MEL & ENID ZUCKERMAN COLLEGE OF PUBLIC HEALTH

Western Mining Safety and Health Training Resource Center

Mine Emergency Preparedness Competency Model for Self-Escape

Domain 1: Leadership and Decision-Making

Refers to the responsibility of each miner to stand up and contribute in all phases of an emergency and the ability to implement decisions in a continuous changing environment by demonstrating the following competencies:

Competency 1.1 Understand and support a coordinated operational structure to solve problems under emergency conditions.

Individual Miner	Organizational Leadership
Describe the essential elements of the Incident Command System. (K)	*Recognize the value in having an incident command structure during an emergency situation. (O)*
Understand your mine's command structure and the importance of relaying information and communication flow through the chain of command structure.(K)	*Summarize the means, methods, and processes for solving the problems. (K)*
Recognize the value in having an incident command structure during an emergency situation. (O)	*Prioritize problems based on severity, urgency, and solvability. (S)*
Participate in Basic Incident Command System Training. (K)	*Participate in Incident Command System and Command Center (CC) Operations Training.(S)*
Prioritize problems based on severity, urgency, and solvability. (S)	*Participate in mock drills and simulations, which include ICS and CC principles (at least annually)(S)*
Differentiate among the consequences of specific decisions. (S)	*Assess information, resources and procedures necessary to address the problems in emergency situations. (S)*
Determine different types of incidents and levels of hazards and risks.(S)	*Analyze dysfunctions within your mine's emergency response system. (S)*
Prioritize problems based on level of hazard and degree of risk. (S)	*Explain how different personality types impact performance during emergency situations. (K)*
Explain how different personality types impact performance during emergency situations. (K)	*Maintain awareness of one's own tolerance for risk. (A)*
Maintain awareness of one's own tolerance for risk. (A)	*Recognize the ethical and moral implications of decisions made to improve self –escape. (O)*
Recognize the ethical and moral implications of decisions made to improve self –escape. (O)	*Refer problems that fall outside one's scope of authority to the appropriate person in the chain of command. (S)*

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Competency 1.2 Contribute expertise to the development of mine emergency plans for improved response roles during an emergency.	
Individual Miner	**Organizational Leadership**
Locate operational plans for emergency response. (K)	*Locate operational plans for emergency response. (K)*
Describe your mine's Emergency Response Plan procedures and recognize emergency conditions and the resulting problems. (K)	*Describe your mine's Emergency Response Plan procedures and recognize emergency conditions and the resulting problems. (K)*
Interpret MSDS files and materials. (K)	*Demonstrate knowledge and use of MSDS, operational plans, and standard operating procedures relevant to mine emergencies (S)*
	Compare the roles of relevant internal and external emergency response partners (including, but not limited to, agencies, organizations, authorities, elected leaders, and stakeholders). (K)
	Develop partnerships among internal and external emergency response partners. (S)
	Develop collaborative emergency response plans and/or policies with appropriate internal and external emergency response partners. (S0
	Apply communication strategies to effectively communicate with internal and external response partners. (S)
	Review and update operational plans as needed for new systems and/or modifications to existing systems (K)
	Classify details on critical shut-downs, isolations, potential hazardous substances, etc. in mine emergency plan. (K)
Competency 1.3 Manage stress-induced behaviors associated with emotional responses in self and others.	
Individual Miner	**Organizational Leadership**
Maintain willingness to be an active listener. (A)	
	Describe referral resources for serving as a liaison and advocate. (K)
Maintain a non-judgmental and respectful manner. (A)	
	Distinguish among the types of referrals needed for intensive care. (S)-
Evaluate the emotional support needs of others. (S)	
Distinguish among well-functioning, distress, and dysfunctional emotional responses. (S)	

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Distinguish among the possible signs of personal stress, burn-out, and vicarious trauma. (K)	
Apply intervention techniques to support emotional health needs.(S)	
Describe the importance of mitigating acute distress and fostering adaptive functioning and coping. (K)	
Discuss the elements of self-care principles and practices. (K)	
Use self-care principles and practices to mitigate potential adverse effects. (S)	
Develop a willingness to support the emotional health of others. (A)	

Competency 1.4 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.

Individual Miner	Organizational Leadership
Maintain situational awareness (K) *Create steps for evaluating the success of actions taken during an emergency situation. (S)* *Develop a method for realigning response actions as crisis events evolve. (S)*	*Recognize critical elements impacting situational awareness (K)* *Develop strategies to minimize distracters impacting situational awareness. (S)* *Prioritize actions to recover situational awareness. (K)* *Demonstrate the ability to communicate oral and written information impacting situational awareness in a clear, concise, and accurate manner. (S)*

Competency 1.5 Manage and assess information related to an emergency to inform decision-making regarding the nature and extent of the hazard and any cascading effects.

Individual Miner	Organizational Leadership
Interpret your role and operational procedures in emergency response plan. (K)	*Develop cross-cultural strategies (non-English speakers, etc.) to address emergency situations and disseminate information. (S)* *Management of different types of routine and urgent information. (K)*

Competency 1.6 Maintain good interpersonal listening and speaking skills to promote collaboration and cooperation to solve safety concerns.

Individual Miner	Organizational Leadership
Communicate the need for and importance of a coordinated mine response to emergencies and disasters. (S) *Implement approved signaling methods. (S)*	*Recognize the benefits of diverse perspectives within the miner workforce. (O)*

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Domain 2-Communications & Crisis Management
Refers to the miner's need to communicate before, during, and after an emergency and implementing crisis management activities by demonstrating the following competencies:

Competency 2.1 Use principles of crisis and risk communication to ensure information is concise and clearly understood among underground mine team.

Individual Miner	Organizational Leadership
Recognize radio and telephone protocols for crisis and risk communications. (K)	*Classify the general tenets in crisis and emergency risk communication principles. (K)*
Differentiate among the responsibilities of a receiver, transmitter, and translator during events (before, during, and after). (K)	*Use consistent names, acronyms, and pronunciation in oral and written communications. (S)*
Differentiate between crisis communication and emergency risk communication. (K)	*Differentiate between the mental and emotional factors that might create barriers to communication (e.g., reception and interpretation). (K)*
Differentiate between the mental and emotional factors that might create barriers to communication (e.g., reception and interpretation). (K)	*Differentiate among the responsibilities of a receiver, transmitter, and translator during events (before, during, and after). (K)*

Competency 2.2 Use psychological first aid to diminish physiological stress response and facilitate function and action toward self-escape and survivability.

Individual Miner	Organizational Leadership
Able to identify and discuss the impact of trauma, acute and long-term stress, and fear on individuals and groups (S)	*Participates in PFA training to recognize and understands the rationale and goals. (K)*
Participates in physiological first aid (PFA) training to recognize and understands the rationale and goals. (K)	*Understands the disaster context and the psychosocial implications of disasters. (K)*
Understands the disaster context and the psychosocial implications of disasters. (K)	
Recognize ethical and practice standards of the psychological first aid model. (O)	
Understands and implements self-care. (K)	

Competency 2.3 Establish and maintain different types of communications (i.e. interoperable voice, data, etc.).	
Individual Miner	**Organizational Leadership**
Understand mine's communication plan (ICC and Emergency Response Plans). (K)	*Understand mine's communication plan (ICC and Emergency Response Plans). (K)*
Assign communication roles (i.e. Who contacts who and when contact is made). (S)	*Communication faults and deficiencies are reported according to mines' policy and procedures. (S)*
	Alternative communication strategies are employed according to mines' procedures to address identified faults and deficiencies in communication. (A) Locate and maintain up to date phone directory. (K)

Competency 2.4 Relay and document the six categories of critical information that should be provided during emergency communications: Who, Where, What, Miners, Event, and Response.	
Individual Miner	**Organizational Leadership**
Understand elements of the communication triangle (i.e. who, what, where, why, how). (K)	

Competency 2.5 Communicate information on the course of action and implementation to the relevant people.	
Individual Miner	**Organizational Leadership**
Interpret miner's role in emergency identification and control as outlined in relevant mine Emergency Response Plan. (S)	*Appreciate how strongly held personal beliefs and convictions might impact the validity and acceptance of information received. (O)*
	Interpret miner's role in emergency identification and control as outlined in relevant mine Emergency Response Plan. (S)

Competency 2.6 Ensure the capacity for timely communications in support of security, situational awareness, and operations by any and all means available.	
Individual Miner	**Organizational Leadership**
Understand redundant communications systems throughout mine. (i.e. ICC and/or emergency response central areas, etc.). (K)	*Understand redundant communications systems throughout mine. (i.e. ICC and/or emergency response central areas, etc.). (K)*

Competency 2.7 Understand mine communications plan to include protocols for family reunification, media control, & external management teams.	
Individual Miner	**Organizational Leadership**
Recognize negative impacts of individual off site (un-authorized) communications. (K)	*Recognize negative impacts of individual off site (un-authorized) communications. (K)*
Differentiate among the stages of mine's communication emergency plan. (S)	*Express the importance of routine review of emergency plans and communications protocols .(A)*

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Domain 3: Hazard Recognition & Avoidance

Refers to the miner's contribution of subject matter and mine hazard vulnerability to prepare for, and increase miner response in emergency situations by demonstrating the following competencies:

Competency 3.1 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.

Individual Miner	Organizational Leadership
Knowledge of risk management processes and methods, including: identifying hazards, assessing risks, determining acceptability of risks, identifying controls.(K) *Analyze work area conditions to identify/recognize potential hazards in the workplace. (A)* *Distinguish between potential threats to physical and mental well-being in the response and escape environment. (A)* *Maintain familiarity with emergency escape route(s) according to mine site procedures.(K)*	*Conduct a Threat and Hazard Identification and Risk Assessment. (S)*

Competency 3.2 Maintain familiarity with emergency escape route(s) according to mine site procedures.

Individual Miner	Organizational Leadership
Discuss the types of physical hazards and resulting injuries one might encounter while performing one's role during emergency planning and response. (K) *Interpret mine escape way maps and navigate by proper interpretation of symbols for self-escape. (A)* *Locate and demonstrate the correct use of equipment (i.e. SCSR, ladders, tethers, etc.) and other devices. (S)*	*Determine escape route procedures and strategy and develop an action plan for evacuation operations. (A)*

Competency 3.3 Select most appropriate action for dealing with the situation (i.e. hazard) according to mine site emergency response plans and procedures.

Individual Miner	Organizational Leadership
Identify information on hazards and conduct handling procedures for the identified substance in accordance with the mines' procedures. (A)	*Illustrate safe incident size-up using care and caution and a safe distance in accordance with the mines' procedures and/or advice from appropriate authorities. (A)*

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Competency 3.4 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).	
Individual Miner	**Organizational Leadership**
Continuously monitor equipment inspections and environmental surroundings. (S) *Knowledgeable and familiar with use of safety equipment (i.e. breathing apparatus, chemical protective clothing and equipment, portable instruments, radiation detectors, sampling tubes and pumps, oxygen level meter, carbon monoxide detector and combustible gas detectors). (K)* *Knowledge of exposure standards (time weighted average, short term exposure limits, peak limitation values, etc.). (K)*	
Competency 3.5 Perform primary and secondary assessments of miners (i.e. each team member) condition to recognize and implement life support measures.	
Individual Miner	**Organizational Leadership**
Locate first aid equipment and follow procedures in accordance with manufacturer's instructions and organizational standards, policies, procedures and protocols. (S) *Prioritize for life support/saving treatments in emergencies including the DRABC (danger, response, airway, breathing ventilation and circulation assessments) mode (S)* *Manage injuries in line with approved emergency care. (A)*	
Competency 3.6 Understand and apply the hierarchy of controls to reduce and/or eliminate immediate risks.	
Individual Miner	**Organizational Leadership**
Describe how the selection of control measures may evolve as conditions change. (K) *Describe the hierarchy of control measures. (K)* *Knowledge of mine site safety systems information. (K)*	*To access, interpret and apply mine site information on risk control systems. (A)* *Knowledge of procedures, requirements and instructions to conduct local risk assessment appropriate to a mine site. (K)* *Knowledge of mine site communication, reporting and recording procedures. (K)* *Development of appropriate risk management procedures and techniques for*

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	initial response appropriate to a mine site, while complying with Miner safety. (S)

Domain 4: Regulatory Compliance
Refers to the miner's adherence to regulatory compliance and maintaining emergency response standards and mine specifications by demonstrating the following competencies.

Competency 4.1 Apply appropriate site safety procedures during mine emergencies according to mine standards to improve self-escape (i.e. use of directional lifelines, donning and doffing of SCSR, knowledge of mine escape way maps, etc.).

Individual Miner	Organizational Leadership
	Recognize differences and individual contribution of each team member. (O)
	Monitor quality of outputs and implement changes as necessary in accordance with site procedures. (K)
	Conduct internal inspections and audits for compliance with all site standards. (S)
	Identify corrective actions and follow up on same for all non-compliances. (S)
	All supervision should participate in Regulatory agency inspections. (S)
	All supervision (and employees as appropriate) should be trained on Regulations and Citable conditions. (K).

Competency 4.2 Collect and record all potential hazards, risks, injuries, and incidents and communicate details of the event or changes in circumstances to Incident Command for advice on actions to be taken.

Individual Miner	Organizational Leadership
Record clearly and concisely the details of any incident, hazards and/or injury. (S)	*Apply mine site safe operating procedures for managing potential hazards, risks and emergencies. (S)*
	Participate in regular field observations to ensure proper processes and procedures are being followed. (K)
	Conduct all work according to current relevant legislation, codes and standards. (S)
	Apply mine site safety reporting procedures. (S)
	Record clearly and concisely the details of any incident, hazards and/or injury. (S)

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Competency 4.3 Achieve and maintain quality mine operations/work conditions by monitoring individual work processes and applying local risk control measures.	
Individual Miner	**Organizational Leadership**
Plan and facilitate work process for the achievement of quality work outcomes. (K)	*Mine Site to have Incident Reporting System in place to include near misses. (O)*

Domain 5: Worker Safety and Health

Refers to the need of individual miners and miners deployed in teams to take protective actions to threats by demonstrating the following competencies:

Competency 5.1 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.

Individual Miner	Organizational Leadership
Discuss the need to protect worker health and safety in emergencies and disasters. (K) *Discuss miner's roles and responsibilities in designing, implementing and evaluating engineering, administrative, work practice specific to emergencies and Personal Protective Equipment (PPE) control measures. (K)* *Employ practices to minimize exposures to agents and hazards during an emergency. (S)* *Construct a plan for monitoring personal physical and psychological responses to emergency situations. (S)* *Exhibit personal hygiene practices that minimize exposure to chemical, biological, or radiological agents that may be present during emergencies and disasters. (S)* *Demonstrate correct donning of chemical protective clothing, respiratory protection, protective eyewear, protective footwear, hearing protection, gloves, and any other assigned Personal Protective Equipment (PPE). (S)* *Demonstrate proper use and maintenance of assigned Personal Protective Equipment (PPE) in an emergency. (S)*	*Develop protocols for proper methods to maintain, store, decontaminate and dispose of different types of Personal Protective Equipment (PPE) post event. (S)*

Competency 5.2 Recognize, access, and respond to alarms and warning devices according to mine site procedures.

Individual Miner	Organizational Leadership
Recognize and respond to alarms in work areas. (K) *Locate muster areas. (K)* *Knowledge of mine escape-ways and alternate evacuation routes. (K)*	*Knowledge of mine escape-ways and alternate evacuation routes. (K)* *Conduct periodic drills and evacuation simulations. (S)*

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Individual Miner	Organizational Leadership
Demonstrate self-escape knowledge through periodic drills and evacuation simulations. (S) *Promote taking protective actions in response to current and changing threats. (K)*	*Promote taking protective actions in response to current and changing threats. (K)*
Competency 5.3 Report unresolved threats to physical and mental health through the chain of command.	
Individual Miner	**Organizational Leadership**
Recognize the types of physical hazards and resulting injuries one might encounter while performing one's role during emergency planning and response. (K) *Identify how and to whom one should report unresolved physical and mental health threats. (K)*	*Foster a preparedness culture and promote reporting all hazards and threats –without repercussion – first to supervisor then on up as needed. (A)*
Competency 5.4 Implement and maintain risk-informed physical protections, countermeasures, and policies protecting people, structures, materials, products, and systems associated with key mine operational activities	
Individual Miner	**Organizational Leadership**
Describe the relationship among protective measures, behaviors, and reduction of worker risk of injury or illness. (K)	*Categorize potential threats and emergencies. (S)* *Summarize organizational roles and responsibilities related to worker health and safety. (K)* *Recognize the value of having a Safety and Health Management System in place that includes both internal and external audits. (O)*

Domain 6: Miner Resiliency
Refers to the need of individual miners to reduce their risk and recover from emergency situations by demonstrating the following competencies:

Competency 6.1 Employ protective behaviors according to changing conditions, personal limitations, and threats.

Individual Miner	Organizational Leadership
Promotes self-help and mutual aid strategies. (K) *Understands and has demonstrated competency in a repertoire of psychosocial support. (K)* *Understands and implements self-care. (K)* *Adhere to mine site policies in relation to smoking, alcohol and drug use. (S)* *Maintain standards of health, fitness and well-being according to site and/or industry medical criteria. (K)* *Understands the principles of stress management and demonstrate associated skills. (K)(S)-*	*Characterize field level risk processes and participate in renewed assessments when starting a new task, with periodic stops and checks for changing conditions during on-going tasks. (S)*

Competency 6.2 Conduct health and safety hazard assessments and ensure the availability and dissemination of guidance and resources (i.e. deploying hazardous materials teams).

Individual Miner	Organizational Leadership
Describe the key role miner's in an emergency response.(K)	*Differentiate among mine emergency response legislation, regulations, and organizational policies.(S)* *Adapt skill sets to meet organizational needs during an emergency response situation. (K)* *Prioritize critical emergency preparedness responsibilities in one's own program. (S)* *Implement recommendations identified in After Action Reviews. (S) .* *Communicate the need for and importance of a coordinated response with other agencies to emergencies and disasters. (S)* *Apply organizational policies and plans during an emergency response. (S)*

	Characterize field level risk processes and participate in renewed assessments when starting a new task, with periodic stops and checks for changing conditions during on-going tasks. (S)

Competency 6.3 Take precautions to safeguard workers and maintain standards of health, fitness and well-being.	
Individual Miner	**Organizational Leadership**
Adopts and promotes the value of personal, family and work-life preparedness and resilience. (O) *Adopts a resiliency and empowerment orientation to psychosocial response. (O)* *Demonstrates a capacity to recognize, operate effectively within, and manage crisis and extreme stress. (S)* *Adopts an ethical approach in all actions. (O)* *Demonstrates cultural competence and a valuing of diversity. (S)* *Works collaboratively within existing and emergent teams. (S)* *Demonstrates flexibility and adaptability and approaches change with a positive attitude. (S)* *Demonstrates empathy, respect, compassion and self-awareness. (S)*	*Adopts an ethical approach in all actions. (O)* *Demonstrates cultural competence and a valuing of diversity. (S)* *Works collaboratively within existing and emergent teams. (S)* *Demonstrates flexibility and adaptability and approaches change with a positive attitude. (S)*

Competency 6.4 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.).	
Individual Miner	**Organizational Leadership**
	Express the importance of routine review of emergency plans. (K)
	Knowledge of mine emergency response plan and recovery elements of the plan. (K)
	Apply knowledge and skills gained through participation in emergency preparedness and response activities to improve organizational (mine) capacities. (A)
	Justify the role of risk assessment and hazard vulnerability assessments (HVAs) and Continuity of Operations Plans (COOP) in emergency planning. (K)
	Express the importance of routine review of emergency plans. (K)
	Discuss the importance of planning for the psychological needs of a community during a disaster. (K)
	Recognize the value in having an incident command structure during an emergency situation. (O).
	Value creating preparedness partnerships within community organizations. (O)
	Justify the rationale for using a team approach in emergency planning. (K)
	Assess the relationship of exercises to emergency planning. (S)

Competency 6.5 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.	
Individual Miner	**Organizational Leadership**
	Access and analyze relevant safety systems information to eliminate situations covered by existing and adequate procedures. (A) *Plan and prepare the course of action in detail and acquire/obtain required resources. (K)* *Based upon this assessment, incorporate improvements into ICC and mine emergency response plans. (S)* *Communicate procedural improvements. (S)*