



**FREEPORT-
McMoRAN**

FACILITATOR GUIDE



SFT FCX2018C WORKPLACE EXAMINATIONS UNDERGROUND

JUNE / 2018
VERSION 1

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COURSE OVERVIEW

The following is basic information about this course.

COURSE DESCRIPTION

Through this course, employees will be trained, qualified, and able to follow the appropriate requirements to conduct a workplace examination in an underground environment. Each employee must have an understanding of the overall underground hazards, equipment necessary and required procedures that are directly related to work duties in his/her work space.

COURSE OBJECTIVES

Upon completion of this course, students will be able to

- Module 1: Workplace Examination Compliance
 - Explain the purpose of workplace examinations.
 - Describe the qualifications and training level necessary to conduct one.
- Module 2: Underground Hazard Identification
 - Conduct a workplace examination by assessing a scenario for general hazards.
- Module 3: Underground Critical Controls
 - Describe how critical controls affect the underground environment.
- Module 4: Chemical Storage
 - Describe the process for managing chemical identification, storage, and handling.

COURSE PRE-REQUISITES

There are no pre-requisites for this course.

COURSE LENGTH

This course takes approximately 4 hours to complete.

CLASS SIZE

This course is designed to have a 14:1 student: facilitator ratio. Class size may be less depending on each site's needs, as well as the student's skill and experience level.

TARGET AUDIENCE

This training is intended to satisfy the minimum training requirements for a Competent Individual.

FACILITATOR QUALIFICATIONS

Facilitators should be well versed in the Freeport-McMoRan General Code of Safe Practices.

REGULATIONS/POLICIES/PROCEDURES

This course teaches the compliance guidance for workplace examinations as it relates to an underground environment.

FACILITATOR PREPARATION

The following information will help the facilitator prepare for the course.

ABOUT THIS GUIDE

This guide is intended to give the facilitator a general outline of the flow of the course. It is designed to assist the facilitator in presenting content, conducting classroom activities, and managing time in order to meet the learning objectives. This Facilitator Guide (FG) is intended to be used in conjunction with the Student Guide (SG) and the PowerPoint (PPT).

SAFETY

Safety must be a fundamental component of this course. Students must adhere to safety information in the SG and from the facilitator, and safety procedures must be focused on throughout the training. Equipment may not be operated without facilitator authorization.

ACTIVITIES

Students will participate in many hands-on activities designed to give students time to practice the knowledge learned throughout the course. They also provide the facilitator with opportunities to give immediate feedback on what each student does/does not do well. Facilitators must review each activity's directions in the FG before guiding students through the learning activities.

GENERAL MATERIALS

The following is a list of materials that are consistently needed for courses:

- Attendance sign-in sheets
- Name cards – 1 per student
- Pens and/or pencils
- Push pins and/or tape such as painter's tape
- Sticky Notes
- Easel and Flipchart
- Markers of various colors
- Student Guide (SG) – 1 per student
- Projector and sound system for PPT and/or videos
- Laptop with access to the internet
- Assessments
- Course evaluations
- Appropriate Personal Protective Equipment (PPE)






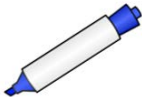




ACTIVITY MATERIALS

The following is a table of the materials needed for the activity in each module:

Module	Activity Materials
Introduction	<ul style="list-style-type: none"> • Activity 1: Icebreaker <ul style="list-style-type: none"> ○ Choose an icebreaker. Depending on the selection, gather the appropriate materials.
Module 1: Workplace Examination Compliance	<ul style="list-style-type: none"> • None
Module 2: Underground Hazard Identification	<ul style="list-style-type: none"> • Activity 2: Hazards in the Workplace <ul style="list-style-type: none"> ○ Worksheet located in the SG • Activity 3: Teach Me <ul style="list-style-type: none"> ○ Worksheet located in the SG
Module 3: Underground Critical Controls	<ul style="list-style-type: none"> • None
Module 4: Chemical Storage	<ul style="list-style-type: none"> • Activity 4: Stump Your Neighbor <ul style="list-style-type: none"> ○ Markers ○ Flip chart or whiteboard for discussion
Conclusion	<ul style="list-style-type: none"> • None

FG CUES

Facilitators quickly identify slides that have unusual but important features by recognizing the cues used throughout the FG. Reference the table below to understand the purpose of each symbol. On each slide that has a cue, the corresponding talking points are bolded.

Description	Symbol	Purpose
Audio Link		The speaker icon indicates when a PPT slide links to an audio file.
Video Link		The director's clapboard indicates when a PPT slide links to a video file.
Animated Slide		The star indicates when an animation appears on a PPT slide and requires more than one click to view all slide content.
Note		The notepad indicates the PPT slide or FG include a note relating to the slide but not necessarily found in the SG.
Incidents		The first aid symbol indicates when the PPT slide or FG addresses a PFE, testimonial, or other safety-related incidents.
Flipchart		The marker indicates when a facilitator writes down responses given by students on a flipchart or whiteboard.
Discussions		The question mark indicates when students need to participate in a discussion either as a class or in small groups.
Example		The hand indicates when the facilitator holds up an item or passes an example around the class.
Facilitation Tip		The podium indicates a facilitation technique used by the facilitator to enhance the presentation. A corresponding red box with white text appears near this cue to explain the tip.
Site-specific		The yellow arrow indicates a place where the facilitator needs to prepare and add site-specific information before class starts.

LAWS OF LEARNING

Implementing the Six Laws of Learning can produce a more effective learning experience for both students and facilitators. Refer to the Instructor Fundamentals SG for more information.

Readiness: Students learn when they are ready, and learn little when they are not ready. Motivate students to prepare for learning and participate by setting a purpose, clearly stating objectives, and giving logical reasons for learning at the start of training.

Exercise: Content repeated is remembered. Every time a concept is practiced, learning is reinforced. Exercise includes recall, review, restatement, drills, and physical application.

Effect: People learn better in a favorable situation. Strengthen learning with pleasant motivational feelings. Constant negative motivation stifles the learning process.

Intensity: Students learn more from the real-life applications than from substitutes. Increase intensity, the power of the learning, through performance activities such as demonstrations, skits, audio/video clips, and models.

Primacy: What a student learns first stays. Teach the correct information the first time. Re-teaching may not work immediately and requires more time and practice with the student.

Recency: The most recent learning idea is the easiest to recall. Practice this law with restating, summaries, and conclusions.

FACILITATION REMINDERS

Incorporating feedback and eye contact, while eliminating semantic barriers can produce a more effective learning experience for both students and facilitators.

Feedback: Feedback in the classroom is evaluative or corrective information about a student's performance given by a facilitator to a student. Feedback guides students toward attaining the course objectives.

Eye contact: Eye contact means looking directly into the eyes of the students and at each student equally, not just at a few. It is communication that lets students know the facilitator is interested, allows for nonverbal feedback from students as the facilitator reads their expression, and enhances facilitator credibility as students can view facilitators with more eye contact as being more confident and competent.

Semantic Barriers: One word can confuse what the facilitator says and what the audience interprets. Avoid the overuse of jargon, symbolism, abbreviations, acronyms, and slang. Using clear and concrete words eliminates misunderstandings and helps students receive the message without misinterpretations.



Facilitators have many roles when teaching a course including instructor, manager, leader, planner, and evaluator. To learn more about these roles refer to the Instructor Fundamentals SG.

USING THE POWERPOINT PRESENTATION

When preparing to facilitate the course, there are several ways to integrate the PPT with the FG.


1. The facilitator can project the PPT and carry the paper copy of the FG as he/she walks around the room.
2. The facilitator can begin the PPT in presentation mode on his/her computer. This displays only the current slide to the class on the projection screen, but shows the facilitator a different view on his/her computer. The facilitator's screen shows a notes screen that has the same information for the slide that is included in the FG. This view also shows the next slide and lets the facilitator see the marker tools to write on the slides and emphasize talking points.
3. The facilitator can also choose to do both, which is the **preferred** method. Moving around the room helps the facilitator engage more participants and keeps the students' brains stimulated, thus promoting learning.



PPT is not the course; it acts as a guide to keep the facilitator and students on track, and as a reminder to cover essential material. Know the FG talking points thoroughly so as not to read the PPT word for word, and do not rely on the PPT for all content as the FG talking points contain standardized content all students need to learn.

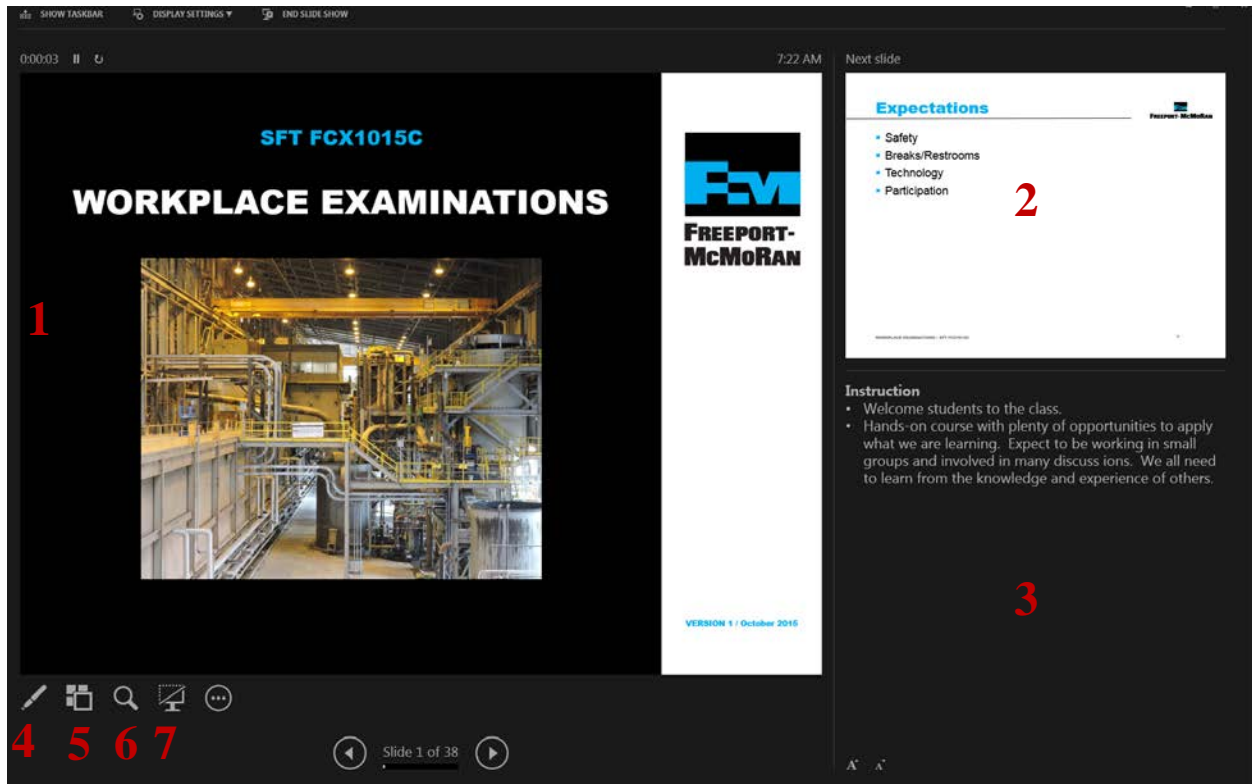
SETTING THE PRESENTATION MODE

To initiate the presentation mode, do the following.

Step	Action
1	Open the PPT presentation.
2	Find the colored bar at the bottom of the screen. The look and color vary depending on the PPT version used.
3	Select the icon circled in the image below and often found in the bottom right-hand corner of the PPT screen. 

PRESENTATION MODE FEATURES

Once you are in presentation mode, the students will only see the slide displayed, but the facilitator will see the layout below. Some of the commonly used features available from this view are numbered in red and identified in the image.



1. **Current slide** – This is the slide students see on the projection screen.
2. **Next slide** – Shows a visual preview of the next slide.
3. **Notes** – Shows the same talking points available in the FG. The notes shown correspond to the current slide projected to the students.
4. **Pens** – This icon gives the user access to a laser pointer, pen, highlighter, ink color, and arrow options. The tool shows on the facilitator’s screen and the students’ projection screen. Facilitators use the tools to emphasize specific points on the PPT and customize the presentation to suit the needs of the site and students better.
5. **All slides** – This shows small slide images together on the facilitator’s screen.
6. **Zoom** – This icon lets the facilitator zoom in on specific aspects of the PPT.
7. **Black screen** – If the facilitator wants to explain content further but feels the PPT slide shown on the screen distracts from the learning, black out the screen to help focus the students.

INTRODUCTION TO WORKPLACE EXAMINATIONS

Mining is a developing industry with frequently changing factors, such as environment, equipment, personnel, and work areas. It is critical that each employee is alert and aware of any hazard that may affect his/her safety, or the safety of others. Safe Production is the ultimate goal. The first step in reinforcing this awareness begins with the employee. Through appropriate training, the employee can build the skills necessary to identify, avoid, and mitigate hazards.

LEARNING OBJECTIVE

Upon completion of the Introduction, the students will be able to:

- Understand the overview of the course

ACTIVITIES

- Activity 1: Icebreaker

Please refer to Activity Materials in *Facilitator Preparation* for further details.

TOTAL TEACHING TIME

The introduction takes approximately 30 minutes to complete.

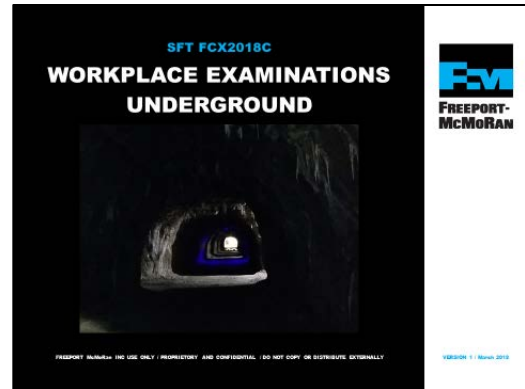


Suggested break times are included throughout the FG. Provide a 10-15 minute break after about every hour of instruction to allow students time to stretch, rest, relax, use the facilities, and refocus their minds.

PPT slide 1

Instruction

- Welcome students to class
- Facilitator introduces self by stating
 - your position at FMI
 - how long you have worked for FMI
 - how long you have worked in mining

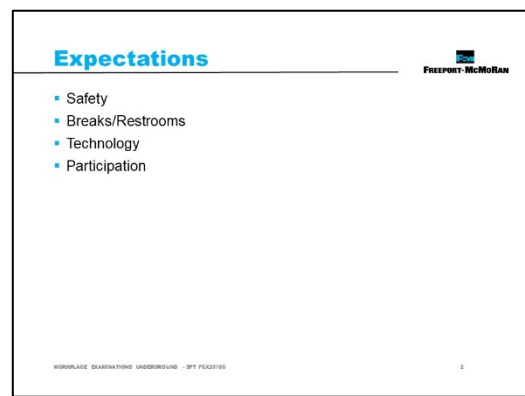


PPT slide 2



Instruction

- Administrative/Classroom policies
 - Safety: Identify the appropriate evacuation procedures, gathering areas, and emergency exits and fire extinguisher locations, etc.
 - Breaks and Restrooms:
 - Establish and announce a break schedule to the class. Occur after approximately every hour of instruction.
 - Identify the location of restrooms and smoking areas
 - Technology policy: Please review your policy on the use of cell phones and laptops during the training.
 - Participation: This course requires significant participation. Students should be prepared for discussion and small group activities.
 - Set the class ground rules by verbalizing your expectations. Some suggestions are provided below
 - Participate
 - Be on time
 - Stay on task
 - Listen when others talk
 - Respect the opinions and attitudes of others



Letting students participate in developing course ground rules can empower them, create buy-in, build trust with the facilitator, and result in students more likely to follow and hold each other accountable to the rules.

ACTIVITY 1: ICEBREAKER

PPT slide 3



Time

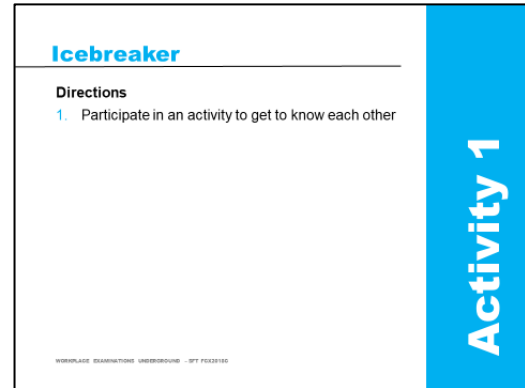
Approximately 10 minutes

Materials

Choose icebreaker and gather appropriate materials

Purpose

- Successful icebreakers encourage students to contribute their ideas and experiences thus increasing motivation and engagement in the class.
- Below is an assortment of icebreakers that the facilitator can incorporate at the beginning of the course as well as after breaks



Icebreaker	Instructions
Stranded on an Island <i>(10-15 minutes)</i>	<ol style="list-style-type: none"> 1. Divide the class into groups of three to five students. 2. Students think of three items to take with them if they knew they would be stranded on an island. 3. Students take turns sharing their items with the group explaining why they chose each item. <p><i>NOTE: With a larger group, have students choose less items.</i></p>
Coin Picker <i>(5-10 minutes)</i>	<ol style="list-style-type: none"> 1. Students take a coin out of their pocket or borrow one from somebody. 2. Students introduce themselves by stating their name, the year on the coin, and something that happened that year. <p><i>NOTE: If students do not have coins, assign them a year.</i></p>
The Pocket/Purse Game <i>(5-10 minutes)</i>	<ol style="list-style-type: none"> 1. Give students one minute to find an item with significance they carry on them in their pocket, purse, backpack, etc. 2. Students introduce themselves by showing the item, telling about it and explaining why they chose it.

Using an Icebreaker promotes a safe learning environment, which can reduce student stress levels. Reducing stress in the environment can increase a learner's retention of the content. (Georgi Lozanoz)

Icebreaker	Instructions
Three of Anything <i>(10-15 minutes)</i>	<ol style="list-style-type: none">1. Divide the class into groups of four to five students.2. Give students one minute each to share their three favorite (or least favorite) movies, children’s books, vacations, etc.3. Ask a volunteer from each group to share anything that was common between any of the students.
Phrases that Fit <i>(10-15 minutes)</i>	<ol style="list-style-type: none">1. Give students two minutes to think about a slogan, commercial, poem, song, etc. that describes his or her life.2. Students introduce themselves to the class by sharing the slogan and explaining why they chose it.

PPT slide 4, SG pp. i-ii



Instruction

- Introduce the student guide as a resource.
- Read or have a student read the quote by Richard Adkerson. Read it aloud.
- As a class, discuss what the quote means.
- You will want to discuss with the class the Corporate Health and Safety Policy. Let them know where they can find it and that it has been recently updated.

Quote

*"We start with looking after our workers' welfare."
Richard C. Adkerson*

What does this mean to you?

WORKPLACE EXAMINATIONS UNDERGROUND - IPT F022100

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PPT slide 5, SG p. v

Instruction

- Review the module topics. This gives the students an understanding of the path of the course.

Course Modules

- Module 1: Workplace Examination Compliance
- Module 2: General Hazard Identification
- Module 3: Underground Critical Controls
- Module 4: Chemical Storage

WORKPLACE EXAMINATIONS UNDERGROUND - IPT F022100


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PPT slides 6-7, SG p. v



Instruction

- **Before beginning these next two slides:**
 - Ask the students what they would like to get out of this course, or what they think about it? Then go into each slide.
- Read the following two slides to explain the objectives for each module. This information can be found in their Student Guides.
- They may also find the module objectives listed on the first page of each module.

Learning Objectives 


Module 1: Workplace Examination Compliance

- Explain the purpose of workplace examinations
- Describe the qualifications and training necessary to conduct one

Module 2: General Hazard Identification

- Conduct a workplace examination by assessing a scenario for general hazards

WORKPLACE EXAMINATIONS UNDERGROUND - SPT F022100 7

Learning Objectives 

Module 3: Underground Critical Controls

- Describe how critical controls affect the underground environment

Module 4: Chemical Storage Identification


- Describe the process for managing chemical identification, storage, and handling

WORKPLACE EXAMINATIONS UNDERGROUND - SPT F022100 8

PPT slide 8, SG p. vi

Instruction

- Fatal Risk Management is a continuation of the Fatality Prevention Program. Focus is placed on identifying Fatal Risks and Critical Controls in an attempt to safeguard all employees within the Company. The Fatal Risk Management Program standardizes Fatal Risk communication by implementing icons, definitions, and Critical Controls for twenty-three Fatal Risks.
- Fatal Risks are based on safety issues that have resulted in events such as severe injury or death. While all risks have a degree of danger, Fatal Risks are those risks that, when left uncontrolled, will kill you. After identifying a Fatal Risk, Critical Control(s) are implemented to prevent death or mitigate the consequences of the Fatal Risk. The absence or failure of a Critical Control significantly increases the risk of severe injury or death despite the existence of other controls. In short, Critical Controls help keep you from being killed. The Fatal Risk(s) and Critical Controls relevant to this course are provided below.

Introduction 

Fatal Risks

- Fatal Risk Management program implemented icons, definitions, and critical controls for twenty-three fatal risks
- Fatal risks are risks that, when left uncontrolled, will kill you

Critical Controls

- Absence or failure of a critical control significantly increases the risk of severe injury or death (helps keep you from being killed)
- Implemented to prevent death or mitigate the consequences of the fatal risk

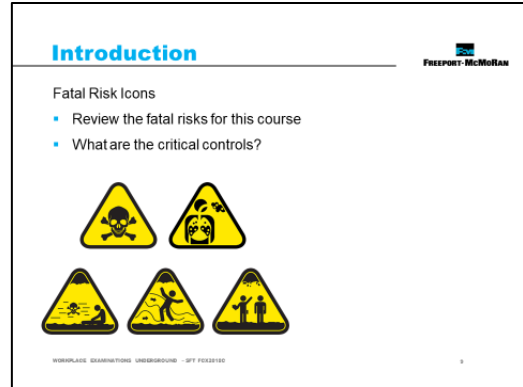
WORKPLACE EXAMINATIONS UNDERGROUND - SPT F022100 9

PPT slide 9, SG pp. vi-viii



Instruction

- For workplace examinations underground, there are five identified fatal risks.
- Review the critical controls for each fatal risk with the class.

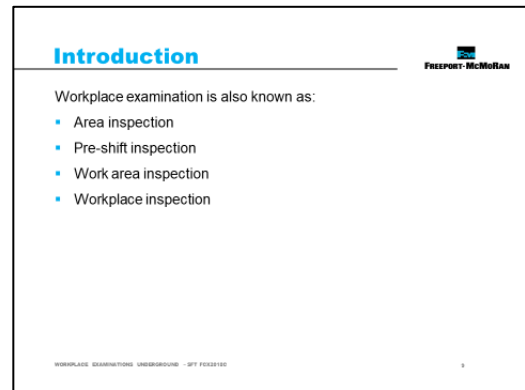


Fatal Risk	Critical Controls
Exposure to Hazardous Substances – Acute 	<ul style="list-style-type: none"> • Access Control • Alarm Systems • Engineered Controls • Handling Requirements • Loading and Unloading Protection • Mechanical Integrity of Storage and Distribution • PPE
Exposure to Hazardous Substances – Chronic 	<ul style="list-style-type: none"> • Access Control • Engineered Controls • Handling Requirements • PPE
Underground Hazardous Atmosphere 	<ul style="list-style-type: none"> • Refuge Chambers • Self-Rescuer • Ventilation Monitoring • Ventilation System
Underground Inrush 	<ul style="list-style-type: none"> • Backfill Management and Control • Draw Point Management and Control • Entry Point Barriers • Ore Passes, Chutes and Raise Controls • Probe Drilling
Underground Rock Fall 	<ul style="list-style-type: none"> • Engineered Support Systems • Geotechnical Inspections and Monitoring Systems • Ground Control Management Plan Execution • Scaling

PPT slide 10, SG p. ix

Instruction

- These procedures or processes are created by each site to identify and immediately control any hazards prior to the beginning of and throughout the shift.
- Make sure that the workplace is adequate for you to perform your regular job duties.
- Workplace examinations are the first line of defense in protecting our most valuable asset – you.



Introduction

Workplace examination is also known as:

- Area inspection
- Pre-shift inspection
- Work area inspection
- Workplace inspection

WORKPLACE EXAMINATIONS UNDERGROUND - 9PT P0220102

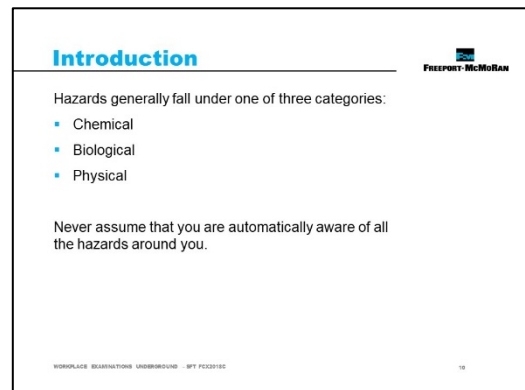
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PPT slide 11, SG p. ix

Instruction

- Depending on your work area, the hazards to which you are exposed can fall under one or all three of these categories.
- Being skilled at recognizing hazards associated with your work area is a lifelong pursuit.
- Changing environmental conditions can affect the associated risk of existing workplace hazards.
- Temperature changes, noise levels, illumination, and weather conditions are all environmental factors that can greatly alter your work area, and in turn, the associated hazards.



Introduction

Hazards generally fall under one of three categories:

- Chemical
- Biological
- Physical

Never assume that you are automatically aware of all the hazards around you.

WORKPLACE EXAMINATIONS UNDERGROUND - 9PT P0220102

10

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MODULE 1: WORKPLACE EXAMINATION COMPLIANCE

Policies, guidelines, and procedures are typically created as a result of an incident or near miss. Injury or loss of life is often the driving force behind the establishment of the Health and Safety policies under which we work. Performing a job in a safe manner is not only a matter of compliance to regulations, but is your means of returning home safely.

Freeport-McMoRan requires a competent person to perform a workplace examination before work begins or as miners begin work in that area for any conditions that could negatively affect health and safety.

LEARNING OBJECTIVES

Upon completion of Module 1, the students will be able to:

- Explain the purpose of workplace examinations
- Describe the qualifications and training level necessary to conduct one

ACTIVITIES

- None

Please refer to Activity Materials in *Facilitator Preparation* for further details.

TOTAL TEACHING TIME

Approximately 45 minutes

PPT slide 12



Instruction

- Upon completion of Module 1, the students will be able to:
 - Explain the purpose of workplace examinations
 - Describe the qualifications and training level necessary to conduct one



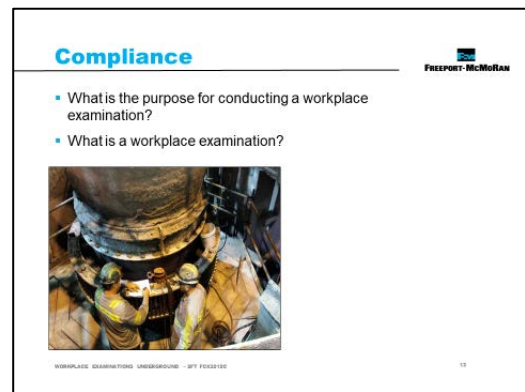
By going over all of the objectives, the facilitator is using the Law of Readiness and preparing the student for learning.

PPT slide 13, SG p. 5



Instruction

- Explain purpose for conducting a workplace examination - Brings employees' attention to recognized hazards in the working area and taking immediate action to mitigate or eliminate them
- Explain what a workplace exam is - Practice to ensure the workplace is free of hazards and adequate to perform regular job duties




Questions play a key role in student learning. Questions can be used to seek clarification, and stimulate thinking. Use different types of questions such as overhead, direct, knowledge, and relay. For more information on effective questions, see the Instructor Fundamentals SG.

PPT slide 14, SG p. 5



Instruction

- Discuss the bullet points under each question.
- It is important that students understand how someone is deemed competent.

Compliance 

- Who conducts them?
 - Freeport-McMoRan requires that a competent person examine each working place before work begins or as miners begin work in that area
- How is a competent person defined per Freeport-McMoRan?
 - Having abilities and experience to perform the assigned duty
 - Designated by supervision
 - Knowledgeable in all operational areas of the working area


WORKPLACE EXAMINATIONS UNDERGROUND - 0PT F022010 14

PPT slide 15, SG p. 6




Instruction

- Discuss the bullet points under each question.
- Varied experiences can contribute to an increased awareness of hazards and result in a more effective workplace examination.
- Whether you have been on the job for one month or 25 years, your input is valued. Even though Supervision may not specifically designate you, it is still ultimately your responsibility to maintain a level of awareness of hazards in your workplace or surrounding areas. The Department of Health and Safety (DOHS) team strongly encourages additional workplace examinations whenever environmental conditions change or when you start a new task.

Compliance 

- What are some advantages to increased team involvement in workplace examinations?
 - Fresh set of eyes
 - Increased awareness of hazards
 - Different perspective on situations




WORKPLACE EXAMINATIONS UNDERGROUND - 0PT F022010 15

PPT slide 16, SG p. 6



Instruction

- Discuss each bullet point.
- It is important that students understand what is required within their workplace examination record.
- When an adverse condition that was not promptly corrected is subsequently correct, the record needs to include or be supplemented to include the date of the corrective action.
- Maintaining and storing records of all workplace examinations may vary depending on your site and department. Regardless of your department-specific handling policies, whenever a workplace examination is performed, it needs to be given to a Supervisor for review.
- Once your workplace examination has been reviewed by your Supervisor, you should use it as a working document throughout your shift. Any new hazards found during the work shift should be documented on the form and submitted to your Supervisor.
- Records of each workplace examination will be maintained according to Freeport-McMoRan's record retention policy. These records are maintained in either hardcopy or electronic form and made available for inspection or copy upon request by MSHA or a miners' representative.

Compliance 

- What is included in a workplace exam record?
 - The date the examination was made
 - The examiner's name
 - The work areas examined
 - Any safety related conditions found
 - Any corrective measures taken
 - Description of each adverse condition not corrected promptly
- Records of each workplace examination will be maintained in accordance with Freeport-McMoRan's record retention policy.


WORKPLACE EXAMINATIONS UNDERGROUND - 07/16/2010 16

PPT slide 17, SG pp. 7-8




Instruction

- Effective communication of hazards is very important. This can be in the form of signs and other administrative controls. Ensure you are aware of the different forms of communication when working underground. Promptly notify miners in the affected area.
- As the control becomes more reliant on behavior, it becomes less reliable at protecting the employee.

Compliance 

- Mitigation of Findings
 - Preventing access to the hazard
 - Contact appropriate personnel
- Read the "Learn from Others" story (SG pg. 8)



WORKPLACE EXAMINATIONS UNDERGROUND - 07/16/2010 17

Continued on next page

- If a hazardous condition is found while performing an examination, immediate action to resolve the issue must occur. If a hazard is discovered that poses an immediate risk to personnel (depending on the level or risk to personnel), work activities will be halted until the appropriate controls are in place. This may also include the need to post a spotter until proper flagging/ribboning or barricading can occur.
- Due to the variety of work performed at our sites, specific steps required to initiate hazard control can vary. Nonetheless, it should always include preventing access to the hazard and contacting your Supervisor or Health and Safety Professional. Only secure or isolate a hazard to the appropriate level of your training.
- When attempting to control a hazard, always refer back to the Hierarchy of Controls outlined in Fatality Prevention. Remember that elimination, substitution and engineering controls are almost always more effective than administrative controls and PPE. Whenever possible, apply the controls that keep the employee as safe as possible.
- Direct students to the “Learn from Others” story on p. 8 of the SG.
 - *On June 11, 2009, an employee backed a buggy (tractor used as an underground personnel transport) into an open ore pass that was under construction. The employee was backing the buggy from the 728 drift into the 77W drift for work related to the construction of the ore pass. The ore pass consisted of two legs: a straight bore of several hundred feet that was completely filled with muck, and a short leg of approximately 30 feet that was open almost to the intersect with the straight bore. He knew that there was an open hole in the drift, but did not know its precise location.*

The buggy came to rest with the front bumper about two feet below the road level; the ore pass was open an additional ten feet below the buggy. The employee was able to climb out without assistance and had only minor injuries.

- Discuss the incident
- What could have been done to prevent this?

Examples of work experiences help students connect to the course content and transfer knowledge into long-term memory. Personal stories from the facilitator and students also help connect the students to the learning. Share good and bad experiences that relate to the module objective(s).

MODULE 1 QUIZ

PPT slides 18-21, SG p. 9



Instruction

1. Students will complete the answers to the quiz questions in the SG (p. 9).
2. Review the answers as a class (See the following page for answers)

Quiz Answers

Question	Answer
1	Answer: c, SG p. 5
2	Answer: c, SG pp. xi, 5
3	Answer: b, c, SG p. 5

<p>Module 1 Quiz</p> <p>Directions</p> <ol style="list-style-type: none"> 1. Refer to the Quiz in the Student Guide (pg. 9). 2. Take five minutes to complete. 3. Review the answers as a class. 	Quiz
<p>Module 1 Quiz</p> <ol style="list-style-type: none"> 1. In accordance with FCX requirements, how often should a workplace examination occur? <ol style="list-style-type: none"> a. Once per hour b. At the end of each shift <input checked="" type="radio"/> c. Before work begins or as miners begin work in that area 	
<p>Module 1 Quiz</p> <ol style="list-style-type: none"> 2. Why is it important to conduct a workplace examination? <ol style="list-style-type: none"> a. To avoid MSHA fines b. To ensure the previous shift was productive <input checked="" type="radio"/> c. To recognize hazards and ensure critical controls are in place prior to starting work d. None of the above 	
<p>Module 1 Quiz</p> <ol style="list-style-type: none"> 3. What defines someone as competent to conduct a workplace examination? (Circle all that apply) <ol style="list-style-type: none"> a. Assigned by a co-worker <input checked="" type="radio"/> b. Designated by supervision <input checked="" type="radio"/> c. Understanding of operations in that work area <p><small>WORKPLACE EXAMINATIONS UNDERGROUND - 871 FEG0010</small></p>	

Quiz questions implement the Law of Exercise, which increases learning by repeating and reviewing concepts covered in the module.

PPT slide 22



Instruction

- Review the questions on the slide.
- This helps to review and refresh the information that was covered in this module.
- By asking the students to apply the information, they are further retaining the lesson.

Debrief

Freeport-McMoRan

- How will you apply the skills learned in this module to your daily work activities?
- What information surprised you?

WORKPLACE EXAMINATIONS UNDERGROUND - 07/15/2010 22

Debriefs are included at the end of each module to help summarize, review, refresh, retain, and clarify content covered in the module. Additional debriefs can occur when returning from breaks, and at the beginning or end of a day. Facilitators debrief material whenever they need to gauge student understanding.

Break

- Take a 5 to 10 minute break after this module
 - Clearly communicate what time you expect students to return
-

MODULE 2: UNDERGROUND HAZARD IDENTIFICATION

This module provides examples of common hazards that exist on Freeport-McMoRan. Note this is not an all-encompassing list of hazards you can expect to find in your work area. Refer to your site-specific Health and Safety Specialist or Supervisor for further clarification.

LEARNING OBJECTIVES

Upon completion of Module Two, the student will be able to:

- Conduct a workplace examination by assessing a scenario for general hazards.

ACTIVITIES

- Activity 2: Hazards in the Workplace
- Activity 3: Teach Me

Please refer to Activity Materials in *Facilitator Preparation* for further details.

TOTAL TEACHING TIME

Approximately 60 minutes

PPT slide 23

Instruction

- Upon completion of Module Two, the student will be able to:
 - Conduct a workplace examination by assessing a scenario for general hazards.



PPT slide 24, SG p. 15




Instruction

- The keys to an effective workplace examination are strong hazard recognition skills along with personal accountability to the task.
- While the workplace examination is the first line of defense against hazards, it is only as effective as the person conducting it.
- Someone may be well versed in the hazards of a job, but if they do not take the time to perform a proper examination, then the workplace exam becomes ineffective.
- Talk through the tasks being performed in the defined work area.
- Ensure the appropriate forms are being used.
- Include as many people from your team, if possible.
- Begin by defining the boundaries of your work area.
- Survey the area from a distance and a closer point of view.
- Examine specific pieces of equipment pertinent to your job.

Hazard Identification

FREEPORT-McMORAN

- What guidelines are necessary for performing an effective workplace examination?
 - Discuss tasks being performed
 - Use appropriate forms
 - Teamwork
 - Define boundaries
 - Survey the area
 - From a distance
 - From a closer point of view
 - Examine specific equipment



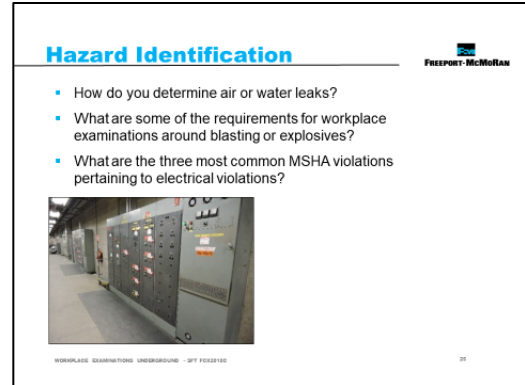
WORKPLACE EXAMINATIONS UNDERGROUND - 071 F0220102 24

PPT slide 25, SG pp. 15-16



Instruction

- Air leaks, unlike water leaks, will be detected audibly. Report the air or water leak to the correct qualified person. Never try to resolve or mitigate an issue that is beyond your skill level or training.
- Using explosives to blast rock is a necessary function of mining, especially in an underground mine. As you conduct a workplace examination, check your work area for misfires or leftover explosives. Immediately barricade the area, if any are found. It is important to remain observant even in areas where work is no longer being performed, as misfires can be present or explosives might have dropped in the drift.
- All vehicles that transport explosives must have all explosives removed when not actively blasting. They should be cleaned and inspected prior to going into the shop/lube bay. Employees trained to handle explosives are responsible for the storage of them. Per Freeport-McMoRan, there are specific requirements for storage of explosives, such as:
 - Must be in stable or supported ground so that a fire or explosion will not prevent escape from the mine or cause detonation of the contents of another storage facility
 - Out of the line of blasts and protected from vehicular traffic
 - At least 200 feet from work places or shafts
 - At least 50 feet from electric substations
 - At least 25 feet from detonator storage facilities
 - Posted with warning signs that indicate the contents and are visible from any approach
 - Provided with unobstructed ventilation openings
- Electrical related citations from MSHA are also some of the most common. For the 2016 year, three of the top ten MSHA violations pertained to electrical violations:
 - Electrical conductors
 - Not of sufficient size or current-carrying capacity and/or conductors exposed to mechanical damage
 - Identification of the power switches
 - Cover plates missing on electrical equipment or junction boxes
 - Correction of dangerous conditions
 - Failure to provide proper records of resistance measurements and continuity checks
- All three types of violations should be covered in a comprehensive workplace examination.

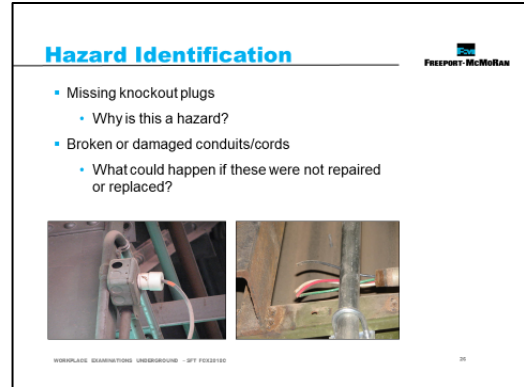


PPT slide 26, SG p. 17



Instruction

- Electrical boxes are designed to allow for either single or multiple conduits. The conduit is attached to the electrical box at small pre-cut holes. These holes are covered with small knockout plugs that are intended to be broken away when the conduit is attached.
- Whenever an electrical box is modified in a manner that eliminates the need for a conduit, the remaining hole cannot be left open. A new knockout plug is used to mitigate this hazard. This is to ensure that no open holes exist in the electrical box.
- As you perform your workplace inspection, be sure to examine all electrical boxes for broken or missing knockout plugs. You also want to ensure that all electrical box access doors are working and can be properly secured. Electrical boxes should be free from any unused knockout plugs. Never access an electrical box through a knockout plug.
- Electrical conduits are housing for live electrical lines. They are intended to prevent personnel from coming into direct contact with live systems. Broken conduits can lead to exposed wiring, which is a shock/electrocution hazard. While conducting your workplace examination, inspect any sections of conduit to which you have access. Pay close attention to any junctions or access points along the conduit, as these sections are where wire exposure can commonly occur.
- Check cords and prongs on power tools and extension cords for damage, including cracks, frays, missing prongs, or loosened connections. Any damaged cords shall be taken out of service. Extension cords cannot be used for permanent use.

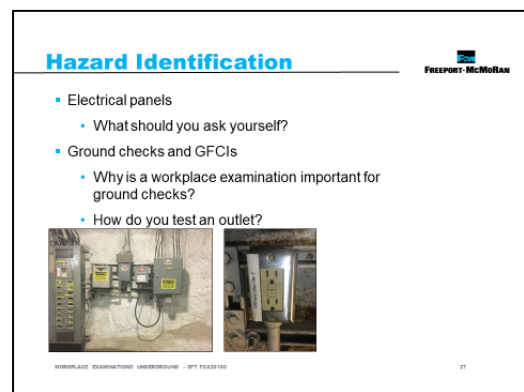


PPT slide 27, SG pp. 18-19



Instruction

- Review the questions in the SG
- Proper labeling of all electrical panels is critical to the safety of personnel.
- When inspecting the labeling of electrical panels, verify that all operational fuses are legibly marked appropriately and accurately.
- If labels are damaged, missing, or not legible, the appropriate personnel needs to be notified so immediate corrective action can be taken.



Continued on next page

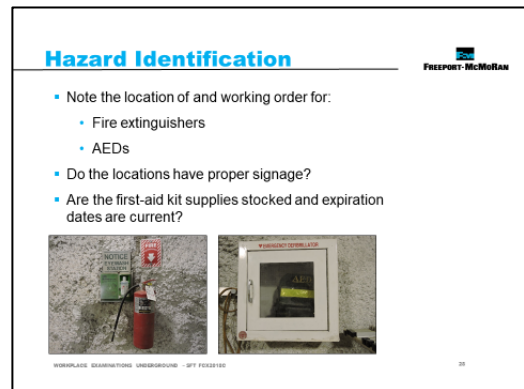
- Only authorized and qualified individuals should open any panels. Additionally, note whether or not adequate lighting is in place to read all labeling. Any items labeled “spare” or something similar, must remain in the open/off position. If doors to the electrical panel are left open, notify an electrician for further assistance.
- Ground checks test the continuity and resistance of the grounding system.
- Ground Fault Circuit Interrupters (GFCIs) protect people by detecting current flowing outside the normal path or circuit. All 120-volt outlets at Henderson must be GFCI protected.
- Always test the outlet before use by pushing the “test” button, which should de-energize the outlet. If it does not trip or will not reset, do not use the outlet. Tag the outlet as “BO” and get a work order generated to replace the outlet.

PPT slide 28, SG pp. 19-20



Instruction

- First-aid kits and automated external defibrillators (AEDs) can be extremely important during a health emergency. During your workplace inspection, pay attention to the location of all first-aid kits and AEDs. Ensure first aid supplies with an expiration date, such as eye wash solution and AED pads, are current.
- Verify AED is charged and operational by visually confirming with the display screen or flashing green light, if applicable.
- When working with fire extinguishers, ask yourself:
 - Is there any damage to the handle, nozzle, or hose?
 - Is the safety pin correctly in place?
 - Does the needle in the pressure gauge fall within the green range, and not above or below this area? That would indicate an over or under pressurized extinguisher.
 - Is the annual and monthly inspection tag current?



PPT slide 29, SG p. 21




Instruction

- Emergency eyewash stations and showers are often the difference between life-altering exposure events and a recoverable injury.
- Your eyes are especially susceptible to injury. In situations where contamination of the eye has occurred, the longer you wait for treatment the worse off your condition may become.
- While skin is much more resistant to damage than eyes, there are still certain exposures that will require immediate treatment.
- Waiting for an event that requires the use of either an emergency eyewash station or shower is not the time to learn where they are located or if they are operational. As you enter your workplace, locate all emergency eyewash stations and showers.
- Inspect them to ensure they are functioning, clean, and free from debris. In addition, eyewashes and showers must have signage near them and the area around them must be clear of obstruction. Eyewash water streams should cross when turned on.

Hazard Identification FREEPORT-McMORAN

- Why is it important to inspect eyewash stations and showers?
- How do you inspect these areas?



WORKPLACE EXAMINATIONS UNDERGROUND - 9PT F0020102 29

PPT slide 30, SG p. 21




Instruction

- Each work area has a detailed evacuation plan. Prior to working underground, familiarize yourself with your primary and secondary routes of escape and nearest refuge chamber.
- Ensure exit signs are clean and legible.
- Part of the workplace examination will include locating and testing the emergency lighting, locating all exit signs, and ensuring that access to all exits are free of obstructions. Emergency lighting can be tested by pressing the “Test” button or simply unplugging it.

Hazard Identification FREEPORT-McMORAN

- How do these affect a workplace examination?
 - Emergency lighting
 - Exit signs
 - Exit routes



WORKPLACE EXAMINATIONS UNDERGROUND - 9PT F0020102 30




Instruction

- If lifting equipment is in your work area, note the travel path of the equipment and if it may cross your travel path at any time during your shift. Check for proper flagging/ribboning and tagging in the work area. Look for the operator's position in relation to the travel path of the equipment, and whether the operator will be able to see if a pedestrian were to cross the route.
- Important questions to ask yourself when working in an area where welding or fabrication is occurring are:
 - Is the welding equipment mobile or in a fixed location?
 - If welding is scheduled to be performed during your shift, is there a likelihood of being exposed to spatter?
 - Are all materials (stinger, bottles, or lines) stored/secured properly? Are clamshells in place on all valves?
 - Are there any flammable materials stored near the welding equipment?
 - Is the welder utilizing a flash screen?
 - Is a Hot Work Permit required?
- If grinders are in your work area, ask yourself:
 - Is use of the grinder going to produce noise levels that could impact other people in the area?
 - Are any generated sparks likely to affect a travelway?
 - Are you using any flammable materials that may come into contact with sparks from the grinder?
- If you are working with grinders, ask yourself:
 - Has a Hot Work permit been completed (if required)?
 - Are you turning off the grinder when not in use?
 - Is there a 1/8" gap between the tool rest and grinding wheel and is the tongue guard in place?
 - Is the grinding wheel rpm rated for the grinder?
 - Is the peripheral hood capable of withstanding a bursting wheel and enclosing not less than 270°?

Hazard Identification

Freeport-McMoRan

- What hazards exist with each of these types of equipment?
 - Lifting equipment
 - Fabrication equipment
 - Grinding equipment
- Review the list of questions in the Student Guide



WORKPLACE EXAMINATIONS UNDERGROUND - 8PT PPT0316

31

PPT slide 32, SG p. 24



Instruction

- It is just as important to be aware of conditions that may lead to the listed hazards. Some of these seismic activity conditions include, but are not limited to:
 - Blasting
 - Vehicle movement/impact
 - Earthquakes
- As a best practice, follow these guidelines:
 - Working under unsupported ground is prohibited
 - Perform ground inspections
 - Do take action in reporting altered ground conditions and/or mitigate the issue to the best of your skill level or training
 - Maintain communication about changing ground conditions
 - Loose rock needs to be barred or scaled down
- When an unsafe condition is noted and cannot be safely mitigated, stop work activities immediately and contact your Supervisor or Health and Safety Professional.

Hazard Identification

FREEPORT-McMORAN

- What are some of the ground control/supports hazards to look for during a visual examination?
 - Cracks
 - Raveling
 - Spalling
 - New water seepage
 - Shotcrete damage
- What is the hazard with seismic activity?

WORKPLACE EXAMINATIONS UNDERGROUND - 9/17 F033130 32

PPT slide 33, SG p. 26




Instruction

- Guarding is intended to prevent access into a hazardous area. Some forms of guarding are intended to prevent whole person access, while other forms only eliminate access into smaller areas.
- When performing a workplace examination, note all areas where guarding should be installed. This can include, but is not limited to, machinery with exposed moving parts, shielding to protect against chemical contact, heat shielding, and fan silencing.
- If guarding deficiencies are discovered through a workplace examination, stop working until the guarding is repaired or reinstalled. These unguarded areas should be barricaded, flagged/ribboned, and/or include a spotter until the hazard can be mitigated or eliminated. If the workplace examination reveals areas where guarding was never installed, but should have been, contact your Supervisor or Health and Safety Professional to begin the process.

Hazard Identification

FREEPORT-McMORAN

- What is the purpose of guarding?
- What types of hazardous areas are guarded?
- What actions should be taken for missing or damaged guarding?



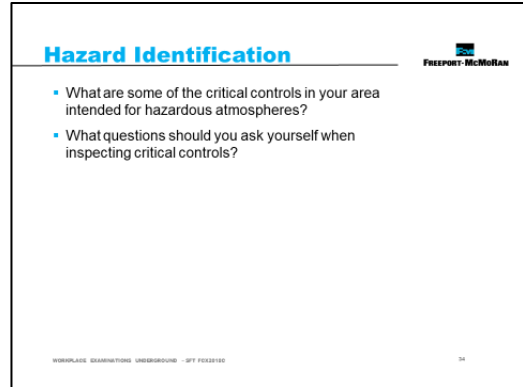
WORKPLACE EXAMINATIONS UNDERGROUND - 9/17 F033130 33

PPT slide 34, SG p. 26



Instruction

- Generate a discussion around the critical controls in the area.
- Critical controls are in place to maintain a safe working environment. Without these controls in place and in operating order, the atmosphere can become hazardous with high levels of carbon monoxide and nitrogen dioxide. It is critical that workplace examinations include checking on the functionality of these controls.
- Questions to ask yourself:
 - Are the fans on before entering the drift?
 - Are the fixed monitors operating? Fixed monitors are located throughout the underground mine.
 - After a blast, has enough time passed (minimum 30 minutes) before employees are allowed to enter the area?
 - Are oxygen levels safe to begin or resume work?

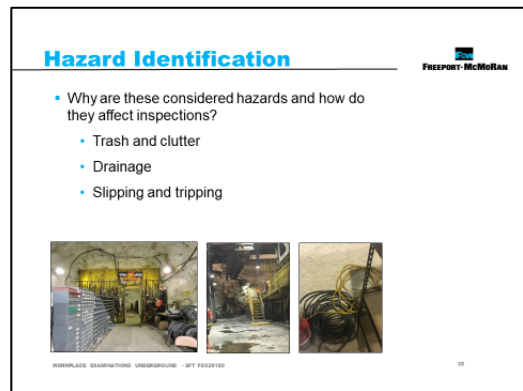


PPT slide 35, SG pp. 27-28



Instruction

- Trash and clutter can be a tripping hazard and, depending on the material, can cause cuts and scrapes. If the trash happens to be food waste, biological hazards may also be present. Trash and clutter can block escape routes, in the event of an emergency or evacuation. In the event of a fire, excess trash can provide an additional fuel source allowing the fire to spread quickly and easily.
- While inspecting the drainage areas underground, it is important to observe the water level. If the drain is not properly emptying, utilize a scaling bar to loosen the material to restart the flow.
- Slips and trips can be caused by a wide variety of conditions. Some of these may include standing liquids, uneven surfaces, hoses, electrical cords, or stairs and ladders. If you happen to see standing liquids or puddles, and cannot avoid walking through it, make sure to shuffle your feet. Once you establish appropriate barricading, contact your Supervisor or Health and Safety Professional.





Instruction

- According to the Hierarchy of Controls, signs are classified as administrative controls. When immediate, potential health, or not easily recognized safety hazards exist in a work area, warning signs must be posted at all approaches. Recognizing these signs enables you to easily understand the hazards and adhere to proper precautions while working. Pay attention to signs in your work area as they are intended to:
 - Direct
 - Warn
 - Inform
- Some of the signs encountered are:
 - Danger: Indicates a hazardous situation that, if not avoided, will result in death or serious injury. The signal word "DANGER" is to be limited to the most extreme situations. DANGER [signs] should not be used for property damage hazards unless personal injury risk appropriate to these levels is also involved. Shall be used in major hazard situations where an immediate hazard presents a threat of death or serious injury to employees. Danger tags shall be used only in these situations.
 - Warning: Indicates a hazardous situation that, if not avoided, could result in death or serious injury. WARNING [signs] should not be used for property damage hazards unless personal injury risk appropriate to this level is also involved.
 - Caution: Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury. Shall be used in minor hazard situations where a non-immediate or potential hazard or unsafe practice presents a lesser threat of employee injury.
- All signs must be in good health, meaning they must be properly anchored, legible, and visible. If you notice signs that are falling or are not easily visible, either resolve the issue or notify your Supervisor to take further action.
- For a sign to be effective in a working area, it must be positioned in an obvious location, be clean and legible, posted in the common language for that property, and oriented properly. During an emergency situation, you do not want to lose time by having to stop and focus on a sign that does not meet these standards.
- If during a workplace examination it is noted that there are signs that do not meet these standards, take the time to correct the problem, or notify Supervision so that the issue can be resolved. Remember, signage is designed to notify you of a hazard; it is understanding and adhering to the information that will protect you.

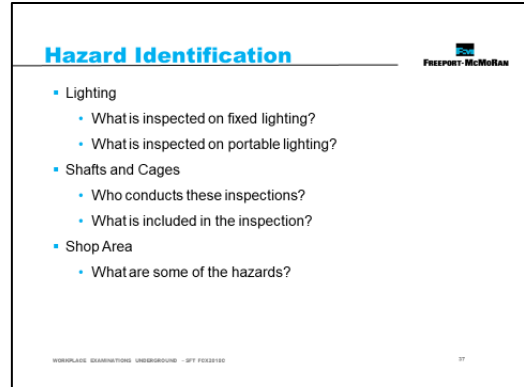


PPT slide 37, SG pp. 29-30



Instruction

- In areas where lights are installed, such as shops, warehouses, substations, or lunchrooms, lighting must be maintained and working. Portable construction lights which are equipped with guards must have the guards installed on them and in working order. Emergency lighting, where applicable, must be functional. High visibility lamps are part of the required PPE for entrants underground and must be fully functional.
- Shafts and cages are not commonplace in most employees' workplace examinations. There is a formal process for inspecting these areas using specially trained crews; however, ensure the entrance is clear of debris and tripping hazards.
- Shop areas are painted white in an effort to brighten the area. Illumination is found most often in these work areas. Some of the shops are designated "safe areas" for hot work and do not require a permit. Ensure all materials are properly stored in appropriate areas within the shop area; this includes flammables, combustibles, hazardous waste, trash, and universal waste. Clear any tripping hazards. Confirm that all signage is not only clean and legible but also current, valid and adequate.

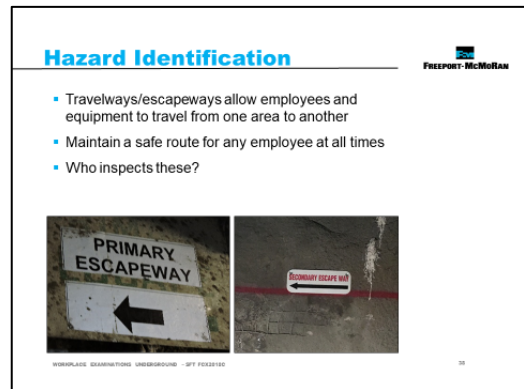


PPT slide 38, SG p. 30



Instruction

- They may be traveled frequently or rarely, but it is important that they remain a safe route for all employees at all times. Always be aware of your primary and secondary escapeway, as well as the nearest refuge chamber.
- While working underground, ensure you know where the primary and secondary escapeways are located. At Henderson, the primary escapeway is 2 shaft, which is a fresh air intake. The secondary escapeway is the conveyor tunnel, which can only be used in the event 2 shaft is not accessible. Note: the conveyor tunnel is also a fresh air intake.



Continued on next page

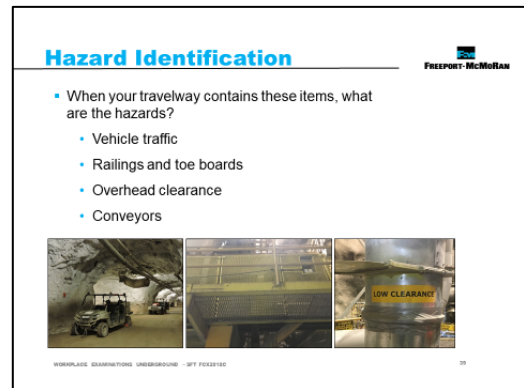
- Safe access along any path that is traveled for work, repair, or maintenance should be kept free of debris or obstruction, and easily accessible.
- Travelways and escapeways are everyone's responsibilities and are scaled/barred down accordingly.
- Inspections should be occurring whether employees travel via equipment or on foot. During the Quarterly Scaling Program, each department devotes a day near the end of each quarter to complete additional inspections.

PPT slide 39, SG pp. 31-32



Instruction

- Follow these traffic/parking procedures whenever you are underground:
 - All uphill traffic has the right of way
 - All mobile equipment in your work area must have the emergency brake set and the tires chocked, when not in use
 - All unattended equipment should be turned off
 - Make sure vehicles are not blocking access ways to shafts
- When working near or walking through an area with railings and toe boards, ask yourself:
 - Are there any missing bolts, hardware, grating, or bent stairs/tread?
 - Is there an installed toe board along all areas that have midrails and handrails?
 - If a fall hazard exists, do you need to be wearing fall protection?
- Overhead clearance is another integral part of safe access along travelways or escapeways. Some of our infrastructures and equipment may require employees to duck as they pass.
- The presence of an overhead crane can add another hazard to the workplace when in use. Alarms and lights are used to warn employees of a moving crane. During a workplace exam, be aware of any overhead hazards, as well as any associated warning devices.
- Conveyors along travelways can present multiple hazards. Material can fall from the conveyor and collect along the travelway. If left uncontrolled, the build-up of material can present a trip hazard, or can completely impede travel along the path. Unguarded conveyors can project material, as well as expose employees to moving machinery.
- Also, be aware of conveyance systems overhead. When guards are installed, look carefully for any gaps that may exist in the guarding and build-up of excess material, as it can easily fall and strike workers below.



PPT slide 40, SG p. 33




Instruction

- Discuss site-specific procedures around open holes or ore passes not in use.
- The presence of an unguarded/non-barricaded open-hole, other than ore passes, along any travelway or escape route is considered an imminent danger.
- In the event a workplace examination reveals an open hole other than an ore pass, work activities should immediately stop, Supervisor or Health and Safety Professional should be notified, and proper barricading must be installed
- All open holes must be marked, and either barricaded or physically guarded at both the collar and bottom. This includes all raises, access in grating floors, manholes and vaults, ladder ways, etc.
- In inactive areas, all ore passes must be covered or barricaded from access; a single flag/ribbon is not adequate.
- Any ore passes in operation must have a light or yellow flasher.

Hazard Identification

Freeport-McMoRan

- When ore passes are not in use, what would you inspect?
- What should you see for ore passes in operation?



WORKPLACE EXAMINATIONS UNDERGROUND - 8/11 FREE0102

ACTIVITY 2: HAZARDS IN THE WORKPLACE

PPT slides 41-45, SG pp. 35-36



Time: Approximately 10 minutes

Materials

- Worksheet (located in the SG pp. 35-36)

Purpose

- This activity reinforces this module's lesson on workplace examinations.

Directions

1. Direct the class to the activity worksheet in the Student Guide.
2. Each student will identify if there are any hazards in the workplace photo. Allow five minutes to complete.
3. After five minutes, progress through the slides and review the answers as a class. Proposed answers are provided as a guideline.

#1

Hazards:

- Overhead crane
- Vehicle and pedestrian traffic
- Blind turn
- Noise exposure

#2

Hazards:

- Tripping
- Uneven grounds, rock underfoot
- Red flagging fallen down and why is it there?
- Winch line under tension
- Air lines under pressure
- Broken handle, potential for cuts
- Missing guarding on winch

Hazards in the Workplace

Directions

1. Refer to the activity in the Student Guide (pp. 35-36).
2. Take five minutes to identify if there are any hazards in the workplace.
3. Be prepared to share your findings.
4. Review the answers as a class.


WORKPLACE EXAMINATIONS UNDERGROUND - 8PT F022102

Activity 2

Hazards in the Workplace

FREEPORT-McMORAN

#1




WORKPLACE EXAMINATIONS UNDERGROUND - 8PT F022102

Hazards in the Workplace

FREEPORT-McMORAN

#2



WORKPLACE EXAMINATIONS UNDERGROUND - 8PT F022102

#3

Hazards:

- Trip hazards with the stand leg on the right side
- Slip hazards
- Low overhang or head clearance
- Poor lighting



#4

Hazards:

- Housekeeping issues
- Shop vacuum stored less than 3 feet from electrical box
- Improper storage of the respirator

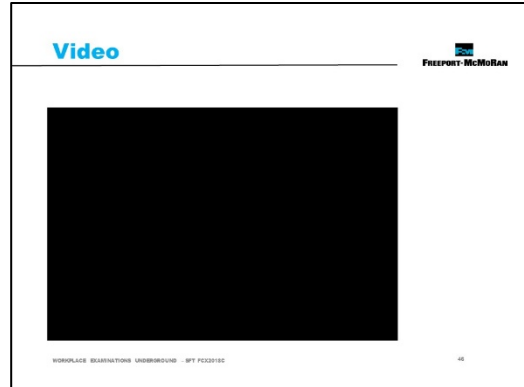


PPT slide 46



Instruction

- Play the 4 minute video.
- This is a brief overview of this module and visually shows examples of areas across the mine that could be examined.
- Encourage students to relate this video to their process for conducting a workplace examination. While it is filmed above ground, ask for similarities in the process.
- Ask students what is missing from the video for an underground workplace examination. They should respond with checking ground conditions.
- <https://web.microsoftstream.com/video/ad611d5d-2234-4413-8a6e-8a44e2a3830f>



ACTIVITY 3: TEACH ME

PPT slide 47, SG p. 37



Time: Approximately 20 minutes

Materials

- Worksheet (located in the SG p. 37)

Purpose

- This activity reinforces this module's lesson on the different kinds of hazards present on our properties.

Directions

1. Divide the class into small groups.
2. Assign each group a hazard topic (Equipment, guards, housekeeping, electrical, emergency preparedness, travelways/escapeways, or ground control).
3. Direct each small group to the worksheet in the Student Guide. Allow ten minutes for each group to research and prepare talking points about their assigned topic.
4. They will teach back their topic to the class. Their presentation should cover the following questions: *What do you want your classmates to understand about this topic? What are some key concepts? How can you apply this topic to your workplace?*

Teach Me	
<p>Directions</p> <ol style="list-style-type: none">1. Facilitator will divide the class into small groups.2. Each group will receive an assigned hazard topic (Equipment, guards, housekeeping, electrical, emergency preparedness, travelways/escapeways, or ground control/support).3. Take ten minutes to research and prepare talking points about your hazard topic. Use the worksheet in the Student Guide (p.37).4. Teach your topic back to the class. <i>What do you want your classmates to understand about this topic? What are some key concepts? How can you apply this topic to your workplace?</i>	Activity 3

MODULE 2 QUIZ

PPT slides 48-51, SG p. 38



Instruction

1. Students will complete the answers to the quiz questions in the SG.
2. Review the answers as a class (See the following page for answers)

Quiz Answers

Question	Answer
1	Answer: a, SG p. 26
2	Answer: a, b, d, SG pp. 27-28
3	Answer: b, c, d, SG p. 24

Module 2 Quiz

Directions

1. Refer to the Quiz in the Student Guide.
2. Take five minutes to complete.
3. Review the answers as a class.

WORKPLACE EXAMINATIONS UNDERGROUND - 3PT F0220102

Quiz

Module 2 Quiz

1. What is the purpose of guarding?
 a. Prevent access into a hazardous area
 b. Provide another location to store PPE
 c. Protect equipment from dust and debris

WORKPLACE EXAMINATIONS UNDERGROUND - 3PT F0220102

Quiz

Module 2 Quiz

2. What are some examples of good housekeeping?
(Circle all that apply)
 a. Disposing of trash
 b. Cleaning up oil spills
 c. Wearing the correct dust mask
 d. Securing ladders in the tool shop

WORKPLACE EXAMINATIONS UNDERGROUND - 3PT F0220102

Quiz

Module 2 Quiz

3. What should you include in your workplace examination when working with grinders? (Circle all that apply)
 a. Drainage
 b. Hot work permit
 c. The tongue guard
 d. The peripheral hood

WORKPLACE EXAMINATIONS UNDERGROUND - 3PT F0220102

Quiz

PPT slide 52



Instruction

- Review the questions on the slide.
- This helps to review and refresh the information that was covered in this module.
- By asking the students to apply the information, they are further retaining the lesson.

Debrief

Freeport-McMoRan

- How will this module impact your future workplace examinations?
- What information surprised you?

WORKPLACE EXAMINATIONS UNDERGROUND - SP1 PCD0102 52

Break

- Take a 5 to 10 minute break after this module
 - Clearly communicate what time you expect students to return
-

MODULE 3: UNDERGROUND CRITICAL CONTROLS

This module addresses some of the critical controls in place for working underground. If you recall, critical control(s) are implemented to prevent death or mitigate the consequences of the Fatal Risk. The absence or failure of a Critical Control significantly increases the risk of severe injury or death despite the existence of other controls. In short, Critical Controls help keep you from being killed.

LEARNING OBJECTIVES

Upon completion of Module Three, the student will be able to:

- Describe how critical controls affect the underground environment.

ACTIVITIES

- None

Please refer to Activity Materials in *Facilitator Preparation* for further details.

TOTAL TEACHING TIME

Approximately 45 minutes

PPT slide 53

Instruction

- Upon completion of Module Three, the student will be able to:
 - Describe how critical controls affect the underground environment.

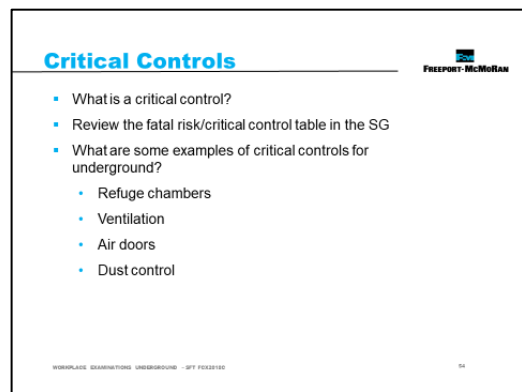


PPT slide 54, SG p. 45



Instruction

- After identifying a Fatal Risk, Critical Control(s) are implemented to prevent death or mitigate the consequences of the Fatal Risk.
- The absence or failure of a Critical Control significantly increases the risk of severe injury or death despite the existence of other controls. In short, Critical Controls help keep you from being killed.
- Direct students to review the fatal risk/critical control table in the SG. Discuss items they would inspect from the critical controls list. This table is to drive the conversation around critical controls, as those critical controls are in place to prevent employees from being killed.
- Review the examples of critical controls for underground.

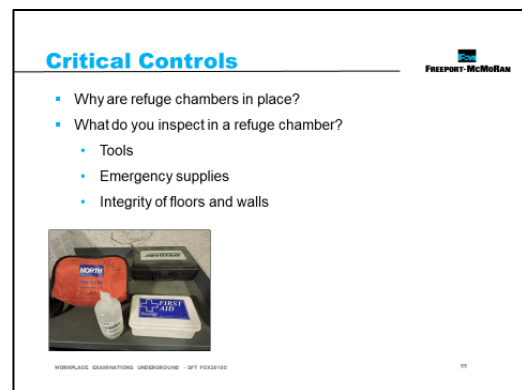


PPT slide 55, SG p. 46



Instruction

- In addition to primary and secondary escapeways, refuge chambers are located throughout the underground mind.



Continued on next page


- This critical control is provided for every employee who cannot reach the surface within one hour from his/her working area using either escapeway. The refuge chambers are specifically located so that employees can reach one of them within 30 minutes from leaving their workplace.
- Refuge chambers are designed with fire-resistant construction and can be sealed to be gas-tight. Each chamber is equipped with compressed air lines, waterlines, suitable hand tools, stopping materials, and first aid supplies.
- Ensure that the proper tools and supplies are maintained and readily available, should an emergency occur. Even though refuge chambers are not active working areas, it is critical to check the integrity of the walls and ceilings (ribs and back).

PPT slide 56, SG p. 47



Instruction

- It is critical for airflow to be constantly moving within the underground mine. Maintaining proper airflow within the underground mine is required to introduce fresh air into work areas and reduce hazardous atmospheres to workers. Airflow also controls temperatures, environments, and provides oxygen.
- With the combination of fresh air intakes and exhaust fans (return airshafts), air has the ability to safely move throughout the various drifts to provide a safe working environment.
- There are qualified individuals who are responsible for completing a more in-depth inspection of the ventilation system; however, it is important to inform Supervision or a Health & Safety Professional if you notice a change in the environment, the airflow or defects in the ventilation equipment (e.g. torn vent bag, gap between fan and vent bag).
- Throughout the underground mine, air doors are specially designed and placed in areas to control ventilation of the mine between intakes and return airways. The doors create an air-lock. With the use of sensors at Henderson, the doors will automatically open when equipment and/or machinery are detected or in proximity. It is critical that all doors are fully operational and free from obstructions.



Critical Controls

- How does airflow affect the underground environment?
- Who conducts the inspection of the airflow system?
- What should you inspect when traveling through or working near air doors?


WORKPLACE EXAMINATIONS UNDERGROUND - 071 F020110 11



Instruction

- When bulk material is altered or moved by equipment or at transfer station via chutes, dust is generated. Not all dust particulates are visible to the eye, which is why dust suppression measures are critical underground.
- Dust suppression sprayers in draw points must be fully functional and running.
- Dust collection systems at transfer points must be free from damage and running.
- Water trucks are utilized to control dust for main access and travel ways.
- Wash down hoses must be fully functional for dust suppression near exhaust ends.
- Transfer points on conveyors utilized water sprayer to suppress dust while equipment and machinery are dumping/crushing ore.
- Roadways need to be maintained with minimal amounts of water to reduce dust. Look for non-functioning/disabled sprayers. If you notice an excessive amount of dust or an area that needs maintenance, notify Supervision or a Health & Safety professional. Mitigate the issue to the best of your skill level or training.

Critical Controls



- What are some of the dust controls in use?
 - Dust suppression sprayers
 - Dust collection systems at transfer stations
 - Water trucks
 - Wash down hoses
 - Water sprayers on conveyors
- What other areas may have excessive amounts of dust?
- What actions should you take if a critical control is not working or not in place?

WORKPLACE EXAMINATIONS UNDERGROUND - PPT FE22P110

17

MODULE 3 QUIZ

PPT slides 58-61, SG p. 49



Instruction

1. Students will complete the answers to the quiz questions in the SG.
2. Allow five minutes to complete.
3. Review the answers as a class.

Quiz Answers

Question	Answer
1	Answer: a, c, d, SG p. 46
2	Answer: b, SG p. 46
3	Answer: a, b, c, d, SG pp. 46-47

<p>Module 3 Quiz</p> <p>Directions</p> <ol style="list-style-type: none">1. Refer to the Quiz in the Student Guide.2. Take five minutes to complete.3. Review the answers as a class. <p><small>WORKPLACE EXAMINATIONS UNDERGROUND - 5/17 F022102</small></p>	Quiz
<p>Module 3 Quiz</p> <ol style="list-style-type: none">1. What does airflow control? (Circle all that apply) <ul style="list-style-type: none"><input type="radio"/> a. Temperature<input type="radio"/> b. Illumination<input type="radio"/> c. Environment<input type="radio"/> d. Oxygen levels <p><small>WORKPLACE EXAMINATIONS UNDERGROUND - 5/17 F022102</small></p>	Quiz
<p>Module 3 Quiz</p> <ol style="list-style-type: none">2. Refuge chambers are intentionally located how many minutes from each workplace? <ul style="list-style-type: none">a. 15 minutes<input checked="" type="radio"/> b. 30 minutesc. 45 minutesd. 60 minutes <p><small>WORKPLACE EXAMINATIONS UNDERGROUND - 5/17 F022102</small></p>	Quiz
<p>Module 3 Quiz</p> <ol style="list-style-type: none">3. Which of the following are critical controls for Underground Hazardous Atmosphere? (Circle all that apply) <ul style="list-style-type: none"><input checked="" type="radio"/> a. Air doors<input checked="" type="radio"/> b. Ventilation<input checked="" type="radio"/> c. Refuge chambers<input checked="" type="radio"/> d. Dust control systems <p><small>WORKPLACE EXAMINATIONS UNDERGROUND - 5/17 F022102</small></p>	Quiz

PPT slide 62



Instruction

- Review the questions on the slide.
- This helps to review and refresh the information that was covered in this module.
- By asking the students to apply the information, they are further retaining the lesson.

Debrief

Freeport-McMoRan

- How will this module impact your future workplace examinations?
- What information surprised you?

WORKPLACE EXAMINATIONS UNDERGROUND - IPT FC2018C 12

Break

- Take a 5 to 10 minute break after this module
 - Clearly communicate what time you expect students to return
-

MODULE 4: CHEMICAL STORAGE

This module explains chemical containment for working underground. The process differs slightly for in-pit operations versus underground. When performing a workplace examination, look for spills or leaks. Mitigate the issue only to the best of your skill level or training.

LEARNING OBJECTIVES

Upon completion of Module Four, the student will be able to:

- Describe the process for managing chemical identification, storage, and handling.

ACTIVITIES

- Activity 4: Stump Your Neighbor

Please refer to Activity Materials in *Facilitator Preparation* for further details.

TOTAL TEACHING TIME

Approximately 45 minutes

PPT slide 63

Instruction

- Upon completion of Module Four, the student will be able to:
 - Describe the process for managing chemical identification, storage, and handling.



PPT slide 64, SG pp. 55-56



Instruction

- Check your work area for any chemicals and liquids. Identify the hazards of each by reading the corresponding SDS for each. If they do not belong in the area, take appropriate action to remove safely or notify your Supervisor or Health and Safety Professional.
- All tanks/containers must have clear, legible labels. All oil totes and drums require secondary containment. Totes will most likely be double walled for containment purposes. Examine all totes for proper containment and make sure they are stored in their appropriate areas.
- In areas where combustible materials are stored, signage must be present and legible stating “No Smoking” and “No Open Flame.” All containers must be properly labeled and legible. Containers should be clean and in good condition (no dents, broken caps, or stoppers, unclean, etc.)
- Ensure that combustible liquids are stored separately from explosives or blasting agents, shaft stations, and ignition sources. This includes any electric equipment that could create sufficient heat or sparks. This helps minimize the spread of fire. In the event of a combustible liquid spill such as oil or grease, actions must be taken to clean up the spill as quickly and safely as possible. Establish good housekeeping habits and ensure this area is free of debris.
- Similar to trash/clutter, improperly stored materials can become a hazard when obstructing travelways. The risk of this hazard increases dramatically in the event of an emergency. When looking around your work area, note if all materials are stored in accordance with Freeport-McMoRan standards as well as manufacturers’ instructions. While materials may be stored in the proper containers, if their weight exceeds the limits of the shelving system, then they are improperly stored.

Chemical Storage

- Why would you inspect these items in a chemical containment area?
 - SDS
 - Tank/container labels
 - Secondary containment
- Why is the storage location important for combustible and non-combustible items?

WORKPLACE EXAMINATIONS UNDERGROUND - 5/17/2010

Continued on next page

- If your work area contains liquids stored under pressure, ensure that the vessels are secured properly and that no valves are leaking. If you are storing liquid waste, verify that all containers are properly labeled (describing contents), secured, and free from leaks. If your work area contains various hazardous or reactive chemicals, make sure that there is no possibility of the chemicals mixing.
- When storing materials, ensure that you utilize a rated flammable materials safety storage cabinet. All containers stored in the cabinet, regardless of the content, need to be properly labeled. Do not store items in the cabinet such as rags, cardboard containers, paper, or anything else that could become a fuel source, should a fire occur. Keep in mind that some cardboard containers are used for organizational purposes.

PPT slide 65, SG p. 56



Instruction

- This waste should be segregated and never stored in a container with an unlike item.
- Accumulation areas are located throughout the underground mine for aerosol, battery, lamp/bulb, and electronics.
- All material must be properly disposed of in a timely manner. For example, empty aerosol cans should be properly stored in containers labeled with the words “Universal Waste Aerosol Cans” while BO batteries should be stored in containers that are appropriately labeled “Universal Waste Batteries” with the leads insulated.

Chemical Storage FREEPORT-McMoRAN

- How should universal waste be stored and disposed?
 - Segregated
 - Only stored with like items
 - Disposed of in a timely manner
- Why?
 - Universal waste is considered hazardous and handled with care
 - Disposed in such a manner as to reduce and/or prevent release to the environment

WORKPLACE EXAMINATIONS UNDERGROUND - PPT FE650101 55

PPT slide 66, SG p. 56



Instruction

- All shops and surface areas are supplied with spill kits.
- The kit contains absorbent materials and pads.
- Check each spill kit during your inspection and refill supplies accordingly.
- If you see a spill, clean it up immediately.
- Discard oil absorbent pads into the proper disposal container after each use.

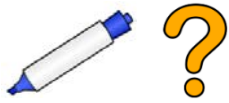
Chemical Storage FREEPORT-McMoRAN

- Where are spill kits located?
- What do you inspect on a spill kit?

WORKPLACE EXAMINATIONS UNDERGROUND - PPT FE660101 55

ACTIVITY 4: STUMP YOUR NEIGHBOR

PPT slide 67



Time: Approximately 20 minutes

Materials

- Flip chart
- Markers

Purpose

- This activity draws out the students' existing knowledge on workplace examination compliance.

Directions

1. Divide the class into two teams.
2. Each team will create three questions and answers about this course that they believe will stump the other team. Designate one person as the leader. Allow 5 minutes to complete.
3. After 5 minutes, teams will take turns with the leader asking the other team one question and allowing them to answer it. Rotate between the two teams until all questions have been asked and answered.
4. The flip chart can be used to capture questions that generate a discussion.
5. Discuss the responses as a class.

Note: *If there are not any questions generated regarding the qualifications of a competent person, be sure to include those questions on your own. It is important that this information is reiterated to the class.*

Stump Your Neighbor	
<p>Directions</p> <ol style="list-style-type: none">1. Facilitator will divide the class into two teams.2. Each team will designate a leader.3. Take five minutes to create three questions and answers that you believe will stump the other team.4. Each leader will take turns asking the other team one of their questions.5. Review the answers as a class.	Activity 4
<small>WORKPLACE EXAMINATIONS UNDERGROUND - 07/10/2010</small>	

MODULE 4 QUIZ

PPT slides 68-71, SG p. 57



Instruction

1. Students will complete the answers to the quiz questions in the SG (p. 53).
2. Allow five minutes to complete.
3. Review the answers as a class.

Quiz Answers

Question	Answer
1	Answer: b, SG p. 55
2	Answer: b, SG pp. 55
3	Answer: a, b, c, d, SG pp. 55-56

<p>Module 4 Quiz</p> <p>Directions</p> <ol style="list-style-type: none">1. Refer to the Quiz in the Student Guide (p.52).2. Take five minutes to complete.3. Review the answers as a class. <p><small>WORKPLACE EXAMINATIONS UNDERGROUND - 57 F002100</small></p>	Quiz
<p>Module 4 Quiz</p> <ol style="list-style-type: none">1. What document provides hazards, proper handling, and storage information for each chemical?<ol style="list-style-type: none">a. JSA<input checked="" type="radio"/> b. SDSc. Hot Work Permitd. Workplace Examination <p><small>WORKPLACE EXAMINATIONS UNDERGROUND - 57 F002100</small></p>	Quiz
<p>Module 4 Quiz</p> <ol style="list-style-type: none">2. Combustible materials should always be stored near open flames and smoking areas.<ol style="list-style-type: none">a. True<input checked="" type="radio"/> b. False <p><small>WORKPLACE EXAMINATIONS UNDERGROUND - 57 F002100</small></p>	Quiz
<p>Module 4 Quiz</p> <ol style="list-style-type: none">3. When storing liquid waste, what should be verified with all containers? (Circle all that apply)<ol style="list-style-type: none"><input checked="" type="radio"/> a. Secured<input checked="" type="radio"/> b. Free from leaks<input checked="" type="radio"/> c. Properly stored<input checked="" type="radio"/> d. Properly labeled <p><small>WORKPLACE EXAMINATIONS UNDERGROUND - 57 F002100</small></p>	Quiz

PPT slide 72



Instruction

- Review the questions on the slide.
- This helps to review and refresh the information that was covered in this module.
- By asking the students to apply the information, they are further retaining the lesson.

Debrief

Freeport-McMoRan

- How will this module impact your future workplace examinations?
- What information surprised you?

WORKPLACE EXAMINATIONS UNDERGROUND - BY FC220102 72

CONCLUSION

The importance of a good workplace examination cannot be understated. This is the first step, taken every shift, which leads to a safe return home. Every one of us has worked a job where complacency to hazardous conditions is witnessed. For some of us, this behavior has resulted in an incident where an injury occurred. For others, perhaps luck was on their side. The mining industry, and the work we perform every day, does not lend itself to the lucky ones of the group. Safety on a mine site is an actively achieved task, and it starts with the workplace examination.

As your career in mining progresses, do not forget that examining a working area is a fluid process. Good hazard recognition skills in conjunction with a strong understanding of how to implement critical controls are the backbone of a workplace examination. Knowledge of the processes performed in the area plays a significant role as well. Unfortunately, none of this means much if even the most experienced employee does not take the examination seriously.

PURPOSE

During the conclusion, the students will be able to:

- Understand the overview of the course

ACTIVITIES

- Student End of Course Questionnaire (located in SG)

TOTAL TEACHING TIME

Approximately 5 minutes

PPT slide 73

Instruction

- Complete a final review session

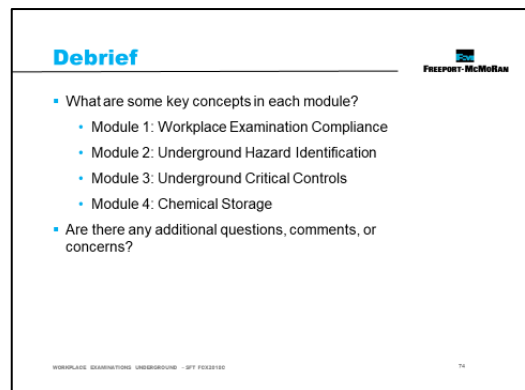


PPT slide 74



Instruction

- As the objectives for each module are reviewed, **discuss the students' lingering questions, comments, or concerns.**
- Module 1
 - Explain the purpose of workplace examinations
 - Describe the qualifications and training level necessary to conduct one
- Module 2
 - Conduct a workplace examination by assessing a scenario for general hazards
- Module 3
 - Describe how critical controls affect the underground environment
- Module 4
 - Describe the process for managing chemical identification, storage, and handling

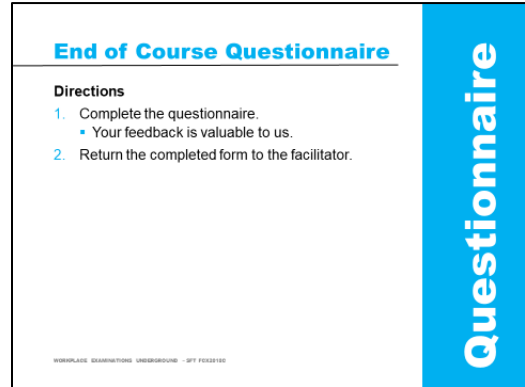


A debrief is included at the end of the course to help summarize, review, refresh, retain, and clarify content covered throughout the course. Students are often anxious to leave at the conclusion of the course so keep the debrief quick and relevant.

PPT slide 75, SG p. 69

Instruction

- Have students complete the Student End of Course Questionnaire (located in the SG p. 69)



FACILITATOR COURSE EVALUATION

Course Name

Facilitator
Name

1. What worked well in the course? Please explain.

2. Were the topics effectively sequenced? If not, please provide suggestions for change.

3. Was the content up-to-date with current processes, equipment, etc.? If not, please provide specific examples.

4. Was the content at the appropriate level of difficulty? If not, please provide examples.

5. What in the course needs improvement? Please provide specific examples.

6. Were the teaching materials (PPT, FG, etc.) of high quality? If not, please provide examples.

7. Were there any inaccuracies or missing content? If so, please provide examples.

8. Do any of the issues you've identified need to be addressed immediately? If so, please list which ones.

Thank you for taking the time to complete the survey.

Please mail to: Mine Training Institute, Attention: Suzanne Anderson, 18550 S. La Canada Drive, Sahuarita, AZ 85629
Or scan and email to: sanderso2@fmi.com

