FREEPORT-McMoRan

FACILITATOR GUIDE

SFT FCX1021C
FATAL RISK MANAGEMENT

March 2019

VERSION 2

TABLE OF CONTENTS

COURSE OVERVIEW

The following is basic information about this course.

COURSE DESCRIPTION

Through this course, employees will be able to discuss Fatal Risks and Critical Controls. Freeport-McMoRan supplies each employee with specific tools to perform their job safely and efficiently. Fatal Risk Management was created to further enhance the measures currently in place. With the appropriate communication and plan in place, Fatal Risk Management can be used to enhance conversations in the field, JSAs, SOP reviews, and even tailgate talks.

In short, employees need to know what will kill them at work and what must be done to prevent that from occurring.

COURSE OBJECTIVES

Upon completion of this course, students will be able to:
- Select the appropriate Fatal Risk Management icons based on the hazards associated with the task and environment
- Identify appropriate Fatal Risk Management tools specific to the needs of the work area and employees
- Differentiate the roles and responsibilities of employees, supervisors, and managers
- Demonstrate effective communication skills for transferring program concepts to employees

COURSE PRE-REQUISITES

Before taking this course, students should be familiar with Fatality Prevention.

COURSE LENGTH

This course takes approximately 4 hours to complete.

CLASS SIZE

This course is designed for a maximum of 20 students. Class size may be more or less depending on each site's needs and the students' skills and experience levels.

TARGET AUDIENCE

This training is intended to train all Supervisors.

FACILITATOR QUALIFICATIONS

Facilitators should be well versed in Fatality Prevention.

REGULATIONS/POLICIES/PROCEDURES

This course teaches to the Fatality Prevention Guideline, FCX-14.

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 for the flow of the course. It is designed to assist the facilitator in presenting content, conducting classroom activities, and managing time 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). The guide belongs to the facilitator to make notes and write in as much as needed.

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 consistently needed for courses. Gather and/or order the necessary materials prior to the start of class and verify that everything functions properly.
- 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
- Flipchart
- Markers of various colors
- Student Guide (SG) – 1 per student (available on MTI SharePoint)
- Projector and sound system for PPT and/or videos (available on MTI SharePoint)
- Laptop with access to the internet
- Assessments (available on MTI SharePoint)
- Course Evaluations (Found in the back of SG and FG)
- Appropriate Personal Protective Equipment (PPE)

ACTIVITY MATERIALS

The following are materials needed for activities in each section:

| Sections	Materials

Introduction	• Activity 1: Icebreaker
	  ○ Paper
	  ○ Pens/pencils

Explanation of the FRM Concept	• Activity 2: Introduction to Each Icon
	  ○ Worksheet in the SG
	  ○ Pens/pencils

How FRM Works	• Activity 3: Identifying Fatal Risks
	  ○ Worksheet in the SG
	  ○ Fatal Risk icons page in the SG
	  ○ Pens/pencils
	• Activity 4: Fatal Risks and Critical Controls Part Two
	  ○ Worksheet in the SG
	  ○ FRM Every Day, Every Job…handout in SG
	  ○ Pens/pencils
	• Activity 5: Fatal Risks and Critical Controls Part Two
	  ○ Worksheet in the SG
	  ○ Pens/pencils
	  ○ FRM Operator Reference Guide (1 per student)

FRM Implementation and Progression	• Activity 6: Tailgate Talk
	  ○ Worksheet in the SG
	  ○ Pens/pencils

Conclusion	None

FACILITATOR GUIDE CUES

Throughout the FG, cues are used to help the facilitator quickly identify slides that have unusual but important features. The purpose of each symbol is explained below.

Description	Symbol	Purpose
Audio Link		The speaker icon indicates when audio files are linked on a PPT slide.
Video Link		The director's clapboard is indicates when video files are linked on a PPT slide.
Animated Slide		The star indicates when a PPT slide has an animation and requires more than one click to view all of the content.
Note		The paper and pencil indicate that an important note relating to the slide is included on the PPT slide or in the FG. The note is not necessarily found in the SG.
Incidents		The first aid symbol indicates when a PFE, testimonial, or other safety related incident is addressed on a PPT slide or in the FG.
Flipchart		The marker indicates when the facilitator needs to write down responses given to them by the students. This is generally done with a flipchart or a whiteboard.
Discussion		The question mark indicates when students are expected to participate in a discussion either as a class or in small groups.
Example		The hand indicates when the instructor will hold up an item or pass an example around the class.
Facilitation Tip (FT)		The podium indicates a facilitation technique used by the facilitator to enhance the presentation. A corresponding red box with white text is provided near this cue to explain the tip.
Site Specific		The yellow arrow indicates a place where the facilitator will need to add Site Specific information. This will need to be completed in advance before teaching the class.

USING THE PPT 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 teaching points.
3. The facilitator can also choose to do both. This is the preferred method for facilitating this course. Moving around the room helps the facilitator engage more participants and keeps the students' brains stimulated, thus promoting learning.

Note: The FG follows the PPT presentation slide by slide. Each page is designed with the information the facilitator needs and an image of the slide. The FG should be used as a roadmap to guide the facilitator through the course.

SETTING THE PRESENTATION MODE

To initiate the presentation mode, do the following:

Step	Action
1	Open the PPT presentation.
2	At the bottom pf the screen is a colored bar (The look or color may vary depending on the version of PPT used).
3	Select the icon that is noted in the image below.

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.
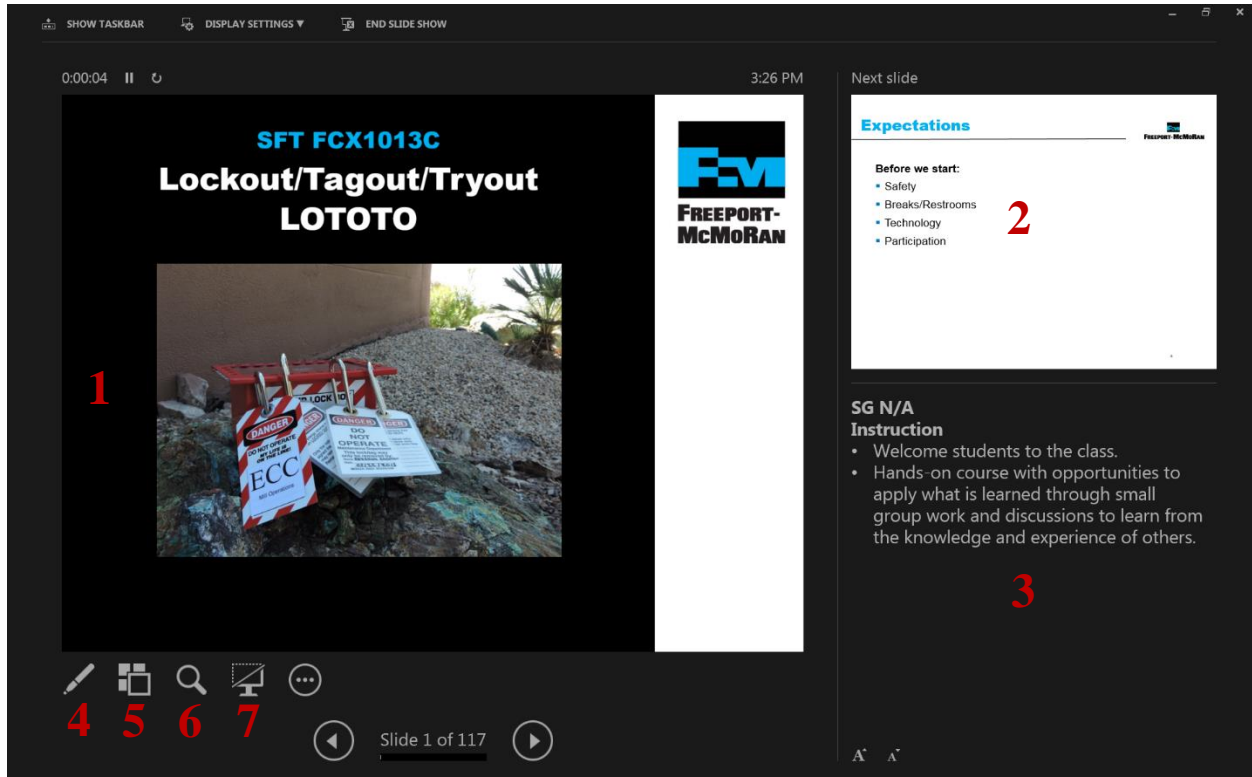
1. **Current slide** – This is the same slide that students see on the projection screen.
2. **Next slide** – A visual preview for the next slide is shown.
3. **Notes** – These notes are the same as the talking points available in the FG. The notes correspond with the current slide projected to the students.
4. **Pens** – This icon gives the user access to a laser pointer, pen, highlighter, and arrow options. Whichever tool is used on the facilitator's screen will show on the projection screen for the students and allows for specific points on the PPT to be emphasized. This helps the facilitator customize the PPT presentation to better suit the needs of the site and students.
5. **All slides** – This will show small images of all of the slides 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 would like to explain content further but feels the PPT slide shown on the screen may distract from the learning, the screen can be blacked out to help focus the students.

INTRODUCTION

The introduction contains introductory information about the agenda, learning objectives, and an icebreaker.

ACTIVITIES

- Activity 1: Icebreaker

For further details, refer to "Activity Materials" under "Facilitator Preparation" on page 6.

TOTAL TEACHING TIME

The introduction takes approximately 15 minutes to complete.

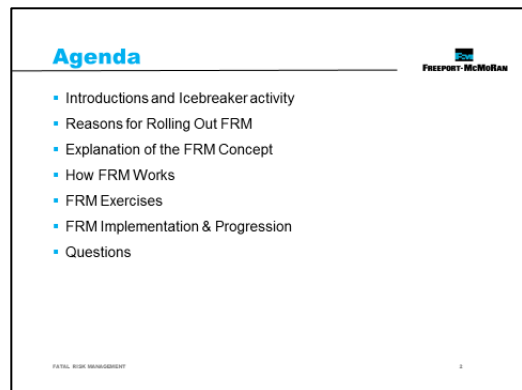**PPT slide 1**

Instruction
- Throughout the presentation, work to encourage participation among the students. The purpose of this training is to shift the way that we think about risk from all hazards, to what can kill us and how to protect ourselves. To increase understanding, student participation is necessary.
- Above all else, have fun interacting with participants and this new material.

PPT slide 2

Instruction
- Review the agenda with the class
- Administrative/Classroom policies
  - Safety
    - Identify the appropriate evacuation procedures, gathering areas, and emergency exits and fire extinguisher locations, etc.
  - Breaks and Restrooms
    - Establish a break schedule and announce it to the class. Suggested break times are included throughout the FG and occur approximately every hour and often occur at the end of each module. Breaks should last 5-10 minutes to give students time to rest and relax before beginning the next learning session.
    - Identify the location of restrooms and smoking areas.
  - Technology policy
    - Review your expectations on cell phone and laptop use during the training.
  - Participation
    - This course requires significant participation. Students should be prepared for discussions 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

PPT slide 3

Instruction
- Conduct introductions with the class
- Facilitator should begin introductions with their information

ACTIVITY 1: ICEBREAKER

PPT slide 4

Time
Approximately 10 minutes

Materials
- Paper
- Pens/pencils

Purpose
- Successful icebreakers encourage students to contribute their ideas and experiences thus increasing motivation and engagement in the class.

Instruction
1. Break the class into small groups. Depending on the size of the class, this could be pair or groups of 3-4.
2. Direct the groups to create a list of five things that the entire group has in common
   - The five things cannot be related to work, body parts, or clothes.
3. Direct each group to designate one person to write down the responses and another person to speak for the group.
4. Allow 5 minutes for groups to discuss.
5. Discuss responses as a class.

PPT slide 5, SG page iii

Instruction
Upon completion of this course, students will be able to:
- Select the appropriate Fatal Risk Management icons based on the hazards associated with the task and environment
- Identify appropriate Fatal Risk Management tools specific to the needs of the work area and employees
- Differentiate the roles and responsibilities of employees, supervisors, and managers
- Demonstrate effective communication skills for transferring program concepts to employees

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REASONS FOR ROLLING OUT FRM

This section contains introductory information about the reason for rolling out the Fatal Risk Management Program.

LEARNING OBJECTIVES

Upon completion of this course, students will be able to:
- Select the appropriate Fatal Risk Management icons based on the hazards associated with the task and environment
- Identify appropriate Fatal Risk Management tools specific to the needs of the work area and employees
- Differentiate the roles and responsibilities of employees, supervisors, and managers
- Demonstrate effective communication skills for transferring program concepts to employees

ACTIVITIES

- None

For further details, refer to "Activity Materials" under "Facilitator Preparation" on page 6.

TOTAL TEACHING TIME

This section takes approximately 60 minutes to complete.

PPT slide 6

Instruction
- Ask the class if they know why Fatal Risk Management is being rolled out.
- This section will address any unanswered questions.
- The idea of this section is to stress that the company remains committed to Fatality Prevention. Fatality Prevention is not a "flavor of the month" activity. This is already a multi-year commitment and we are looking ahead with FRM to the next several years.
- Fatalities and PFEs are continuing to happen at an unacceptable rate. They continue to happen across the globe and at sites of all sizes and functions. They continue to happen with people with both lots or experience and limited experience. They continue to happen with numerous types of risks. They are happening in both routine and non-routine tasks. **In other words there is no pattern to these events and no one can afford to be numb to the Fatal Risks that are present every day!** Everyone needs to be engaged and vigilant when it comes to fatality prevention.
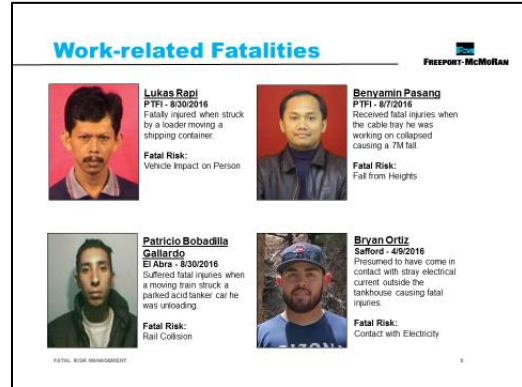

PPT slide 7

Instruction
- Review the four employee fatalities.
- Be sensitive to the fact that a friend/relative may be in the audience.
- The purpose of this is to reinforce the importance of Fatal Risk management and fatality prevention.
- Background:
- **Antonio Martin**: While training in an active haul area to operate an overhead crane, Antonio and his trainee were so focused on their task, they stepped into the path of an oncoming Kress hauler and the trainee was bumped by the equipment, while Antonio was crushed by the tires.
- **Frank Ruiz**: Supervisor of shovel operations. He was in the cab of a shovel helping to direct the work of the operator. They were attempting to pull down a large rock, and had the shovel positioned incorrectly with the cab toward the bench. The rock came loose and came into the cab through the door and Frank was crushed to death.
- **Peter Ale**: Peter removed the guards around a moving tail pulley for reasons unknown and was pulled into the tail pulley.
- **Nelson Pondayar**: When the supervisor took over operating the dozer in a difficult location, Nelson stayed on the deck. The dozer rolled on its side and slid down the embankment, causing Nelson to fall and hit his head, ultimately killing him.

PPT slide 8

Instruction
- Review the four employee fatalities.
- Be sensitive to the fact that a friend/relative may be in the audience.
- Background:
- **Lukas Rapi**: Lukas was the area supervisor and walked into an active loading area and into the path of a loader with forks moving a large shipping crate. He was struck and killed. That morning he had lined out the loader operator and discussed the hazards of the area and the work they were going to perform.
- **Benyamin Pasang**: Ben was a fill in foreman for the day. He and his crew were working to inspect and repair electric cables. He was wearing his fall protection when he climbed onto the cable tray, but he did not tie off, and had left the hooks on his lanyard connected back to the d-rings on his harness. The supports for the cable tray failed under the weight, and Ben fell to his death.
- **Patricio Gallardo**: Patricio and the crew were unloading acid from rail cars. They were standing on top of platforms. An over-speed train came into the area and struck the car he was working on. He was doing what he was supposed to do, where he was supposed to it. In the collision, he suffered fatal injuries.
- **Bryan Ortiz**: During maintenance work in the tankhouse yard, Brian was working alone. He had extended contact with stray current after making contact with a flange.
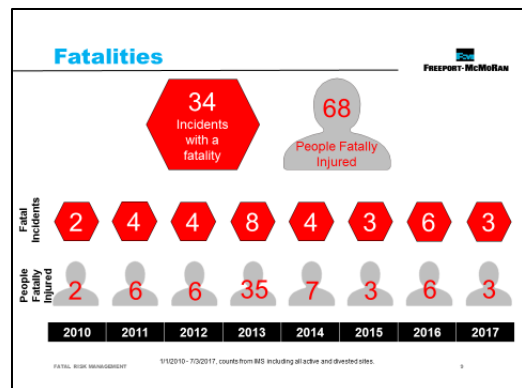

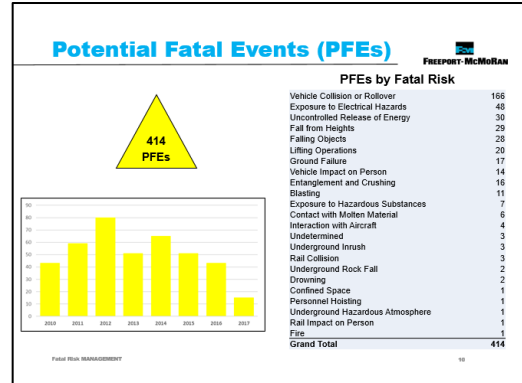**PPT slide 9**

Instruction
- Review the information on the slide.
- This data was collected between January 2010 and July 2017.
- One of the major points here is that while most of us are aware of fatalities as they happen, it is often not recognized how many people have lost their lives in the last several years. This slide illustrates that we as a company have not gone a single year without a fatality in many years.
- Draw the distinction that not every fatal event is one fatality, but we have had several fatalities over the years where more than one employee lost their life.
- In 2013, the collapse of the underground training room at PTFI cost the lives of 27 miners in one incident. The other 7 incidents resulted in the death of the other 8 people.
- Ask the group if they are surprised by these numbers.
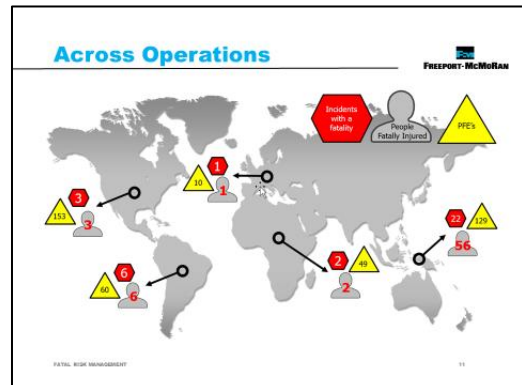

PPT slide 10

Instruction
- Review the information on the slide.
- Speak to the number of PFEs per Fatal Risk
- This data was collected between January 2010 and July 2017.
- Slide illustrates where the fatalities have occurred in terms of Fatal Risks. Large majority are around vehicle collisions and rollovers, while very few have happened around confined space.
- This difference in occurrence do not make the Fatal Risks any less dangerous than others.
- The trend for PFEs has been on the decline since we started the Fatality Prevention Initiative.
- Ask the group with PFEs on the decline, why are we not seeing a decline in Fatalities?
  - Distractions, behavioral controls, individual decisions, improper/lack of planning

PPT slide 11

Instruction
- Review the information on the slide.
- Reinforce that location is not necessarily a cause for the higher number of PFEs.
- Fatalities and PFEs are not isolated to one operation or one part of the world over others. None of our operations are immune to Fatal Risks.
- Ask the group if they are surprised by the numbers and why.

PPT slide 12, SG page iv

Instruction
- Review the information on the slide.
- Review the core elements of Fatality Prevention.

PPT slide 13

Instruction
- Discuss the questions on the slide.
- Fatality Prevention is not a "flavor of the month" type of activity. The company has invested several years and countless hours of training trying to improve our performance. FRM is just the next step in this ongoing effort.
- FRM builds out the core elements for the initial Fatality Prevention Training. It emphasizes the same concepts and provides tools to make it easier to apply. This is not a new program. It is a set of tools to help us better implement the existing program.

PPT slide 14

Instruction
- Reinforce the relationships within the Company and industry
- Inside and outside pressure is being applied around Fatality Prevention. Regulatory groups are encouraging or mandating efforts around fatality prevention. Mining trade organizations such as ICMM are spending significant resources trying to help member companies reduce fatalities. FCX emphasizes fatality prevention as part of our sustainability initiatives. Labor groups are striking and applying pressure on companies around safety conditions as they relate to fatalities and other serious injuries. Investor groups for ethical reasons are being very public about selling off stock in companies where safety is deemed as a problem. Industry publications are writing articles about continuing to combat fatalities in the workplace.

Continued on next page

- Failing to show improvement in our ability to stop fatalities could eventually lead to making it harder to operate in certain countries, make it harder to partner with other companies with better safety records, cause additional work stoppages, make it harder to attract top talent from around the world, suppress our stock price, make it harder to finance large projects, and bring additional regulatory scrutiny.
- The International Council on Mining and Metals (ICMM)is made up of 25 different international mining companies it purpose is to ensure safe and sustainable mining practice for the mining industry through 10 core principals.
  - Ethical business practices
  - Sustainable development
  - Respect of human rights
  - Implement effective risk strategies
  - Continual improvement Health and safety performance
  - Pursue continual environmental improvement
  - Contribute to the conservation of biodiversity and integrated approaches to land use planning
  - Facilitate and support the knowledge-base and systems for responsible design use, re-use, recycling and disposal of products containing metals and minerals
  - Pursue continual improvement in social performance and contribute to the social, economic and institutional development of host countries and communities
  - Proactively engage key stakeholders on sustainable development challenges and opportunities in an open and transparent manner. Effectively report and independently verify progress and performance.

PPT slide 15

Instruction
- Reinforce the reason to work safely.
- Everyone has a reason to go home safely at the end of the day whether it is family, friends, pets, activities, volunteer groups, hobbies, etc. Everyone is responsible for finding a way to make Fatality Prevention personal and to live it every day.
- Ask the group: How do you make safety personal? Take as many responses are participants are willing to provide.

EXPLANATION OF THE FRM CONCEPT

This section contains introductory information about the concept of the Fatal Risk Management Program.

LEARNING OBJECTIVES

Upon completion of this course, students will be able to:
- Select the appropriate Fatal Risk Management icons based on the hazards associated with the task and environment
- Identify appropriate Fatal Risk Management tools specific to the needs of the work area and employees
- Differentiate the roles and responsibilities of employees, supervisors, and managers
- Demonstrate effective communication skills for transferring program concepts to employees

ACTIVITIES

- Activity 2: Introduction to Each Icon

For further details, refer to "Activity Materials" under "Facilitator Preparation" on page 6.

TOTAL TEACHING TIME

This section takes approximately 1 hour and 30 minutes to complete.

PPT slide 16

Instruction

- This section contains introductory information about the concept of the Fatal Risk Management Program.

PPT slide 17, SG page 5

Instruction

- Standardizing communication means understanding the same message.
- In order to accomplish this, we need to be speaking in the same terms, or a common language.
- DOHS recognized the need for commonality amongst the highest priority Fatal Risks.
- Fatal Risk Management bridges the gap between the properties by introducing a common set of icons used to identify Fatal Risks (what will kill you).

FRM Concept

- Fatal Risk Management (FRM) is the next step in the Fatality Prevention Program
- It builds on the core elements presented in Fatality Prevention Training
- Focused on improving identification of fatal risks and implementing critical controls
- It consists of several tools to be used in the field

PPT slide 18, SG page 5

Instruction

- Review the information on the slide.
- The intent of this training is to increase awareness and education around Fatal Risks and Critical Controls.

FRM Concept

FRM was developed to:

- Clarify the potential for fatal risks
- Identify critical controls to manage those risks
- Standardize communication

PPT slide 19, SG page 5

Instruction
- While all risks have danger to some degree, the intent of this training is to focus in on the Fatal Risks, or the risks that will get you killed.
- These are risks that when not controlled have the potential to cause serious injury or death.
- It is important to note that these Fatal Risks are the risks that will get you killed, versus what may kill you.
- For example, to understand the difference between Critical Controls and other controls, we will look at the task of driving a light vehicle. The Critical Control is the operator competency, while the other control would be a valid insurance card. If the Critical Control (operator competency) is overlooked or not in place, the risk for this task has greatly increased.

PPT slide 20, SG page 5

Instruction
- Review the example on the slide by clicking through each column.
- Explain how the Fatal Risks are associated with each task.

PPT slide 21, SG page 6

Instruction

- Developed list of necessary Critical Controls for each Fatal Risk to prevent or mitigate the most serious consequences of these risks.
- Listed Critical Controls are most impactful on preventing a fatality or preventing an injury.
- Critical Controls have been previously established based on data.
- Once the Fatal Risk is identified, applying the most effective Critical Control is crucial.
- A Critical Control is a control that is crucial to preventing death or mitigating the consequences of the event.
- Absence or failure of a Critical Control significantly increases risk of death despite other controls. A control that prevents more than one high energy or high risk event, or mitigates more than one consequence is normally classified as critical.
- The Hierarchy of Controls should be utilized when selecting, reviewing, and evaluating Critical Controls so most effective control is implemented to mitigate the Fatal Risk.

PPT slide 22, SG page 6

Instruction

- Shoveling under – Look at difference between Critical Controls and other controls
- Critical Control = LOTOTO; other control = housekeeping.
- If Critical Control (LOTOTO) is overlooked or not in place, risk for task greatly increases.
- Review the table in the SG to answer the final question.

| Task	Fatal Risk	Critical Controls
Electrical Line Repair	Exposure to Electrical Hazards	• Access Control • Barriers and Segregation • Drawings and Labels • Electrical PPE • Energized Electrical Work Permit Execution • Energy Isolation/LOTOTO
	Fall from Heights	• Fall protection system • Fixed work platform • Mobile work platform • Leading edge/open hole protection • Scaffold

PPT slide 23, SG page 7

Instruction
- The goal of Fatal Risk Management is to standardize the communication around Fatal Risks (the things that will kill you) and teach employees how to control those risks in any task prior to beginning work.
- Standardizing the message and meaning behind every hazard is no small feat.
- In order to implement Fatal Risk Management on each property, the basic concept of the program needs to be understood.
- The following graphic shows the relationship between the primary components of the process and how they each support Fatal Risk Management.
- The idea around FRM is
    - to use the tools to discuss the controls "what can keep you safe".
    - to have supervisors verify that all the controls are effectively implemented in the field by asking questions (field verification process).
    - stop the work when the controls are missing or not effective.
    - to provide tools that will help us gather data that can be used to identify trends in the application of controls.
- One of the keys of FRM is to provide tools to help everyone feel more empowered to stop the work when Critical Controls are missing or not implemented correctly. Facilitators should work to stress the stop the work point on this slide and throughout the course.
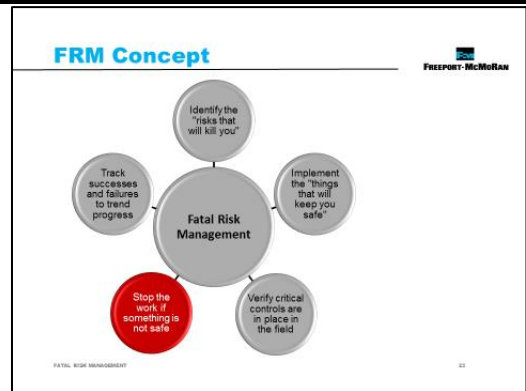
PPT slide 24

Instruction
- Briefly discuss the available tools: the icons, verification questions, and the software tracking system.
- These will be addressed in more depth in the next section.
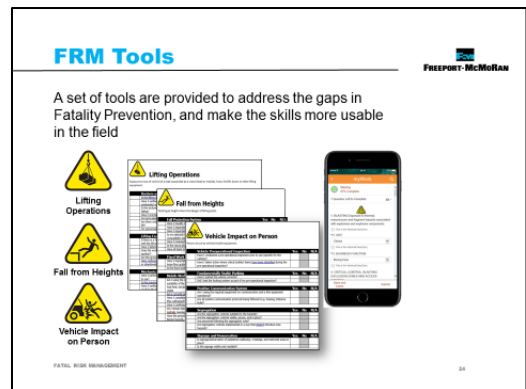
PPT slide 25, SG page 8

Instruction
- Communication does not necessarily include only speech. We utilize images or visual triggers to receive other messages. Think of the many signs you see along the roads you travel. Each sign is posted to deliver a message or warning when human interaction is not possible.
- To ensure success of the message, the images or icons need to be understood. By presenting this information globally, the sender and receiver of the message can translate the same meaning and react appropriately.
- Between January 2010 and July 2017, 68 fatalities have occurred on our properties. In short, 68 people never returned home that day.

PPT slide 26

Instruction
- Discuss the icons that are present at all sites, many sites, and few sites.
- Ask if any of this information is surprising. Are there any missing Fatal Risks? Do any of these not make sense? You must understand all the Critical Controls for each Fatal Risk to facilitate this conversation.
- Routinely participants will suggest items that represent hazards in our workplace such as tripping, mosquito causing malaria, rattlesnakes, lightning, flooding, etc. Have a discussion with the group about any suggestions. Let them know that new icons can be added after review by the corporate office. But focus the group on the idea that we are trying to represent Fatal Risks that have killed people in the past, that large groups of people encounter on a regular basis, and that these are things that "will" kill you rather than "could" kill you if the perfect set of circumstances arises.
- For example, while rattlesnakes do represent a hazard, we have never had a fatality related to an animal attack. Not that it couldn't happen in the perfect circumstance, it is just not certainly something that will kill you. But, standing under a crane and having a load of steel beams fall on you will most likely kill you. Lightning on the other hand has killed people in the past, but was not included because the controls in place to prevent this are mostly not something that an individual employee has to implement themselves. Slipping or tripping scenarios might come up where someone can explain a wild scenario where an unusual set of events results in a fatality, but by and large while slips and trips do cause injuries it is extremely rare that they would cause a fatality.

ACTIVITY 2: INTRODUCTION TO EACH ICON

PPT slides 27-50, SG pages 9-20

Time
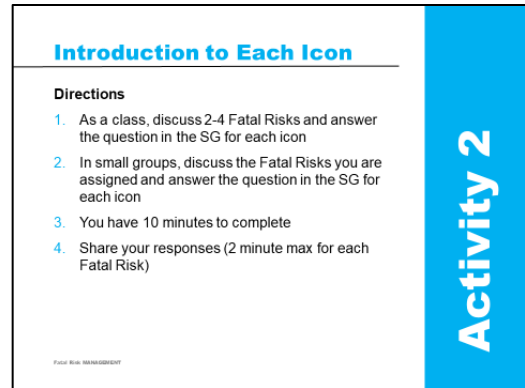Approximately 60 minutes

Materials
- Activity 2: Introduction to Each Icon worksheets (SG pp. 9-20)
- Pens, pencils

Purpose
- This activity gives students the opportunity to apply their knowledge of the Fatal Risk Management icons to their work area and employees.

Instruction

1. As a class, discuss 2-4 Fatal Risks and answer the question in the SG for each icon

2. Break the class into small groups, and tell them to discuss the Fatal Risks assigned to them and answer the question in the SG for each icon

3. Give them 10 minutes to complete

4. Give each group two minutes to present each of their Fatal Risks (advance to the correct slide as groups present)

PPT slide 28, SG page 9

Interaction with Aircraft

- Interaction with manned, unmanned, fixed and rotary wing aircraft.
- What jobs or tasks are related to this Fatal Risk?
- Read the Incident in the SG

Instruction

- Read definition for Fatal Risk.
- Discuss the question.
- Have students read PFE on their own or ask for a volunteer to read out loud.
- Discuss Critical Controls for the PFE.
- Allow a moment for students to write notes in their SG.

Incident

When mobilizing to a new fly camp location, a passenger disembarked from the helicopter and moved to the front of the helicopter as instructed; however, the individual did not stop at the designated 'safe location' but continued to move onward onto an up-sloping area that put him in near contact with the rotor blades. The employee had received a pre-flight safety briefing.

The flight crew knew of this particular hazard at this helipad and avoiding this hazard was emphasized in the pre-flight briefing.

Critical Controls	Jobs or Tasks
• Aircraft Suitability and Maintenance • Fixed/Rotary Aircraft Pre Mission Planning • Positive Communication Systems • Qualified Personnel • UAS/UAV Pre Mission Planning	• Piloting UAS • Piloting manned aircraft

PPT slide 29, SG page 9

Instruction

- Read definition for Fatal Risk.
- Discuss the question.
- Have students read PFE on their own or ask for a volunteer to read out loud.
- Discuss Critical Controls for the PFE.
- Allow a moment for students to write notes in their SG.

Incident

A blasting team was preparing for a shot in the pit. The security department conducted clearance of nearby non-mining areas; however, an exploration drill site 650 feet (200 meters) away was not cleared of employees. When the blast pattern was shot, fly rock measuring approximately 5 inches (15 centimeters) landed at the drill site. No employee injury or equipment damage occurred.

Critical Controls	Jobs or Tasks
• Blasting exclusion zones and access control • Inspection of explosives transportation vehicle • Segregation of explosives during transportation • Execution of charging and handling protocol • Management of misfires • Storage exclusion zones and access control	• Transporting explosives • Clearing blasts • Blasting

PPT slide 30, SG page 10

Instruction

- Read definition for Fatal Risk.
- Discuss the question.
- Have students read PFE on their own or ask for a volunteer to read out loud.
- Critical Controls are listed for reference but will be discussed later.
- Allow a moment for students to write notes in their SG.
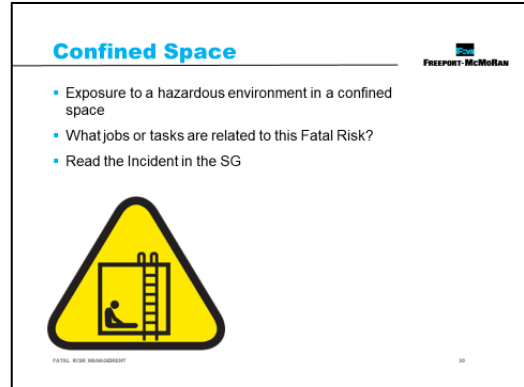
Incident
A contractor started to work on a locked out valve just outside of the confined space after being told not to as it was locked out for the confined space work. The valve needed to be turned so that the valve wheel allowed operator access. While the contractor worked on the valve, it opened and solution started to pour on the employee who was welding inside the confined space. The employee dropped the welding lead into the solution and received a shock. The employee was helped outside.

Critical Controls	Jobs or Tasks
- Atmospheric monitoring - Energy isolation / LOTOTO - Entry permit execution	- Utility work - Trenching/excavation - Entering into machinery - Pits and sumps - Tanks

PPT slide 31, SG page 10

Instruction

- Read definition for Fatal Risk.
- Discuss the question.
- Have students read PFE on their own or ask for a volunteer to read out loud.
- Critical Controls are listed for reference but will be discussed later.
- Allow a moment for students to write notes in their SG.

Incident

Contract electricians / lineman were assigned to work on three pole structures just off of the access road. While repositioning the bucket, the top portion of the knuckle made contact with one of the energized 69kv line, resulting in a short to one of the de-energized 12.5 lines causing it to break. No employee injury or equipment damage occurred.

Critical Controls	Jobs or Tasks
• Access control • Barriers and Segregation • Electrical PPE • Drawings and Labels • Energized Electrical Work Permit Execution • Energy Isolation/LOTOTO	• Line work • Electrical installation • Demolition • Tankhouse activities

PPT slide 32, SG page 11

Instruction

- Read definition for Fatal Risk.
- Discuss the question.
- Have students read PFE on their own or ask for a volunteer to read out loud.
- Critical Controls are listed for reference but will be discussed later.
- Allow a moment for students to write notes in their SG.

Incident
Smelter Operator was cleaning the ISA Furnace concentrate feed-port. While attempting to remove the cleaning hammer from the port, the employee was splashed with molten material causing second and third degree burns to the head and neck. The employee was wearing the required PPE.

Critical Controls	Jobs or Tasks
- Access Control - Cooling Element Monitoring - Engineered Molten Metal Conveyance System - Fire Suppression Systems (Molten Metal Hauler) - Furnace and Taphole Integrity - Hot Metal PPE - Pot Level Controls - Process Controls - Slag Chemistry Management - Integrity of Cooling System Components	- Smelting - Work around furnaces, converters, and anode plants - Refining - Rod mill - Tapping

PPT slide 33, SG page 11

Instruction

- Read definition for Fatal Risk.
- Discuss the question.
- Have students read PFE on their own or ask for a volunteer to read out loud.
- Critical Controls are listed for reference but will be discussed later.
- Allow a moment for students to write notes in their SG.

Incident
As employees were working at a tailings pond barge, they noticed that water had risen above the platform. Before they could reach the system control panel, the barge suddenly flipped over and the occupants fell into the reservoir. Workers were wearing lifejackets and swam to shore. Moderate injuries were documented.

Critical Controls	Jobs or Tasks
• Access control • Access integrity • Barrier and segregation • Flotation devices	• Boat usage • Tailings work • Vats • Tanks

PPT slide 34, SG page 12

Instruction

- Read definition for Fatal Risk.
- Discuss the question.
- Have students read PFE on their own or ask for a volunteer to read out loud.
- Critical Controls are listed for reference but will be discussed later.
- Allow a moment for students to write notes in their SG.

Entanglement and Crushing

- Contact with machinery/moving parts (entanglement, crushing, pinching, penetrating, and cutting forces)
- What jobs or tasks are related to this Fatal Risk?
- Read the Incident in the SG

Incident

A crew was pulling chain segments over the head assembly on an apron feeder. The chain did not line up with the sprocket teeth. They used a 50 ton jack to push the links into alignment. There were 3 segments above the one they were working on that were not supported. When the links dropped onto the sprocket, it jolted causing the pulley to roll and the three unsupported pans to fall. The third segment caught the employee's forearm in between the journal and the sprocket, resulting in fracturing both bones.

Critical Controls	Jobs or Tasks
• Blocking for maintenance work • Energy isolation/LOTOTO • Guards, barriers, and barricades	• Conveyor work • Vehicle maintenance • Equipment maintenance • Proximity to any of the above

PPT slide 35, SG page 12

Instruction
- Read definition for Fatal Risk.
- Discuss the question.
- Have students read PFE on their own or ask for a volunteer to read out loud.
- Critical Controls are listed for reference but will be discussed later.
- Allow a moment for students to write notes in their SG.

Incident

After a shutdown, the molybdenum de-oiling kiln was locked out to allow for cleaning of the kiln discharge. The operator was wearing a respirator and began to clear away the build-up with a chisel. At that moment, he discovered a dust cloud developing and an unfamiliar odor. The operator backed away from the kiln and left to retrieve a full-face respirator. En route to the chemical plant control room, the operator complained of feeling dizzy. He was transported to the hospital for medical evaluation. It was determined that the operator had been exposed to carbon monoxide.

Critical Controls	Jobs or Tasks
- Access control - Alarm systems - Engineered controls - Handling requirements - Loading and unloading protection - Mechanical integrity of storage and distribution - PPE	- Chemical handling - Acid loading and unloading - Smelter work - Tankhouses - Moly circuits - Processing plants - Laboratories

PPT slide 36, SG page 13

Instruction

- Read definition for Fatal Risk.
- Discuss the question.
- Have students read PFE on their own or ask for a volunteer to read out loud.
- Critical Controls are listed for reference but will be discussed later.
- Allow a moment for students to write notes in their SG.

Incident
There have been several confirmed cases of silicosis, including at least one fatality.

Critical Controls	Jobs or Tasks
• Access control • Handling requirements • Engineered controls • PPE	• Chemical handling • In-pit operations • Smelter work • Tankhouses • Moly circuits • Processing plants

PPT slide 37, SG page 13

Fall from Heights
- Working at height where the danger of falling exists
- What jobs or tasks are related to this Fatal Risk?
- Read the Incident in the SG

FATAL RISK MANAGEMENT   37

Instruction
- Read definition for Fatal Risk.
- Discuss the question.
- Have students read PFE on their own or ask for a volunteer to read out loud.
- Critical Controls are listed for reference but will be discussed later.
- Allow a moment for students to write notes in their SG.

Incident

A contractor was assisting with the removal of a steel beam using a crane. The steel beam was located underneath a hanging head pulley. Removing the steel beam created an opening in the area. As the beam was being lifted into a stable and flat position, the employee slipped and fell through the opening. He fell approximately 13 feet (4 meters) and landed on the roof of a conveyor. Employee was immediately transported for a medical evaluation.

Critical Controls	Jobs or Tasks
• Fall protection system • Leading edge/open hole protection • Fixed work platform • Mobile work platform • Scaffold	• Roof work • Climbing • Exposure to unprotected edges

PPT slide 38, SG page 14

Instruction

- Read definition for Fatal Risk.
- Discuss the question.
- Have students read PFE on their own or ask for a volunteer to read out loud.
- Critical Controls are listed for reference but will be discussed later.
- Allow a moment for students to write notes in their SG.

Incident
Employee was closing a door on the plant, due to rainy conditions. The welds holding the three hinges in place failed causing the door to fall. The door struck the employee on the back of the hard hat and his shoulder blade knocking him to the ground. Employee suffered minor injuries.

Critical Controls	Jobs or Tasks
• Barriers and segregation • Integrity of overhead structure and equipment • Securing devices • Work area management	• Work overhead • Stacked materials

PPT slide 39, SG page 14

Instruction

- Read definition for Fatal Risk.
- Discuss the question.
- Have students read PFE on their own or ask for a volunteer to read out loud.
- Critical Controls are listed for reference but will be discussed later.
- Allow a moment for students to write notes in their SG.

Incident

During a three-day heat up schedule on a furnace, the pipe burners malfunctioned creating an oxygen-deficient environment. The operator that was assigned to fire watch immediately isolated the gas and began trying to re-ignite the burners. He experienced difficulty in re-lighting the burners for 20 minutes, at which point an uncontrolled combustion of the natural gas occurred inside of the furnace, causing flames to eject out the mouth. The operator was working on an elevated platform a few feet (1 meter) away from the flames but was unharmed.

Critical Controls	Jobs or Tasks
• Alarm systems • Evacuation plan • Fire suppression systems • Hot work permit execution • Rescue systems • Segregation and storage	• Hot work • Receiving of potentially flammable or combustible materials • Startup or maintenance of smelter/furnace/dryer operations

PPT slide 40, SG page 15

Instruction

- Read definition for Fatal Risk.
- Discuss the question.
- Have students read PFE on their own or ask for a volunteer to read out loud.
- Critical Controls are listed for reference but will be discussed later.
- Allow a moment for students to write notes in their SG.

Ground Failure

- Exposure to failure of natural slopes and temporary or permanent slopes which are excavated or constructed in relation to mining activities or associated supporting infrastructure
- What jobs or tasks are related to this Fatal Risk?
- Read the Incident in the SG

FATAL RISK MANAGEMENT   40

Incident

A severe rain event triggered a series of mudslides on a mountain slope. The event caused a large debris flow of soil, vegetation, and large boulders to descend a steep river channel into the town. The mudslide took the lives of two employees and damaged infrastructure throughout the town.

Critical Controls	Jobs or Tasks
• Geotechnical inspection and monitoring • Slope plan execution • Awareness and reporting • Excavation/trenching execution	• Trenching and excavation • Work around highwalls, benches and slopes • Stockpiles • Dumps

PPT slide 41, SG page 15

Instruction
- Read definition for Fatal Risk.
- Discuss the question.
- Have students read PFE on their own or ask for a volunteer to read out loud.
- Critical Controls are listed for reference but will be discussed later.
- Allow a moment for students to write notes in their SG.

Incident

Mechanics were changing wet end parts on a mill cyclone feed pump. One of these components was a suction plate weighing 3.5 tons, which was being mounted with a secondary hook on the 15 ton bridge crane (primary hook is 75 ton). After positioning the suction plate and installing approximately 60% of the nuts on the lugs of the pump, the mechanics heard a loud noise occurring from the failure of the 1.5" wire sling (rated for 21 tons). This resulted in the crane hook being projected approximately 65 feet (20 meters) up, landing on the walkway. There were no injuries.

Critical Controls	Jobs or Tasks
• Barriers and segregation • Mechanical integrity of lifting equipment • Lifting execution	• Crane use • Forklift use • Other rigging/hoisting operations

PPT slide 42, SG page 16

Instruction

- Read definition for Fatal Risk.
- Discuss the question.
- Have students read PFE on their own or ask for a volunteer to read out loud.
- Critical Controls are listed for reference but will be discussed later.
- Allow a moment for students to write notes in their SG.

Incident

While raising a man bucket with two occupants in a service shaft, the winder tripped causing the man bucket to fall approximately 65 feet (20 meters). Normally, a brake should engage automatically. The emergency brake had to be engaged manually. No employee injuries or equipment damage occurred.

Critical Controls	Jobs or Tasks
• Engineered hoisting system • Positive communication system	• Hoist/tram operations • Hoist/tram inspection • Hoist/tram maintenance

PPT slide 43, SG page 16

Instruction

- Read definition for Fatal Risk.
- Discuss the question.
- Have students read PFE on their own or ask for a volunteer to read out loud.
- Critical Controls are listed for reference but will be discussed later.
- Allow a moment for students to write notes in their SG.

Incident

A locomotive was returning to service after having had preventative maintenance. As it approached a descent on the tracks, the engineer noticed the brakes were not functional. He was not able to gain control of the locomotive, called a Mayday, and dismounted. The locomotive went off the tracks shortly after sliding several feet before impacting a semi-truck. The sole injury was a sprain/strain by the semi-truck operator.

Critical Controls	Jobs or Tasks
- Operator competency - Fit for work and fatigue management - Positive communication system - Access control - Scheduling, separation, and traffic control - Signaling and signage	- Work in and around rail yards and tracks - Train operations

PPT slide 44, SG page 17

Instruction
- Read definition for Fatal Risk.
- Discuss the question.
- Have students read PFE on their own or ask for a volunteer to read out loud.
- Critical Controls are listed for reference but will be discussed later.
- Allow a moment for students to write notes in their SG.

Incident

Employee was inspecting the brakes and wheels on a rail flat when he stepped on the parallel tracks and was struck by an oncoming flat. The flat car rolled over his foot and derailed. Employee suffered injuries to his lower and upper extremities.

Critical Controls	Jobs or Tasks
- Access control - Equipment maintenance - Positive communication system - Securing rolling stock - Segregation - Signaling and signage	- Work in and around rail yards, and tracks, where personnel are in the area

PPT slide 45, SG page 17

Instruction

- Read definition for Fatal Risk.
- Discuss the question.
- Have students read PFE on their own or ask for a volunteer to read out loud.
- Critical Controls are listed for reference but will be discussed later.
- Allow a moment for students to write notes in their SG.

Incident
A cook was using a pressurized pot in the kitchen of the camp mess hall. While the cook was nearby and two other employees were about 10 feet (approximately 3 meters) away, the pot exploded. The explosion caused property damage and minor injuries.

Critical Controls	Jobs or Tasks
• Energy isolation/LOTOTO • Guards, barriers, and barricades • Pipe Management • Hose coupling lock system • Piping Hoses and Equipment Mechanical Integrity • Relief valves • Tensioned lines management • Tire management	• Work including maintenance, testing, diagnostics, and commissioning of live systems • HDPE activities • Pressurized vessels and systems • Unloading of materials (straps) • Pneumatic tire work

PPT slide 46, SG page 18

Instruction
- Read definition for Fatal Risk.
- Discuss the question.
- Have students read PFE on their own or ask for a volunteer to read out loud.
- Critical Controls are listed for reference but will be discussed later.
- Allow a moment for students to write notes in their SG.

Incident
Two contractors were conducting routine core sampling from a drilling location underground. They were traveling through a tunnel in a truck when their portable gas detectors started to indicate a low level of oxygen. Both employees realized the ventilation in the area was off. While they were attempting to exit the area, the truck lost power. Both employees started to feel dizzy and experienced difficulty breathing. They decided to immediately exit the vehicle and walk out of the area.

Critical Controls	Jobs or Tasks
• Refuge chambers/Escape Routes • Self-rescuer • Ventilation monitoring • Ventilation system	• Drilling operations • Blasting operations • Chemical/hazardous material use (paint, epoxy, etc.) • Vehicle operations underground (emissions and diesel particulate matter)

PPT slide 47, SG page 18

Instruction

- Read definition for Fatal Risk.
- Discuss the question.
- Have students read PFE on their own or ask for a volunteer to read out loud.
- Critical Controls are listed for reference but will be discussed later.
- Allow a moment for students to write notes in their SG.

Incident
While cleaning up a spill on a conveyor belt, a rush of materials began sliding towards the group of employees. One employee was hit in the arm by a rock, but all personnel were able to escape. Employee suffered fractured elbow.

Critical Controls	Jobs or Tasks
• Backfill management and control • Draw point management and control • Entry point barriers • Ore passes, chutes, and raise controls • Probe drilling	• Work in and around wet muck areas

PPT slide 48, SG page 19

Instruction

- Read definition for Fatal Risk.
- Discuss the question.
- Have students read PFE on their own or ask for a volunteer to read out loud.
- Critical Controls are listed for reference but will be discussed later.
- Allow a moment for students to write notes in their SG.

Incident
An employee was working under an unsupported ground after a blast. A rock weighing approximately 55 lbs (25 kg) fell from the rook striking the employee in the head. Employee sustained a cut on his head.

Critical Controls	Jobs or Tasks
• Engineered support systems • Geotechnical inspections and monitoring systems • Ground control management plan execution • Scaling	• Jumbo operations • Panel development • Barring down/scaling activities • Rock bolting activities

PPT slide 49, SG page 19

Instruction

- Read definition for Fatal Risk.
- Discuss the question.
- Have students read PFE on their own or ask for a volunteer to read out loud.
- Critical Controls are listed for reference but will be discussed later.
- Allow a moment for students to write notes in their SG.

Incident

An employee was traveling to a maintenance shop on a haul road. Eight haul trucks drove by creating a partial obstruction with the dust and their lights. Employee drove into the right hand berm to avoid collision. No spotters were in the area and no equipment contact was made.

Critical Controls	Jobs or Tasks
- Operator competency - Fit for work and fatigue management - Vehicle pre-operational inspection - Positive communication system - Access control - Segregation - Signage and demarcation - Road design and maintenance	- Mobile equipment and light vehicle interaction - Driving on uneven surfaces (dumps, benches, edges/cliffs)

PPT slide 50, SG page 20

Instruction

- Read definition for Fatal Risk.
- Discuss the question.
- Have students read PFE on their own or ask for a volunteer to read out loud.
- Critical Controls are listed for reference but will be discussed later.
- Allow a moment for students to write notes in their SG.

Incident

Two employees were retrieving a vehicle after a repair. One employee positioned himself between this vehicle and another vehicle to conduct a pre-operation inspection. The second employee turned on the ignition. The vehicle was in 1st gear and moved forward, pinning the first employee between the vehicles. Employee suffered minor injuries.

Critical Controls	Jobs or Tasks
- Vehicle pre-operational inspection - Positive communication system - Segregation - Signage and demarcation - Fundamentally stable parking	- Personnel in or around vehicles or vehicle Travelways - Vehicles operating off roads (lots, warehouses, storage areas)

Break

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

HOW FRM WORKS

This section contains introductory information about the tools specific to Fatal Risk Management.

LEARNING OBJECTIVES

Upon completion of this course, students will be able to:
- Select the appropriate Fatal Risk Management icons based on the hazards associated with the task and environment
- Identify appropriate Fatal Risk Management tools specific to the needs of the work area and employees
- Differentiate the roles and responsibilities of employees, supervisors, and managers
- Demonstrate effective communication skills for transferring program concepts to employees

ACTIVITIES

- Activity 3: Identifying Fatal Risks
- Activity 4: Fatal Risks and Critical Controls Part One
- Activity 5: Fatal Risks and Critical Controls Part Two

For further details, refer to "Activity Materials" under "Facilitator Preparation" on page 6.

TOTAL TEACHING TIME

This section takes approximately 60 minutes to complete.

PPT slide 51

Instruction

- This section contains introductory information about the tools specific to Fatal Risk Management.

PPT slide 52

Instruction

- Ask the students to answer the question.
- Ask the students about opportunities to combine some of the repetitive work, and explain that the Fatal Risk Management systems aim to do that.
- DOHS is not trying to add another safety requirement to those activities that you are doing, but trying to enhance them or replace them, if necessary.

How FRM Works

- What are some of the tools we use in the field to plan work?
  - SOP
  - JSA
  - Risk assessment
  - Work instruction
  - Toolbox Talk
  - Critical Control Audits
  - Field Verifications
  - Others?
- The Fatal Risk Management system can combine and eliminate some of the repetition

PPT slide 53

Instruction

- Before you play the video, ask the students to either see if any of the ideas are realistic for their site or if they can think of other ways to implement the icons.
- Discuss responses after the video ends.
- The video is an example of how leaders can utilize the FRM tools in their tailgate meetings and how they can verify Critical Controls in the field.
- It does not mean that all tailgate meetings must be operated like the one in the video.

How FRM Works

- Watch the video to see utilization of the FRM tools
- Think of ways you can implement some of the ideas at your property

https://web.microsoftstream.com/video/29b89c5f-1a6c-408f-a743-ed410e14f6a9

PPT slide 54, SG page 25

Instruction

- There are three tools available within the Fatal Risk Management: the icons, the verification questions, and the Cority system.

How FRM Works

- Fatal Risk Management tools
  - Icons
  - Cority System
  - Verification questions
- Supervisors can use these tools to
  - Enhance tailgate meetings
  - Improve field verification of Critical Controls
  - Empower employees to stop work

PPT slide 55, SG page 25

Instruction

- Icons can be used in a number of ways. Each method of use will vary from site to site and each site is responsible for determining how the icons are implemented.
- Icons represent the most critical Fatal Risks, or their roots, for all operating locations, however it is possible not all risks will be captured. If a site believes a Fatal Risk is missing or an additional icon should be created, it is imperative that this concern is addressed with supervision or management who can then bring it to the attention of DOHS.
- **Note:** Do not attempt to modify, alter, or create any portion of the Fatal Risk Management program, such as icons, Critical Controls, or verification questions.

FRM Tools

Icons
- Visual cue to communicate a potential risk
- Implementation of icons will vary site to site
- Intended to represent the most critical fatal risks
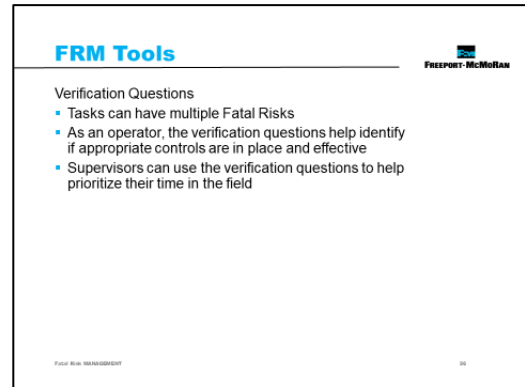
PPT slide 56, SG pages 25

Instruction

- Discuss the bullets on the slide.
- Review the examples provided.
- The intent here is every day operators will identify their Fatal Risks and review Critical Controls prior to beginning their task(s).
- Reiterate the focus on stopping work if controls are missing or ineffective.
- Critical Controls are pre-defined and listed for each Fatal Risk.
- The verification questions help ensure that Critical Controls are in place. In some cases, a single task might have multiple Fatal Risks associated with it. Verification Forms are one way the verification questions can be implemented. The idea is that each of these questions is answered yes, no, or not applicable for this task. A no answer indicates that the control is missing or is not effective, and the job must be stopped until the control is either in place or functioning correctly. Completing the verification questions gives employees and supervisors a quick overview of how safely the job or task can and is being performed. These can be used in multiple ways, as talking points during tailgates, as conversations in the field when looking at a job in progress, or as an audit for Critical Controls. Verification questions are an additional layer of accountability that the Critical Controls are in place. It is important to keep these lines of communication open, so that safety stays at the forefront of every decision.
- Prior to performing a job, the operator and/or crew should identify any potential Fatal Risks and ask themselves the relevant questions. If a Critical Control is not in place or implemented in an effective manner, then the job will be stopped until the issue is addressed.

PPT slide 57

Instruction
- Click through the example for "Fall from Heights".
- The concept of this slide is to illustrate how for each Fatal Risk icon we have created a set of Critical Controls. For each Critical Control we have created a set of simple verification questions that can be used for discussion purposes or as a reminder of what needs to be considered before the job. Each question is meant to be answered with either a Yes, No, or Not Applicable. These are not set in stone and we are open to suggestion for adding and modifying these items. **The idea is that they help remind people quickly what they need to consider before proceeding with work.** In many cases not all of the Critical Controls will apply to every job. Same with the verification questions. That is when Not Applicable is appropriate. Any time a No is given to a question work should be stopped immediately until the issue can be resolved. The idea is that the Critical Controls and the verification questions are available to everyone as part of empowering the workforce to stop work when something critical is missing.
- Many of the Critical Controls are somewhat general in nature because they need to apply to a range of different job tasks and work settings across the company. These are also not meant to be an exhaustive list of controls for every job. Nor are they meant to replace an SOP. Again, they are there to remind people what is critical based on past fatalities and to encourage conversations during pre-job assessments.
- **Note:** There is a process for adding or changing elements of the FRM program. Take any questions or concerns to supervision or health and safety. Changes will be evaluated and implemented annually as needed.
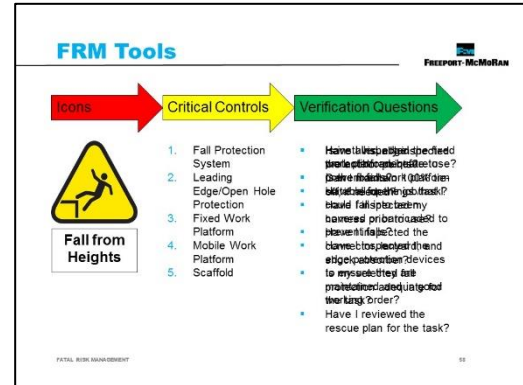
PPT slide 58, SG pages 26-26

Instruction

- Cority is a relatively new system to the Company. It was primarily used for Industrial Hygiene purposes, but has recently been adapted for other uses. When an issue with a Critical Control is reported, the information is recorded in Cority.
- When used appropriately, the system can help track leading indicators to help managers and health and safety determine where controls are failing, missing, ineffective or can be strengthened to create safer working spaces and safer jobs for our employees. It is important to note that the software is not a way to identify people who are underperforming, but rather to identify jobs that can be made safer. There is no punishment, there is no name tracking associated with this software, or with any of the verification questions.
- By querying specific data, supervisors can track the use or misuse of Critical Controls. This aids in Critical Control concerns and improvements. This information can be compared and shared across the sites.
- Field verifications conducted with verification questions by Supervisors or Management can be loaded into the Cority system.

PPT slide 59, SG page 28

Instruction

- Discuss the bullets on the slide.

PPT slide 60, SG page 28

Instruction
- These images show icons being used at PTFI.
- Banners were used to introduce the program at the Grasberg mine area.
- Laminated verification forms- are available in the shop and then when a job is performed. They take those applicable verifications to the work location, discuss the Fatal Risks and complete a verification of Critical Controls.
- Metal signs were posted around the mine areas and shops to communicate Fatal Risks in the area.
- Be cautious not to plaster the entire site. Oversaturation will dilute the intent of the program.

PPT slide 61, SG page 28

Instruction
- These images show icons being used at El Paso.
- Task Specific Fatal Risk Documents- customized to their work assignments, keeping the same Critical Controls as the verification questions, etc. (this is important that they are consistent)
- Line Out Room Task board- utilized in the work area or tailgate meeting similar to the video that was viewed earlier. Some El Paso teams have this in the middle of the work area.
- Signs and stickers, when placed appropriately and sparingly can help enhance messages or draw attention to specific areas of concern.
- Ask for additional examples that students may have seen.

PPT slide 62, SG page 29

Instruction
- Review the bullets on the slide.
- The expectations are intended to reiterate that the tools should be utilized in ways that make sense for the site, the division, dept., etc.
- There shall not be modifications to the icons, Critical Control questions, etc.
- If there are changes needed, a discussion with DOHS will need to be scheduled.
- The program is intended for Fatal Risk Management and only that. Not for bruised knees, not for a sore back, etc.
- It is absolutely crucial that we be disciplined about managing it with Fatal Risks.

PPT slide 63, SG page 29

Instruction
- Review the bullets on the slide.
- The expectations are intended to reiterate that the tools should be utilized in ways that make sense for the site, the division, dept., etc.
- There shall not be modifications to the icons, Critical Control questions, etc.
- If there are changes needed, a discussion with DOHS will need to be scheduled.
- The program is intended for Fatal Risk Management and only that. Not for bruised knees, not for a sore back, etc.
- It is absolutely crucial that we be disciplined about managing it with Fatal Risks.

PPT slide 64, SG page 30-31

Instruction
- Ultimately, each site will define the specifics around the frequency of and the person responsible for the verification questions.
- Employee
    - Review the questions on the slide.
    - If any of these are answered with a "no", stop the job.
    - Discuss other responsibilities.
        - Performs the tasks needed to successfully complete the job
        - Exposed to the risks more often than any other position on the property
        - Plays a vital role in identifying issues or potential issues by using the verification questions
        - Ensures effective Critical Controls are in place and stops the job if they are not
- Supervisor
    - While the supervisor may not be performing the job out in the field like the employee, he/she also greatly impacts the Fatal Risk management program.
    - It is important that the messages being conveyed center on safe production, rather than production pressure.
    - Supervisors are also responsible for providing the necessary resources to employees to ensure jobs are performed.
    - Review the questions on the slide.
    - Discuss other responsibilities.
        - Ensures employees understand the training, potential Fatal Risks and Critical Controls in their area
        - Leads discussions at tailgate meetings and in the field
        - Verifies icons are being utilized
        - Verifies employees are identifying the Fatal Risks for the jobs they are performing and implementing effective Critical Controls
    - Delivers safe production messages

PPT slide 65, SG page 31-32
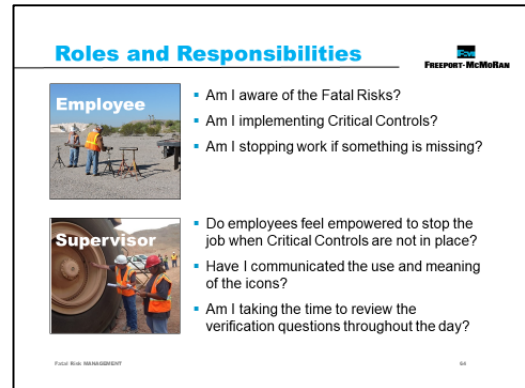
Instruction

- Manager
  - o In addition, managers are responsible for verifying appropriate use of tools in the field and at the administration level; and developing milestones, expectations, plans, and accountability.
  - o Review the questions on the slide.
  - o Discuss other responsibilities.
    - ▪ Responsible for many areas and people at their site
    - ▪ Relies on the supervisors and employees to act responsibly and safely
    - ▪ Provides systems, tools, and resources
    - ▪ May verify supervisors are following expectations of the training
    - ▪ Establish the requirements for completion of verification questions and site metrics
    - ▪ Evaluate data to determine site trends and make changes as needed
- In Fatality Prevention, we learn about the power of the message, and how the sender and receiver can misinterpret the information.
- Body language and tone of voice can influence the strength or importance of the message.
- When preparing to speak with frontline employees, take the time to practice your message and interaction.
- Use of the icons and discussions about "what will kill you" are new. Consider the different ways they can be misinterpreted and keep those in mind as you speak about the program. More clear discussions should occur not to scare, but to encourage employees to speak freely and openly about hazards.
- It is important that employees understand the Fatal Risk Management program, in its entirety.
- Review the questions on the slide.

Instruction

- The Supervisor Talking Points is another tool available for use when communicating the program to employees.
- Review the document prior to training and be available should questions arise.
- By having the conversation both before and after the training, the employee is more likely to understand and retain what is expected of him/her.
- Remind Supervisors:
  - o Utilize the talking points to help educate your employees and utilize your resources.
  - o Don't attempt to push everything on crews all at once, consider starting small (one basic task) and building up from there.
  - o Once employees and supervisors get comfortable with the materials and intent, the involvement and energy should build and expand.

PPT slides 67-71, SG pages 35-37

Time
Approximately 15 minutes

Materials
- Worksheet in the SG (pages 36-37)
- Icons with titles handout in SG (page 35)
- Pens/pencils

Purpose
- This activity gives students the opportunity to identify Fatal Risks given specific scenarios.

Instruction
1. Break the class into groups of approximately 4-6 students.
2. Direct them to review both photos on the worksheet.
3. Tell students to use the Fatal Risk icons in the SG to determine which Fatal Risks are present for that job and choose the appropriate icon(s). Remind the class that tasks/jobs can have multiple Fatal Risks.
4. Allow 5 minutes for them to complete.
5. Discuss responses as a class.
6. Clarify any confusion.

1. Area Housekeeping
Task: Clean and organize the area
Tools: Forklift, hand dolly, other necessary tools for cleaning
Factors: Vendor is parked outside the working area and is using a dolly to replace empty cylinders in the background, no weather concerns
- Discuss the job on the slide. Also in the SG.
- Ask the question on the slide.
- Review the responses provided.
- Advance to next slide.
- Ask them to identify the icon.
- Note on Fall from Heights
  - At the height presented, there is a greater likelihood of a minor injury than a fatality.

Continued on next page

- Note on Exposure to Hazardous Chemicals
  - Vendor is the one accessing the area with the bottles.
  - The likelihood of the bottles containing enough hazardous substance to be fatal is minimal.
- Note on Vehicle Collision and Rollover
  - Likelihood of a fatality from forklift hitting a parked truck is extremely low, if even possible.

2. Replace Building Panels
Task: Replace panels on top of the building
Tools: Crane, two manlifts, necessary hand and power tools
Factors: Not in a roadway, not exposed to other traffic or equipment, no weather concerns

- Discuss the job on the slide.
- Ask the question on the slide.
- Review the responses provided.
- Advance to next slide.
- Ask them to identify the icon.
- Correct any incorrect responses, but encourage discussion around Fatal Risks.

PPT slides 72-78, SG pages 38-42

Time
Approximately 20 minutes

Materials
- Worksheet in the SG (pp.40-42)
- FRM Every Day, Every Job… in the SG (pages 38-39)
- Pens/pencils

Purpose
- This activity gives students the opportunity to identify Fatal Risks and appropriate critical Controls given specific scenarios.

Instruction
1. Continue working in groups.
2. Direct them to review both photos on the worksheet.
3. Tell students to use the Fatal Risk icons in the SG to determine which Fatal Risks are present for that job and choose the appropriate icon(s). Remind the class that tasks/jobs can have multiple Fatal Risks.
4. Ask them to list the appropriate Critical Controls for each Fatal Risk.
5. Allow 10 minutes for them to complete.
6. Discuss responses as a class.
7. Clarify any confusion.

3. Pipeline Repair / Inspection
Task: Maintenance and repair on a pipeline
Work: Cut the pipe, enter the pipe to clear an obstruction, weld the pipe back together
Tools: Crane, necessary hand and power tools
Factors: Not in a roadway, not exposed to other traffic or equipment, no weather concerns
- Discuss the job on the slide.
- Ask the two questions on the slide.
- Review the responses provided.
- Advance to next slide.
- Ask them to identify the icon and associated Critical Controls.

4. Clean-up and Inspection around Conveyor

Task: Clean-up and inspection around conveyor

Work: Inspection, clean up and possibly minor maintenance

Tools: Required hand and power tools, including shovels

Factors: Not working at heights, no equipment or vehicles in the area, no weather concerns, and the conveyor is running

- Discuss the job on the slide.
- Ask the two questions on the slide.
- Review the responses provided.
- Advance to next slide.
- Ask them to identify the icon and associated Critical Controls.

5. Underground Utility Repair

Task: Underground utility repair

Work: Entering a trench, cutting a section of pipe, and welding the pipe back together

Tools: Crane and required hand and power tools

Factors: Not in a roadway or exposed to other traffic or equipment, and no weather concerns Discuss the job on the slide.

- Discuss the job on the slide.
- Ask the two questions on the slide.
- Review the responses provided.
- Advance to next slide.
- Ask them to identify the icon and associated Critical Controls.

PPT slide 79-85, SG pages 43-46

Time
Approximately 20 minutes

Materials
- Worksheet in the SG (pp. 44-46)
- Pens/pencils
- FRM Operator Reference Guide (1 per student)

Purpose
- This activity gives students the opportunity to identify Fatal Risks and Critical Controls given specific scenarios.

Instruction
1. Break the class into groups of approximately 4-6 students.
2. Direct them to review the photos on the worksheet.
3. Hand out the FRM Operator Reference Guides (1 per student).
4. Have them use the books to determine the Fatal Risks present for that job and choose the appropriate icon(s). Remind the class that tasks/jobs can have multiple Fatal Risks.
5. Ask them to list the appropriate Critical Controls for each Fatal Risk.
6. Allow 10 minutes for them to complete.
7. Discuss responses as a class.
8. Clarify any confusion.
9. Discuss how the books helped in the understanding of FRM and Critical Controls.

6. Process Tank Entry

Task: Process tank entry

Work: Entering tank to replace cover plate

Tools: Drop ladder, tripod rescue unit, torch/welder, and required hand/power tools

Factors: LOTOTO and required blocks and blinds performed; work communicated with affected individuals in the area; and proper flagging and barricading erected

Continued on next page

- Discuss the job on the slide.
- Ask the two questions on the slide.
- Review the responses provided.
- Advance to next slide.
- Ask them to identify the icon and associated Critical Controls.

7. Remove Broken Roaster Arm

Task: Remove broken roaster arm

Work: Removing a broken arm out of the roaster while roaster is hot

Tools: Forklift, chains, and other rigging supplies

Factors: Draft valves are 100% open; area is properly flagged and barricaded; and work communicated with affected individuals in the area

- Discuss the job on the slide.
- Ask the two questions on the slide.
- Review the responses provided.
- Advance to next slide.
- Ask them to identify the icon and associated Critical Controls.

8. Sample Materials

Task: Sample materials

Work: Mix chemicals and sample resulting solutions

Tools: Acids, bases, beakers, hot plate, vent hood

Factors: Area is free of tripping hazards and housekeeping issues; limited employees working in the area on similar tasks

- Discuss the job on the slide.
- Ask the two questions on the slide.
- Review the responses provided.
- Advance to next slide.
- Ask them to identify the icon and associated Critical Controls.

PPT slide 86

Instruction
- Review the questions on the slide.
- The purpose of this is to help with the retention of the information by asking students these questions.

Debrief

- How will these tools make you more efficient in discussing fatal risks and critical controls?
- What are some other ways the tools can be used?
- What do you need to help you be successful using this approach in the field?

FATAL RISK MANAGEMENT

Break

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

FRM IMPLEMENTATION AND PROGRESSION

This section contains introductory information about recommended timeframes for implementing the Fatal Risk Management Program.

LEARNING OBJECTIVES

Upon completion of this course, students will be able to:
- Select the appropriate Fatal Risk Management icons based on the hazards associated with the task and environment
- Identify appropriate Fatal Risk Management tools specific to the needs of the work area and employees
- Differentiate the roles and responsibilities of employees, supervisors, and managers
- Demonstrate effective communication skills for transferring program concepts to employees

ACTIVITIES

- Activity 6: Tailgate Talk

For further details, refer to "Activity Materials" under "Facilitator Preparation" on page 6.

TOTAL TEACHING TIME

This section takes approximately 40 minutes to complete.

PPT slide 87

Instruction
- This section contains introductory information about recommended timeframes for implementing the Fatal Risk Management Program.

PPT slide 88, SG page 51

Instruction
- Fatal Risk Management is new and therefore will take time to implement.
- There are projected timelines for each segment of the deployment.
- These time frames are approximate and are intended to represent the length of time expected to train each property.
- As the number of employees vary per site, so will the timelines.

PPT slide 89, SG page 51

Instruction
- These actions are suggested for this time frame to get the employees used to the terminology and tools.
- Review each bullet on the slide.
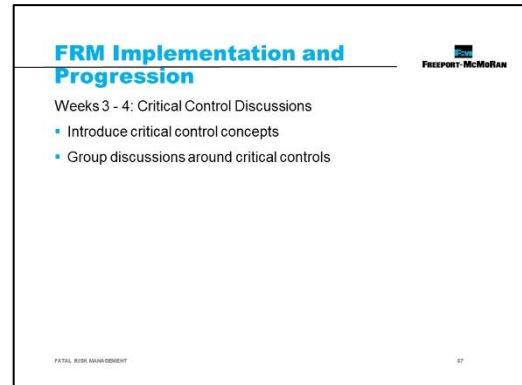
PPT slide 90, SG page 51

Instruction
- These actions are suggested for this time frame to get the employees used to the terminology and tools.
- Review each bullet on the slide.

FRM Implementation and Progression

Weeks 3 - 4: Critical Control Discussions
- Introduce critical control concepts
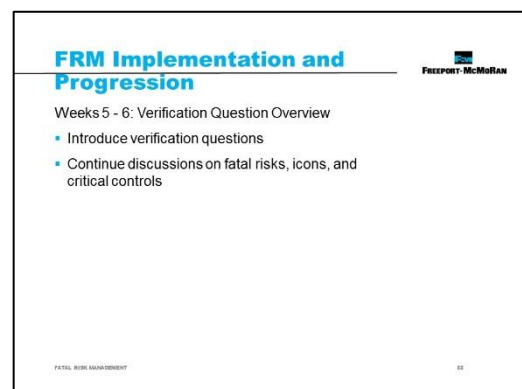- Group discussions around critical controls

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PPT slide 91, SG page 52

Instruction
- These actions are suggested for this time frame to get the employees used to the terminology and tools.
- Review each bullet on the slide.

FRM Implementation and Progression

Weeks 5 - 6: Verification Question Overview
- Introduce verification questions
- Continue discussions on fatal risks, icons, and critical controls

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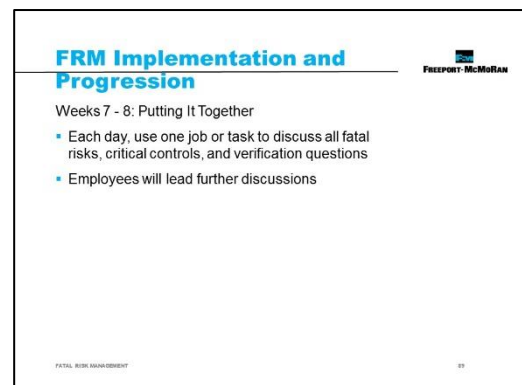
PPT slide 92, SG page 52

Instruction
- These actions are suggested for this time frame to get the employees used to the terminology and tools.
- Review each bullet on the slide.

FRM Implementation and Progression

Weeks 7 - 8: Putting It Together
- Each day, use one job or task to discuss all fatal risks, critical controls, and verification questions
- Employees will lead further discussions

PPT slide 93, SG page 53

Time
Approximately 25 minutes

Materials
- Worksheet in the SG (p. 53)
- Pens/pencils

Purpose
- This activity gives students the opportunity to practice speaking to their crew about Fatal Risk Management.

Tailgate Talk

Directions
1. Using the worksheet in the SG, create a tailgate or discussion explaining each of the tools
2. Propose at least one way that you would implement use of the icons for your crew
3. You have 10 minutes to complete
4. Be prepared to share your responses

Fatal Risk MANAGEMENT

Activity 6

Instruction
1. Direct each student to complete the worksheet in the SG by creating a tailgate or discussion explaining each of the tools.
2. Direct each student to then propose at least one way that he/she would implement use of the icons.
3. Allow 10 minutes to complete.
4. Ask for a couple of volunteers to conduct their tailgate talk, if time allows, ask for additional volunteers.
5. Ask for a couple of other volunteers to share their proposed ideas; if time allows, ask for additional ideas.

CONCLUSION

The conclusion debriefs students on the course as a whole and clarifies any unanswered questions.

According to the Safety and Health Policy, "The safety and health of all Freeport-McMoRan Inc. employees is of the highest priority and a core value of the company. It is crucial that we communicate with each other. Everyone must be aware of Fatal Risks and Critical Controls in the workplace. Using guidelines and tools will allow everyone to go home safely."

Fatal Risk Management is a continuation of the Fatality Prevention Program. Supervisors are introduced to key concepts to aid in their communication and roll out of the program to their frontline employees. Focus is placed on identifying Fatal Risks and Critical Controls in an attempt to safeguard all employees within the Company. Implementation of the program will be determined at the site level, which allows for customization and creativity.

Ultimately, Fatality Prevention is a living program and needs to be nurtured to grow. The program is owned by every front line employee, supervisor, manager, and leader. Encourage conversation around the concept of Fatal Risk management, so that it becomes a part of the language and work habits.

Taking the time to understand and deliver the message of working safely is important. Employees that are informed and encouraged to work smarter greatly affect the workforce.

ACTIVITIES

- Student End of Course Questionnaire (in SG)

For further details, refer to "Activity Materials" under "Facilitator Preparation" on page 6.

TOTAL TEACHING TIME

The conclusion takes approximately 15 minutes to complete.

PPT slide 94

Instruction
- The conclusion covers:
    - Debrief
    - Student End of Course Questionnaire

PPT slide 95, SG page 55

Instruction
- Review the bullets on the slide.
- Clarify any questions.

PPT slide 96

Instruction
- Review the debrief questions.
- Have students complete the Student End of Course Questionnaire (in SG).

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