 5

Card 4

Activity 3

Smoke begins to fill the area where you were working so you don your SCSR. However, you are finding it hard to breathe. You start to panic. You want to go to the refuge chamber where you can take off the SCSR and there will be oxygen to breathe.

Smoke begins to fill the area of the mine where you are working, but you don't know the cause of the smoke. You don your SCSR at the first sign of smoke, but need to get your fellow miners to do the same. You want to warn another group of miners working further in by before evacuating.

Smoke from an unknown source begins to fill the area where you are working.

Smoke from an unknown source begins to fill the area where you are working.

Group 5

Card 5

Activity 3

Group 5

Card 6

Activity 3

Group 6

Card 1

Activity 3

Group 6

Card 2

Activity 3

Smoke from an unknown source begins to fill the area where you are working.

Smoke from an unknown source begins to fill the area where you are working.

You are a big, burly guy and you just twisted your ankle; you think it might be broken. Another miner just told you that you have to evacuate the mine, but you don't think there is any way you will be able to walk out. You want your fellow miners to leave you behind and make their escape.

Your personal gas meter alarm sounds. Upon checking the readout you find that CO levels are high. You don your SCSR. You need to get your fellow miners to don their SCSRs and evacuate the mine.

Group 6

Card 3

Activity 3

Group 6

Card 4

Activity 3

Group 6

Card 5

Activity 3

Group 6

Card 6

Activity 3

A gas meter alarm sounds. The readout is indicating high levels of carbon monoxide.

A gas meter alarm sounds. The readout is indicating high levels of carbon monoxide.

A gas meter alarm sounds. The readout is indicating high levels of carbon monoxide.

A gas meter alarm sounds. The readout is indicating high levels of carbon monoxide.