FREEPORT-
MCMORAN

STUDENT GUIDE

SFT FCX1020C
FLAGGING AND BARRICADING

APRIL / 2019
VERSION 1.1

"The safety of the men and women in our workforce continues to be our highest priority."

Richard C. Adkerson
President and CEO, Freeport-McMoRan[1]

1 Richard C. Adkerson, "2015 Working Toward Sustainable Development Report." *Fcx.com*, June 8, 2016, Accessed August 11, 2016. http://www.fcx.com/sd/pdf/wtsd_2015.pdf

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SAFETY AND SAFETY AND HEALTH POLICY

FREEPORT-McMoRan

Freeport-McMoRan Inc.
Safety and Health Policy

The safety and health of all Freeport-McMoRan Inc. ("FCX") employees is of the highest priority and a core value of the company. Our objective is zero workplace injuries and occupational illnesses. Production and costs are critical to the well-being of the company, but these considerations must never take precedence over safety, employee health or protection of the environment.

We believe that all injuries and occupational illnesses are preventable. We further believe that safety and health considerations are integral to, and compatible with, all other management functions in the organization and that proper safety and health management will enhance rather than adversely affect production or costs.

A fundamental tenet of our policy is that there will be compliance with applicable internal and external safety and health standards. Safety and health is a line management responsibility and all safety and health policies and practices must be adhered to and actively supported by all levels of management. Each employee must take individual responsibility for his/her safety and that of their co-workers. It is the job of each employee to create a work environment that eliminates occupational health and safety hazards whenever possible. If a hazard cannot be eliminated, then employees must work together to ensure that it is effectively reduced or controlled. Assigning responsibility and determining accountability measures for safety and health performance are established at all levels of management. The Board of Directors will monitor and receive regular reports on outcomes and results.

We will measure progress to attaining our objectives against regularly established benchmarks. We will provide the training and resources necessary to achieve our safety and health benchmarks, and everyone will be held accountable for the results.

We will ensure that employees and contractors are properly trained and held accountable for following all prescribed safety procedures and practices. Safety and health issues will not be compromised. Each employee and contractor is responsible for their personal safety, the safety of others and the environment in which they work. No job will be considered so important, and no schedule so urgent, that time cannot be taken to perform work in a safe manner. Working safely is a condition of employment.

As a matter of philosophy and practice, we will hold all contractors operating at our facilities accountable for the same level of safety that we expect of ourselves. All contracts will include specific safety provisions designed to achieve this result. Regular audits of our contractor's safety compliance will be performed to ensure adherence with our policies and core values.

We will conduct comprehensive safety audits and industrial health audits on a regular basis at our operations to evaluate the status of compliance with our safety and health programs and will communicate that information to all levels of management.

The safety professionals working in our operating units are charged with assisting those units in achieving their safety and health objectives. They will assist management in developing and implementing effective safety programs, and will design the methods to effectively measure safety performance. They will also analyze compliance results and trends in order to make recommendations to improve performance.

We are committed to providing a safe and healthy workplace and to providing adequate resources through training programs, safety incentive programs, and occupational health programs to attain recognized leadership in matters of safety and health. We consider safety and health programs, both on and off the job, to be an investment in our most valuable resource - our employees.

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As amended by the Board of Directors through February 3, 2015

FATAL RISKS AND CRITICAL CONTROLS

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 communication for twenty-three Fatal Risks by implementing icons, definitions, and Critical Controls.

Fatal Risks are based on safety issues that have resulted in catastrophic 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.

For each identified Fatal Risk a list of necessary Critical Controls was developed to prevent or mitigate the most serious consequences of these risks. Once the Fatal Risk is identified, applying the most effective Critical Control is crucial. A Critical Control is a device, system, or process implemented to eliminate or reduce the risk for a task/job, and if missing or overlooked has the potential to lead to catastrophic outcomes such as serious injury or death. These Critical Controls are considered the most impactful on preventing a fatality or injury and have been previously established based on data. The absence or failure of a Critical Control significantly increases the risk of severe injury or death despite the existence of other controls.

While Flagging and Barricading, you may be exposed to potential fatal risks depending on the nature of the hazard being flagged. Identify any Fatal Risks prior to performing any task or job. Evaluate, implement and verify Critical Controls are in place prior to starting work, and throughout the work activity.

Immediately report unsafe working conditions and only perform tasks which you are trained and authorized to perform.

LEARNING OBJECTIVES

Learning objectives have been provided to establish guidance and focus throughout the course.

MODULE 1: FLAGGING AND TAGGING

Upon completion of this module, students will be able to:

- Explain the purpose of flagging and tagging.
- Analyze a scenario and select the appropriate flagging.

MODULE 2: BARRICADING

Upon completion of this module, students will be able to:

- Explain the purpose of barricading.
- Analyze a scenario and select the appropriate barricading.

MODULE 3: APPLICATION

Upon completion of this module, students will be able to:

- Summarize the role of the attendant and spotter/safety watch.
- Explain the process of installing, maintaining, and removing the control.

COURSE INTRODUCTION

Workplace examinations are conducted to identify any hazards in the work area. Once the hazards are identified, immediate action must take place. Depending on the type of hazard located, the course of action and control implemented vary. Always refer to the Hierarchy of Controls when selecting an appropriate control, keeping in mind the effectiveness and reliability of each level.

Flagging, tagging, and barricading are all recognized methods of controlling hazards. Each one involves limiting access to the hazard, but enforces the restriction differently. Flagging and tagging use a color-coded system with tags and tape to visually alert employees to a hazard or unsafe condition in the area. Barricades are physical obstacles restricting access to the identified hazard. By visibly identifying or blocking an area considered dangerous, incidents can be avoided.

Whether working near these restrictions, establishing them, or removing them, understanding their importance is critical. This course is intended for all Freeport-McMoRan employees. Employees are expected to refresh this training on an annual basis.

Flagging and Tagging

MODULE 1

MODULE 1: FLAGGING AND TAGGING

MODULE 1 LEARNING OBJECTIVES

Upon completion of this module, students will be able to:

- Explain the purpose of flagging and tagging.
- Analyze a scenario and select the appropriate flagging.

INTRODUCTION

There are times that you may become so focused on, or familiar with, a task that you fail to recognize the changing conditions around you. When involved in a routine task, it is not uncommon for attention to drift while the body continues the action. Most daily routine activities are performed automatically, without 100% focus as the brain and eyes continue to scan the environment for triggers or signs perceived as threatening or dangerous. When a unique or unusual cue is noticed, the brain then focuses and responds to the situation.

Throughout Freeport-McMoRan properties, flagging cues employees to a specific situation. The bright colors or placement of the flagging and tags are intended to draw attention to the location of and inform about the hazard. This method of communication relies on the employee's behavior to notice, react, and adhere to the reason for the flagging. All of the moving components on the properties make it necessary to recognize and understand markings.

HIERARCHY OF CONTROLS

The Hierarchy of Controls is mentioned throughout Freeport-McMoRan courses, and is utilized in many tasks and work areas. From installing a handrail to adopting a new practice, controls are put in place to create a safer environment for employees. The Hierarchy of Controls offers a framework for implementing mitigation strategies from the most effective to least effective. By following this approach, the likelihood of successful mitigation of a hazard greatly increases.

The five levels of the hierarchy (from the most effective to least effective) are elimination, substitution, engineering, administrative and Personal Protective Equipment (PPE). Flagging and tagging are considered an administrative control, in that it conveys a message to persons in the area.

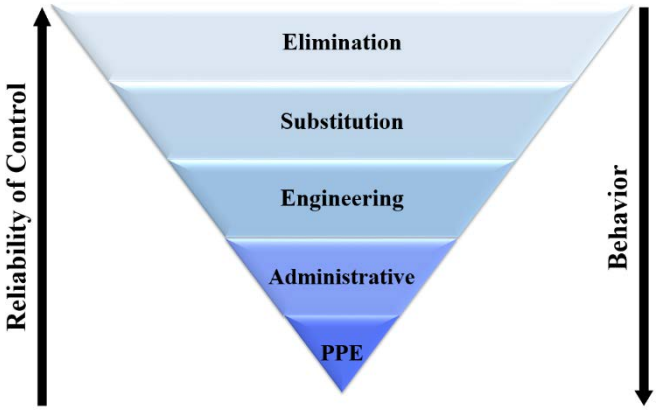

Fig. 1.1 Hierarchy of Controls

DEFINITION OF FLAGGING

Flagging is a tape, similar to police tape that is available in different colors. The color indicates why an area or item is flagged. Flagging is used to indicate a hazard or unsafe conditions exists and establishes the boundary of the hazardous area.

Fig. 1.2 Flagging a work area

Note: According to Freeport-McMoRan's Working at Heights Policy and Technical Supplement (FCX-HS02), in areas where there is a potential for falls, flagging alone is not a sufficient means of restricting access.

ACCEPTABLE FLAGGING COLORS

There are two acceptable flagging colors used on Freeport-McMoRan properties: yellow and red. Each of these colors is used to convey separate messages and the differences must be understood. With traffic lights, the green light represents go, the yellow light means caution, and the red light signifies stop. The colors of the flagging tape act in a similar manner with a yellow flag meaning caution and a red flag indicating danger.

Note: Additional flagging colors are used for non-safety purposes, such as surveying, environmental flagging, or for promotional purposes.

Fig. 1.3 Yellow and red flagging tape

WHEN TO FLAG

Flagging is used to warn or notify employees that a hazard or unsafe condition exists. Based on the severity of the potential hazards, the color of and the placement for the flagging varies. Always extend around all access points to the hazard.

Red "DANGER" flagging is used to indicate an immediately hazardous condition that could cause death or serious injury. Special additional precautions may be necessary. The only individuals authorized to work in red DANGER flagged areas include: persons performing work to mitigate the hazards, individuals in charge of the work being performed, and other escorted personnel, authorized by responsible person listed on tag. Escorts for red DANGER flagged areas must be authorized to be in the areas. Unauthorized entry is prohibited.

Yellow "CAUTION" flagging is used to indicate a hazardous condition that may lead to moderate injury. This color is suitable for situations where the employee only needs to maintain an awareness of the hazard. Before entering a yellow flagged area, all employees must read the corresponding tag to understand and avoid the hazard that is present. Employees not part of the hazard mitigation must only enter a yellow flagged area if business needs cannot be conducted anywhere else.

When either color of flagging is noticed in a work area or an area being passed through, take notice and exercise caution. If you have any questions or concerns, check with your supervisor or health and safety professional.

Fig. 1.4 Red flagging around a building

Fig. 1.5 Yellow flagging in a parking lot

Below is a table providing examples of hazards that may require flagging and is not all-inclusive.

Requires Flagging	Examples
Low potential hazards	• Tripping hazards • Spills • Leaks • Maintenance work
High potential hazards	• Swing radius of heavy equipment • Overhead work • Electrical work

DEFINITION OF TAGGING

Tags are used to communicate key pieces of information and are attached to the flagging or barricades. Per Freeport-McMoRan's LOTOTO Policy (FCX-04), tags must:

- Have a means of attachment substantial enough to prevent accidental removal.
- Be capable of remaining legible while withstanding the environment to which they are exposed.

The policy does not dictate tag colors and, therefore, a variety of tag colors can be found on sites. Tags should include:

- The nature of the hazard being flagged
- Contact information for the responsible person (consider shift and weekend work contacts)
- Any necessary PPE required for entry or work in the area
- The time and date installed

Fig. 1.6 Tags vary from site to site (Tag intentionally left blank)

Regardless of the color, all tags need to be noticeable. This includes hanging on all sides of the perimeter or all access points. Individuals entering the area must first go directly to the tag to become informed of the hazards.

WHEN TO TAG

Any area or item flagged or barricaded needs a tag to explain the reason for the marking. Without a tag, an employee coming across flagging may not be able to accurately determine what hazard is present. In addition, depending on the direction from which the employee approaches the flagged area, he or she may not be able to see the hazard at all from outside of the flagging. Check with your supervisor or health and safety professional to determine which site-specific tags are available for use.

Fig. 1.7 Warning employees about a housekeeping issue

ACTIVITY 2: COLOR SELECTION

Review each scenario below. Determine if you would apply yellow or red flagging. Provide a reason for your choice.

SCENARIO 1

You are entering a truck shop leading a tour for new employees and notice a puddle of water in the walkway. What color flagging should you select?

☐ **Yellow Flagging** ☐ **Red Flagging**

Why?

SCENARIO 2

You are performing a routine maintenance job that requires multiple hoses that are in a potential travelway. What type of flagging should you use to warn others of the hazard? Why?

☐ **Yellow Flagging** ☐ **Red Flagging**

Why?

SCENARIO 3

A contractor is removing plants from outside of an administrative building. The plants are located close to parking spaces. All of the plants are removed by hand digging. No equipment is needed for this task. What type of flagging should be used to block off the parking spaces? Why?

☐ **Yellow Flagging** ☐ **Red Flagging**

Why?

SCENARIO 4

You are tasked with performing maintenance on a building by repairing metal siding two stories off the ground. Prior to work beginning, decide what type of flagging should be used. You need to use an aerial work platform to complete this task. What type of flagging should you select and why?

☐ **Yellow Flagging** ☐ **Red Flagging**

Why?

SCENARIO 5

A worker is tasked with moving a pallet of material to a second floor storage area. The storage area is directly above doors leading to a stairwell and bathrooms and the only way to get the pallet there is by using a forklift. What type of flagging should they use, if any, and why?

☐ **Yellow Flagging** ☐ **Red Flagging**

Why?

Barricading

MODULE 2

MODULE 2: BARRICADING

MODULE # LEARNING OBJECTIVES

Upon completion of this module, students will be able to:

- Explain the purpose of barricading.
- Analyze a scenario and select the appropriate barricading.

INTRODUCTION

When flagging is not a secure enough method of restricting access, then the area must be barricaded. Barricading can be temporary or permanent, and provides more protection for employees from the identified hazard. Employees sometimes walk by barricades without considering their original purpose. For example, elevated platforms have handrails around the perimeter. Handrails are installed to prevent employees from falling over the edge. In this instance, the handrail is the physical barricade to the hazard.

DEFINITION OF BARRICADE

A barricade is used to physically prevent access to a fall or other serious hazards. Per the Freeport-McMoRan Flagging and Barricading Policy (FCX-HS19), a barricade must be used when permanent handrails and/or grating are removed, when other openings are exposed in the workplace resulting in a fall hazard, or to enclose hazardous areas. At Freeport-McMoRan sites, barricades come in a wide assortment, depending on the hazard and environment. A barricade must be tall enough and of sufficient strength to bar access to the hazard.

Fig. 2.1 A-frame barricade in use

HIERARCHY OF CONTROLS

Barricades are considered an engineering control. They are constructed and installed to physically prevent entrance into a hazardous area. Some scenarios require barricading to prevent exposure to the hazard. Flagging is an administrative control that does not prevent physical access to the hazard, but can be used in conjunction with barricades. As an engineering control, barricades are a reliable control for separating employees from a hazard, as long as they are installed and used properly.

USING BARRICADES

Proper use of barricades includes never entering a barricaded area unless authorized to do so. Failure to adhere to this can result in exposure to the hazard, injury, and disciplinary action. If the barricaded area happens to be across a travel path, find another way to reach the destination. The ability to step over or squeeze through a barricade does not mean entrance is allowed.

There are two types of barricades on Freeport-McMoRan properties: temporary and permanent. Whether or not a barricade is considered temporary depends on the hazard. If the hazard is temporary, such as a floor opening made for maintenance activities, then temporary barricading is used. In circumstances where a hazard always exists, such as a confined space, install a permanent barricade. Temporary barricades may also be used until a permanent barricade can be erected.

Fig. 2.2 Cones are used as a temporary barricade

Fig. 2.3 Permanent barricade restricts access to a suspended load

HIGH ENERGY HAZARDS

Employees work in areas where high energy hazards may exist. High energy hazards exist when conditions are such that severe injury or death are likely to occur. Some examples of these are:

- Leading edge/Open holes
- Confined spaces
- Open trenches
- Blasting operations
- High hazard areas (substations)

By applying the hierarchy of controls and following the practices established at your site, the risk of danger is minimized. Be aware of changing conditions and ensure appropriate barricading is in place. In circumstances where employees are exposed to high energy hazards, extra precautions may be required. Consult with your supervisor, health and safety professional, and your site-specific Standard Operating Procedures (SOPs) for further clarification.

OPEN HOLES

During a workplace examination, employees need to be thorough and observant. An examination of the walking surface must be included. Floor openings exist for a number of reasons, and can cause life-altering injuries, up to and including death. An open hole is any opening 12 in (0.3 m) or more in its least dimension, in any floor, platform, pavement, or yard, through which persons may fall. These openings must be covered with appropriate materials for the hazard and protected by a cover that leaves no openings more than 1 in (2.5 cm) wide.

Wall openings are just as important to identify as floor openings because the potential for a fall still exists. Open holes on a vertical surface are defined as a gap or open space in a wall, partition, vertical walking/working surface, or similar, at least 30 in (76 cm) high and at least 18 in (46 cm) wide, through which an employee can fall to a lower level.

The Freeport-McMoRan Working at Heights Policy and Technical Supplement (FCX-HS02) outlines in detail the expectations, regulations, and procedures when working in or around an open hole. The policy focuses on employee safety and all employees need to be properly trained on FCX-HS02 prior to working around open holes.

Fig. 2.4 A wall opening

USING THE APPROPRIATE TAG

While tags need to be bright and noticeable, the policy does not list any specific colors that must be used. The tags must contain all of the necessary information, and be visible from all access points around any flagging or barricades. If standard flagging is not used around the barricade, or the barricade is not typical, it is a best practice to also include a tag. In circumstances where barricading is permanent, danger/warning signs are commonly used in place of tags. For temporary barricading systems, always include a tag.

Check with your supervisor or health and safety professional for the site-specific tags available for use.

Fig. 2.5 Warning sign permanently installed

LADDERWAYS AND GATES

Railing systems have a break designed in their structure to allow for access, typically for ramps, fixed ladders, or stairways. Any opening needs to have a swinging gate to prevent employees from walking through.

When gates are used for a change in floor height, they must be a self-closing gate that slides or swings away from the hole and top rail/midrail. This requires the employee to stop, open the gate, and proceed through the opening at a slower pace. If the gate opens towards the lower level, the possibility exist for an employee to lean against it and fall.

Fig. 2.6 Gates swing towards the employee when the transition is to a lower level

TYPES OF BARRICADES

There are many types of barricades used to restrict access into hazardous areas. They vary across sites and tasks. Below are examples of barricades. These examples are not all-inclusive. Check with your supervisor or health and safety professional to determine what barricades are available at your site.

Chain link fence

- When properly installed, a chain link fence can be used as a permanent barricade to keep employees from entering. The fenced area should have signs or tags identifying the hazards.

Fig 2.7 Chain link fence

Snow fence (Construction fence)

- Snow Fence is a temporary barricade used to identify a potential hazard and to restrict access from unauthorized personnel.
- Snow fence is normally made up of plastic and is secured in place with fencing T-post; it usually sits three feet high.

Fig. 2.8 Snow fence

Haul Truck Tire

- May be used to block roadways that are closed to vehicle access or haul truck traffic.

Fig. 2.9 Haul truck tire

Jersey barriers (K-Rails)

- When jersey barriers are installed for barricading, they should be continuous so that persons cannot pass through the openings and be exposed to the hazards.

Fig. 2.10 Jersey barrier

Berms

- A pile or mound of material along an elevated roadway capable of moderating or limiting the force of a vehicle in order to impede the vehicle's passage over the bank of the roadway.
- Must be at least half the axle height of the largest vehicle to travel the roadway.
- May be used to block roadways that are closed to vehicle access.

Fig. 2.11 Berms on a road

Learn from Others

In May 2016, a maintenance employee with 6 years of experience was fatally injured at a cement plant. He went to the top of the slurry tank to perform a task. He fell 50 feet (15.24 meters) through a 3 foot by 4 foot (0.91 x 1.2 meters) opening in the walkway into the empty slurry tank below.

The operator was not wearing fall protection. Barricades were not in place.

Fig. 2.12 Arrows indicate missing grating (left) and control switch for his task (right)

RAILING SYSTEMS

Any working surface where a fall hazard exists, needs to have a railing system in place. The railing must be installed on any open sides, and typically consists of a handrail, a midrail, and a toe board. Modifications to the railing exist when access needs to be granted for a ramp, fixed ladder, or stairway.

Certain instances dictate the need for toe boards. Toe boards are in place to protect the open area underneath from materials or tools that may fall to the lower level. Toe boards must be included on any working surface or platform, if below the working surface there is a possibility of:

- pedestrian traffic
- moving machinery
- hazards to equipment by falling objects

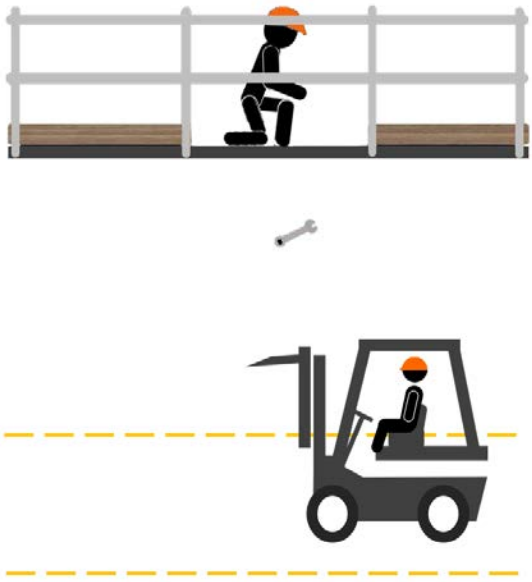

Fig. 2.13 Toe boards prevent these types of incidents

In these same instances, employees need to be aware of what is occurring above them. If there is a chance of employees conducting work overhead and endangering those on the lower level by dropping materials, then proper flagging and/or barricading is required.

Note: Per the Freeport-McMoRan Working at Heights Policy and Technical Supplement (FCX-HS02), railing systems and barricades installed around fall hazards must meet specific criteria.

- Install nets or other barriers to prevent falling objects when necessary, and able to withstand 150lbs (68 kg) of force
- 39-45in (99-115 cm) from the walking surface to the top of the rail; not deflect lower than 39in (99 cm)
- Able to withstand 200lbs (91 kg) of force in a downward/outward direction
- Midrail installed halfway between top rail and walking surface
- Vertical members every 8ft (2.6m) on center
- Intermediate vertical members every 19in (48 cm) on center when installed
- Toe boards a minimum of 4in (10 cm) nominal height, able to withstand 75lbs (34 kg) of force outward, and no more than ¼in (0.64 cm) gap between surface and lower edge of toe board
- Stair rail systems must be 42in (107 cm) from the leading edge of the stair to the top of the rail
- Guardrails around ladderways: self-closing gate that slides or swings away from the hole and top rail/midrail that meets guardrail requirements (unless opening is offset)

CRITERIA FOR SELECTING BARRICADES

The effectiveness of the barricade is dependent on many factors, such as terrain, environment, potential hazard(s), location, weight requirements, availability, and use. These same factors dictate the construction and configuration of the barricade. Understanding how construction, configuration, and effectiveness relate to each other is critical when choosing which barricade to implement.

For example, do not place a haul truck tire next to an open hole or use a jersey barrier on a haul road. In both examples, the barricades do not provide sufficient protection for the identified hazards.

When selecting the barricade, ask the following questions:

- What hazard is being controlled?
- How long is the barricade needed?
- What traffic is in the area (vehicles, people, etc.)?
- Are special tools/permissions required to install the barricade?
- Can the barricade withstand environmental factors?

ACTIVITY 3: BARRICADE SELECTION

Review each question below. Circle the barricade(s) you should select from the choices provided and explain the reason for your choice(s) in the second blue box. For each scenario, there may be more than one correct choice. If there are other site-specific options available, list those in the first blue box.

SCENARIO 1

What type of barricade(s) should you use for a downed power line? You need to relieve the spotter/safety watch blocking access to the area.

a. Berm
b. Snow fence
c. Equipment, truck, and cones
d. Haul truck tire

Site-specific options

Explain your selection

SCENARIO 2

What type of barricade(s) should you use if you notice a guardrail/berm on a ramp that is not up to standard?

a. Berm
b. Wire rope
c. Railing system
d. Jersey barrier

Site-specific options

Explain your selection

SCENARIO 3

What type of barricade(s) should you use if an excavation is left unattended?

a. Berm
b. Truck
c. Cones
d. A-frame sign

Site-specific options

Explain your selection

SCENARIO 4

What type of barricade(s) should you use if you discover a washed out road?

a. Berm
b. Truck
c. Snow fence
d. A-frame sign

Site-specific options

Explain your selection

SCENARIO 5

What type of barricade(s) should you use if you discover a ladder with a missing swing gate?

a. Scaffolding
b. Snow fence
c. Railing system
d. Chain link fence

Site-specific options

Explain your selection

Application

MODULE 3

MODULE 3: APPLICATION

MODULE 3 LEARNING OBJECTIVES

Upon completion of this module, students will be able to:

- Summarize the role of the attendant and spotter/safety watch.
- Explain the process of installing, maintaining, and removing the control.

INTRODUCTION

Knowing which flagging, tagging, or barricading to install is critical when it comes to safeguarding an area. Whether marking an unsafe area or preparing for a task, understand the purpose and limits to the specific method selected, as well as the hazard in the restricted area.

ROLES AND RESPONSIBILITIES

If you find yourself in a working area and come across an unmarked hazard that requires flagging, it is your responsibility to ensure this is performed. This can be done in one of two ways:

- Install the appropriate flagging yourself. As long as the hazard does not constitute an imminent danger, you may leave the area to acquire the necessary materials. If you are the person installing the flagging and your name is on the tag, it is your responsibility to maintain and eventually remove it. Employees are not allowed to remove flagging/tagging installed by someone else, unless appropriate site-specific removal procedures have been performed, such as:
    - Making all attempts to contact the initial installer
    - Contacting supervision
    - Consulting with a health and safety professional to ensure hazards have been controlled
- Inform the appropriate personnel of the hazard and need for flagging/tagging, if you are not a part of the task being performed. For example, if you see someone working overhead and the area below is not flagged, inform the working crew. This places responsibility for the flagging/tagging on the personnel performing the task.

If you come across an unmarked hazard that qualifies as a high energy hazard, you automatically become a spotter/safety watch. In this instance, this individual stays near to, but at a safe distance from, the hazard until the area is barricaded. This is true whether or not you are part of the team mitigating the hazard. Once the exposure to the hazard is controlled, continue with your regular duties.

Due to the level of risk involved, certain tasks require the use of an assigned attendant or spotter/safety watch. The responsibilities of this individual may differ depending on the task performed. These responsibilities are outlined in greater detail through SOPs or policies, and are not necessarily the same as an attendant who happens across an unmarked high energy hazard.

Some circumstances that may require an assigned attendant or spotter/safety watch are:

- Blasting operations
- Confined spaces
- Open trenches
- Leading edge/Open holes

INSTALLATION

Every employee who has received appropriate training is empowered to install barricading and flagging systems, or ensure proper installation occurs. Once the marking system is selected, begin the appropriate steps to proceed with installation.

COMMUNICATION PLAN

Installation of any flagging or barricading should be performed in conjunction with proper communication to any affected parties including your supervisor, health and safety professional, and any groups working in the area. These individuals need to be aware of the hazard and the reason the flagging and/or barricading is being installed. Consult your site-specific SOP for further details.

LEADING EDGE/OPEN HOLE WORK

When flooring or handrails are removed for work, or openings are created in walls or walking/working surfaces reference the Freeport-McMoRan's Working at Heights Policy and Technical Supplement (FCX-HS02) and the practices established at your site. This assists in determining proper flagging and barricading.

Note: Prior to working in or near open holes, further training is required.

WORKING OVERHEAD

When work is performed overhead, pedestrian and vehicle traffic below needs to be informed. Materials and/or tools can fall, resulting in injuries to those below or damage to equipment. Proper flagging and/or barricading is used to establish a perimeter on the lower level. The perimeter needs to be large enough to keep all traffic at a safe distance. When needed, a spotter/safety watch helps monitor the area, such as when hot work is performed or suspended loads are moved.

CONGESTED AREAS

In congested areas, such as places with heavy foot and/or equipment traffic, it is a best practice to inform other work groups in the area before any flagging or barricading is established. This is especially important if a barricade is going to impede an escape route. If an evacuation is required, personnel in the area need to be alerted to alternate escape routes. This helps ensure that during an evacuation, employees are not exposed to any additional hazards.

RESTRICTIONS AND PERMISSIONS

The color of the flagging, the barricade, and the accompanying tag communicates information regarding the severity of the hazard and the reason for the installation. In addition to recognizing why these marking exists, employees must adhere to who can and cannot enter the area, and what steps must be taken when entering.

The table below details the restrictions and permissions for each type of marking.

Marking	Description
Yellow Flagging (caution)	If entering a yellow flagged area, you must: • Familiarize yourself with the hazards written on the tag. • Don proper PPE. • Proceed with caution, after the hazards and the work being performed are understood. • Enter only when business needs cannot be performed elsewhere.
Red Flagging (danger) and barricaded	If entering a red flagged and barricaded area, you must: • Be properly protected against falls and/or other hazards. • Be performing work to mitigate the hazards or be an individual in charge of the work being performed. • Be authorized by the responsible party listed on the tag.

ACCEPTABLE DISTANCE OF FLAGGING AND BARRICADING

Flagging and barricading needs to be installed a safe distance from the hazard. This distance varies depending on the job, hazard, and barricading/flagging system used.

This table provides further clarification on acceptable distances for flagging and/or barricades.

Hazard	Acceptable Distance
Overhead work	Situated at a distance far enough away that if the largest possible object falls to the level below, no employee is impacted.
Fall hazards	Erected in a location that provides a safe place for footing for those employees working in the area.
Contact with equipment	Established at a boundary outside of any swing radius, dependent on the size of the equipment, to prevent impact with an employee or another piece of equipment.

MAINTAINING

As long as a hazard exists, the flagging/barricading used to minimize employee exposure must be maintained. Remedy any hazardous situation the same day it is found. If circumstances do not allow for this, ensure the hazard area is free from housekeeping issues and the tags/flags are visible. The information on the tags must remain legible. At the start of the next shift, ensure no changes to the flagging/tagging have occurred. While conducting work in a flagged area, if the flagging or tags become damaged or illegible, stop the job and repair/reinstall, as needed.

For projects that lasting multiple days, it is your responsibility to ensure all flagging, tagging, and barricading is in good order.

Sometimes conditions change and work conducted in a yellow-flagged area becomes a high energy hazard. When this occurs, the yellow flagging must change to red flagging or barricading. The red flagging/barricading must be in place prior to the removal of any yellow flagging. Once the high energy hazard is controlled, the area is free to return to yellow flagging conditions. When changing back, the yellow flagging must be installed prior to the removal of any red flagging/barricading.

Fig. 3.1 Poor handwriting results in an illegible tag

REMOVAL

Flagging or barricading is removed when the job is finished. Prior to the removal, ensure the following has been completed:

- The exposure to the hazard is mitigated.
- Employees are utilizing the proper fall protection when working with open holes, such as when reinstalling grating, handrails, or covering a floor opening.
- The work area is safe for re-entry.

Once removal of all flagging/barricading is complete, either dispose of or properly store all materials in accordance with site-specific requirements. Additionally, ensure all appropriate communications are made to any affected parties. This may include:

- Supervision.
- Operations.
- Any teams that may be impacted in the area.

Do not remove flagging or barricading you did not install. If for some reason you find yourself having to remove flagging or barricading you did not install, adhere to all site-specific procedures to do this. This may include:

- Contacting the initial installer.
- Contacting your supervisor.
- Consulting with health and safety professional to ensure all hazards are controlled.

ACTIVITY 4: STUMP YOUR NEIGHBOR

As a group, use the Student Guide to create five challenging questions (and answers) for another group to try to answer. The space below is provided to capture the questions and answers.

QUESTION 1

Question:

Answer:

QUESTION 2

Question:

Answer:

QUESTION 3

Question:

Answer:

QUESTION 4

Question:

Answer:

QUESTION 5

Question:

Answer:

COURSE CONCLUSION

With changing conditions on Freeport-McMoRan properties, no two situations may ever be alike. By familiarizing yourself with flagging, tagging, and barricading, you are equipped to understand the markings, mitigate the hazard, and notify others of an issue. When you encounter a hazard, use the hierarchy of controls to decide whether a more conservative control can be applied.

Prior to beginning a task that either involves or creates a hazard, determine the best course of action for restricting access. Evaluate multiple factors, such as the effectiveness of the flagging or barricading, the environment, the severity of the hazard, and the purpose. Ensure you are safeguarding the area with visible and appropriately placed barriers. Never attempt to mitigate a hazard for which you are not trained. If you have questions or concerns, utilize the resources available to you, such as your supervisor, health and safety professional, and the Company policies.

Resources

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GLOSSARY

Barricade	A barricade is a physical obstacle to a clearly defined area to defer the passage of persons or vehicles.
Flagging	A tape, similar to police tape, used to indicate a hazard or unsafe condition exists, and establishes a boundary for the hazardous area. Flagging is available in different colors.
Floor Opening	An opening measuring 12 in (0.3 m) or more in its least dimension, in any floor, platform, pavement, or yard, through which persons may fall.
Railing System	Typically consists of a handrail, a midrail, and a toe board.
Tag	A card used to communicate key pieces of information and is attached to flagging and barricades.
Wall Opening	A gap or open space in a wall, partition, vertical walking/working surface, or similar, at least 30 in (76 cm) high and at least 18 in (46 cm) wide, through which an employee can fall to a lower level.

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STUDENT COURSE EVALUATION

Course Title	Site	Date
Your Name (optional)	Facilitator	

Directions: Circle the number that best fits your level of agreement with the statement. Then complete the short answer questions.

	Strongly Disagree	Disagree	Agree	Strongly Agree
1. The course content was relevant to my job.	1	2	3	4
2. The course materials were clear and well written.	1	2	3	4
3. The lecture, discussions, and activities improved the quality of the course.	1	2	3	4
4. The facilitator was knowledgeable about the content.	1	2	3	4
5. The facilitator created an atmosphere that enhanced my learning.	1	2	3	4
6. I am confident I can apply the course content to my job.	1	2	3	4
7. The course met my expectations.	1	2	3	4

8. What did you find valuable in the course?

9. What can be improved in the course?

10. Please clarify your responses (questions 1-8) and provide any additional comments.

Thank you for taking the time to complete this evaluation. We value your feedback.
Mail to: Mine Training Institute, Attn: Suzanne Anderson, 18550 S. La Canada Dr., Sahuarita, AZ 85629. Scan or email to: sanderso2@fmi.com