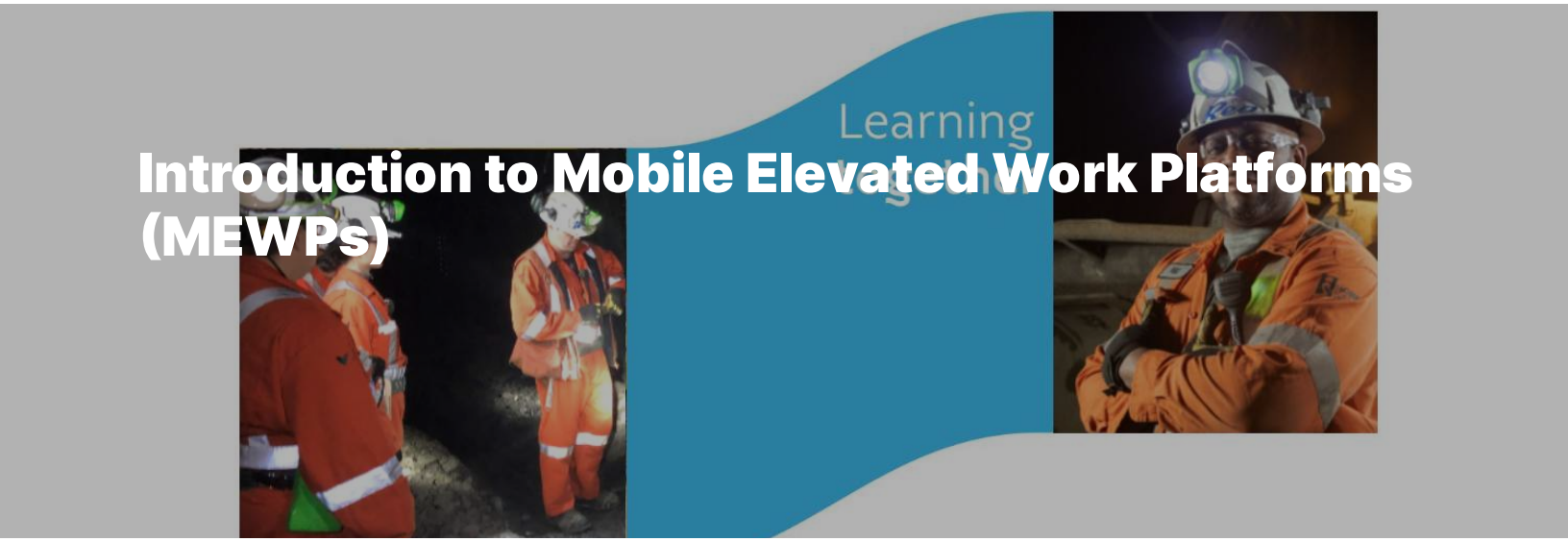
Introduction to Mobile Elevated Work Platforms (MEWPs)



Hello, welcome to the **Introduction to Mobile Elevated Work Platform (MEWP) module.**
This course is a combination of two components, knowledge based instruction, this module, and skills based training on selected mobile elevating work platforms.
The skill based component is where trainees will be expected to demonstrate specific skill sets as part of the evaluation process.
You must obtain a minimum score of 70% on the quiz as well as demonstrate a minimum acceptable level of skill on designated mobile elevating work platforms to be considered a qualified operator.
Note: All occupants of mobile elevated work platforms must be qualified operators.
Enjoy the course.
VESID: MEWP.ABOUT
Revision Date: June - 09- 2022

Welcome

Context

Bowtie

Groups and Types Classifications

Description

The Equipment

Principles of Operation

MEWP Safety

Pre-Operation Requirements

Quiz

Conclusion

Welcome

Upon completion of each section of this module, you will be given an opportunity to submit questions to obtain clarification of any content you are not sure of.

You will also be required to complete a brief survey designed to support continual improvement to your Vale learning experience.

Got a Question?

Submit your question here using Valeforms, be sure to include your first name last name and contact information.

CLICK HERE!

Watch the video in full to continue.

Context

In this module we will deal specifically with Mobile Elevating Work Platforms.

To begin, lets review what the CSA standard is regarding elevated work platforms and how it affects you.

00:12

Mobile Elevating Work Platform - CSA B354

In 2018 the CSA Group implemented Mobile Elevating Work Platform Standard CSA B354. Standards are important as they establish standardized requirements for design of a product, process or system.

They can specify performance of products or personnel.

They can also define terms and definitions specific to the standard, so there is no misunderstanding among those using the standard.

The CSA B354 standards provide uniform guidance in the design and manufacturing of

equipment.

They also address the planning and operation for the safe-use of equipment and training requirements to aid users in achieving safe and effective use of the equipment.

00:42

So, how do these changes affect me?

This module has been designed in alignment with the methods and guidelines as recommended and provides the required elements to aid the operator in the safe operation of Mobile Elevating Work Platforms.

00:14

CSA has no legislative powers; its standards are voluntary. Province and territories (and companies) choose whether they wish to adopt them.
Unless otherwise required by legislation or regulation to comply with a CSA standard, a CSA standard is a best practice standard that does not legally need to be complied with.
Safety Standards are often referenced by federal, provincial and territorial regulations. They can be adopted (which means they must be followed completely) or adapted (which means that only certain parts must be followed) by regulations - a regulation cites a CSA Standard and says that you have to follow it. In effect, the CSA standard becomes part of the law.

This is the first edition of the Standard. It replaces the operator (driver) training sections of CAN/CSA-B354.1-04, Portable elevating work platforms; CAN/CSA-B354.2-01, Self-propelled elevating work platforms; and CAN/CSA-B354.4-02, Self-propelled boom-supported elevating work platforms.
This Standard provides methods and guidelines to prepare MEWP training materials, define administration criteria and the elements required to deliver training, and familiarization to achieve the following objectives: Prevention of personal injuries and accidents; and Thorough and consistent training.

This training covers the proper procedures and general hazards associated with the operation of mobile elevating work platforms. In addition, you may be required to follow site-specific rules to help you work safely.

NOTE: This module provides general information about various groups and types of mobile elevating work platforms. Consult with your training department for additional training and qualification requirements for the specific MEWP you will be operating.

00:27

Always wear all required personal protective equipment appropriate for the task you are performing.

Upon completion of this module you will be able to:

- Identify the groups and types of MEWPs
- Identify safety equipment used on MEWPs
- Describe the training required before you may operate a MEWP
- Describe pre-operation procedures

- Recognize potential hazards and determine the safe operating procedures to be followed

00:22

Warning:

This training does not cover any equipment that elevates the worker unless that equipment is controlled by the worker. Nor does any training you may have received on other types of lifts qualify you to operate a MEWP.

00:14

As a Mobile Elevating Equipment Operator are you authorized to operate bucket attachments on a forklift or skid steer loader?

- ◯ Yes
- ◯ No

SUBMIT

Before proceeding to the Groups and Types Classifications section, check out what Bowties are, and how they can help us to define the best requirements for each type of event we want to prevent or mitigate.

00:11

Got a Question?

Submit your question here using Valeforms, be sure to include your first name last name and contact information.

CLICK HERE!

Complete the content above before moving on.

Bowtie

Important: this module addresses safety and operating procedures common to all types of mobile elevating work platforms.

Not all requirements in this module will be present in the bowtie. Reading the document is essential.

Do you know what a bowtie is?

It is a very efficient risk analysis tool that identifies the event, the barriers (controls) and the consequences.

For MEWPS, bowties assist in understanding the safe operating requirements. This module will show some bowtie diagrams about the main events related to the operation of Mobile Elevated Work Platforms.

It is important that you are familiar with this tool!

00:27

Watch the video below and understand bowties better!

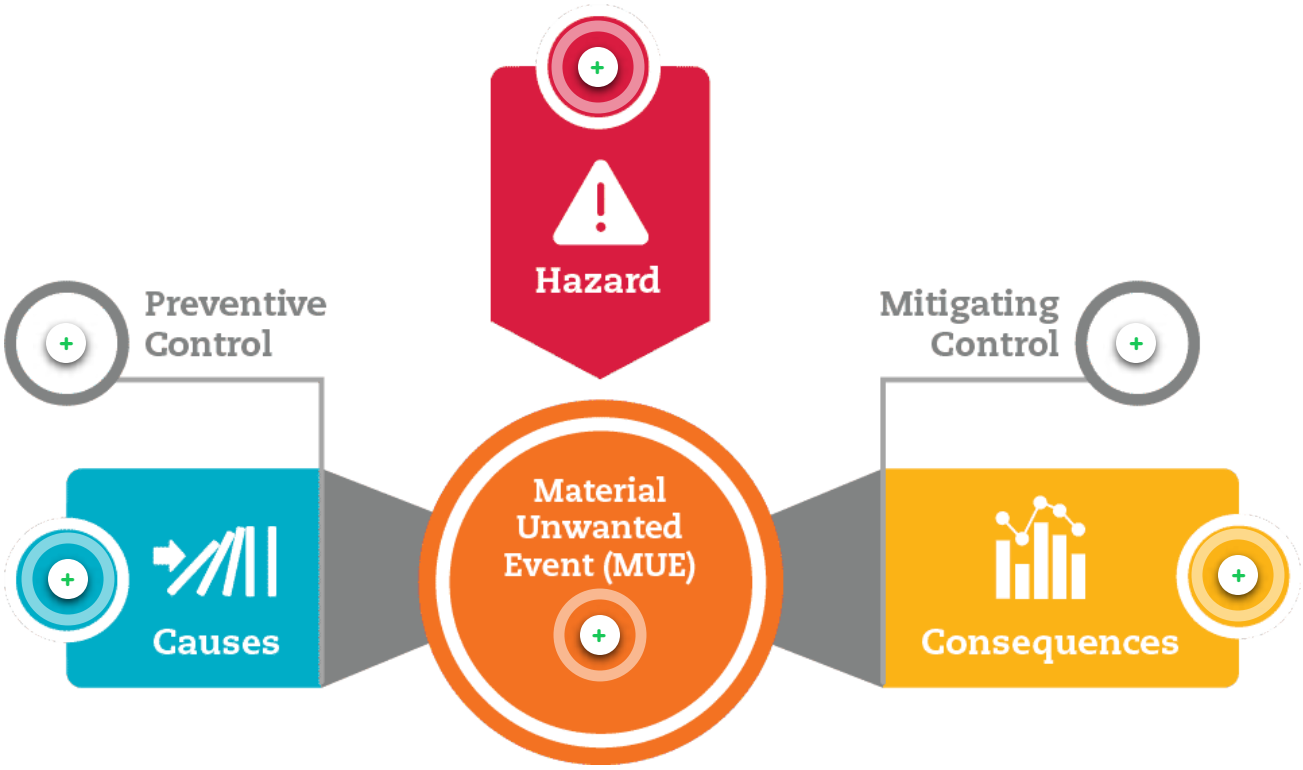
Watch the video in full to continue.

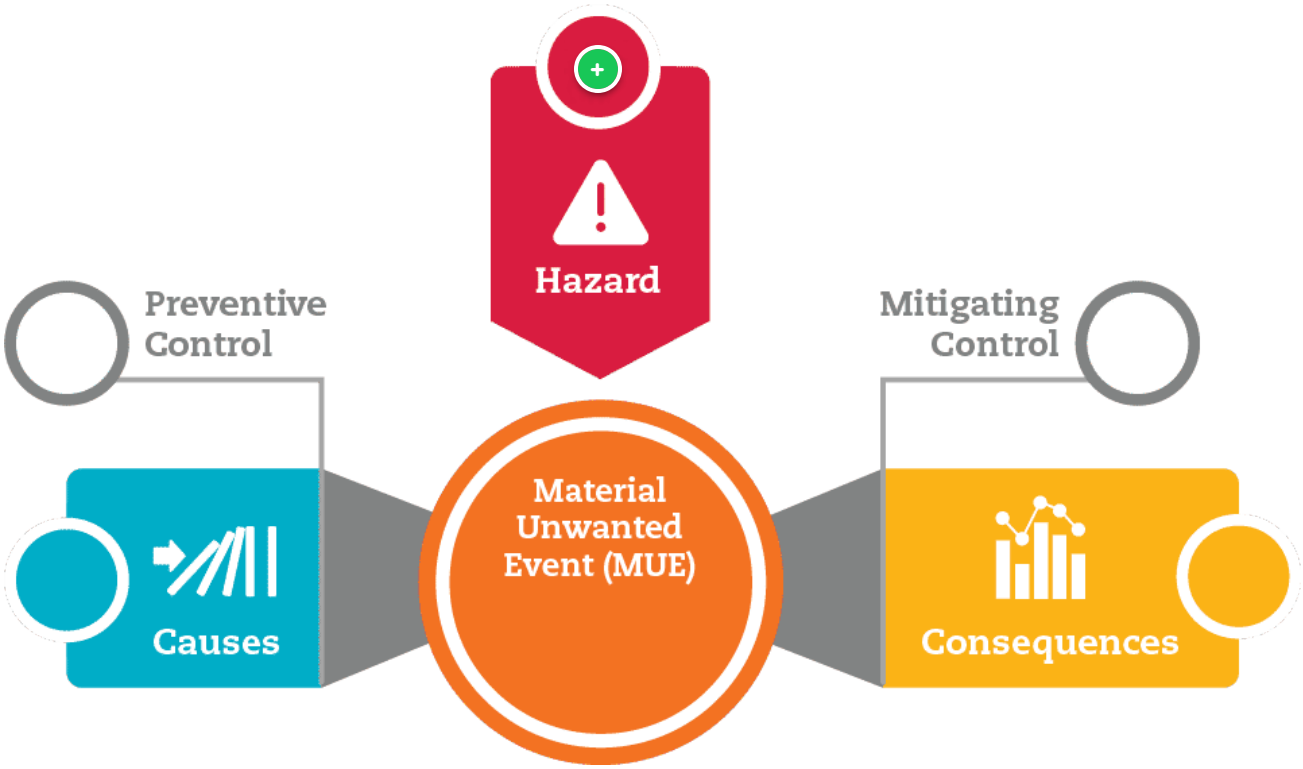
Review the bowties on the following slides related to events that may occur while working on or around mobile elevated work platforms.

00:08

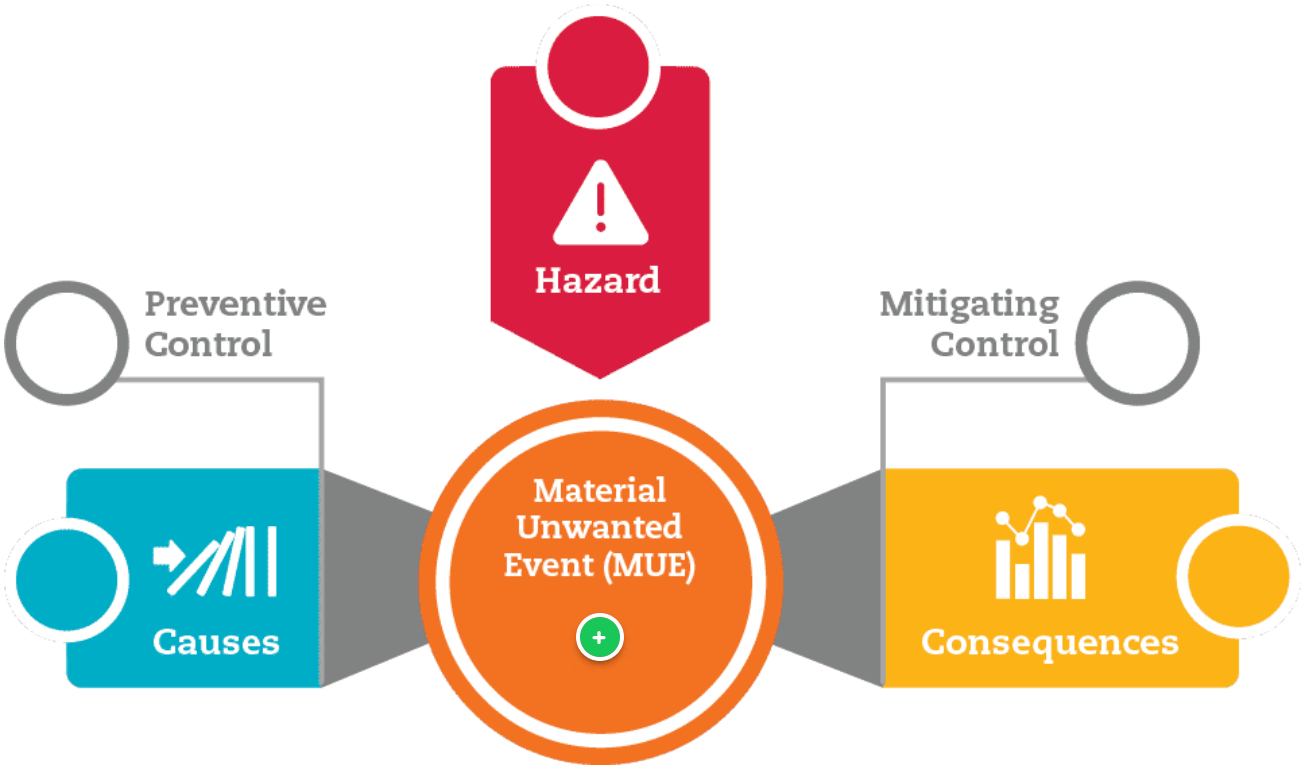
Contact with energized power lines

Click on the markers below and learn more:

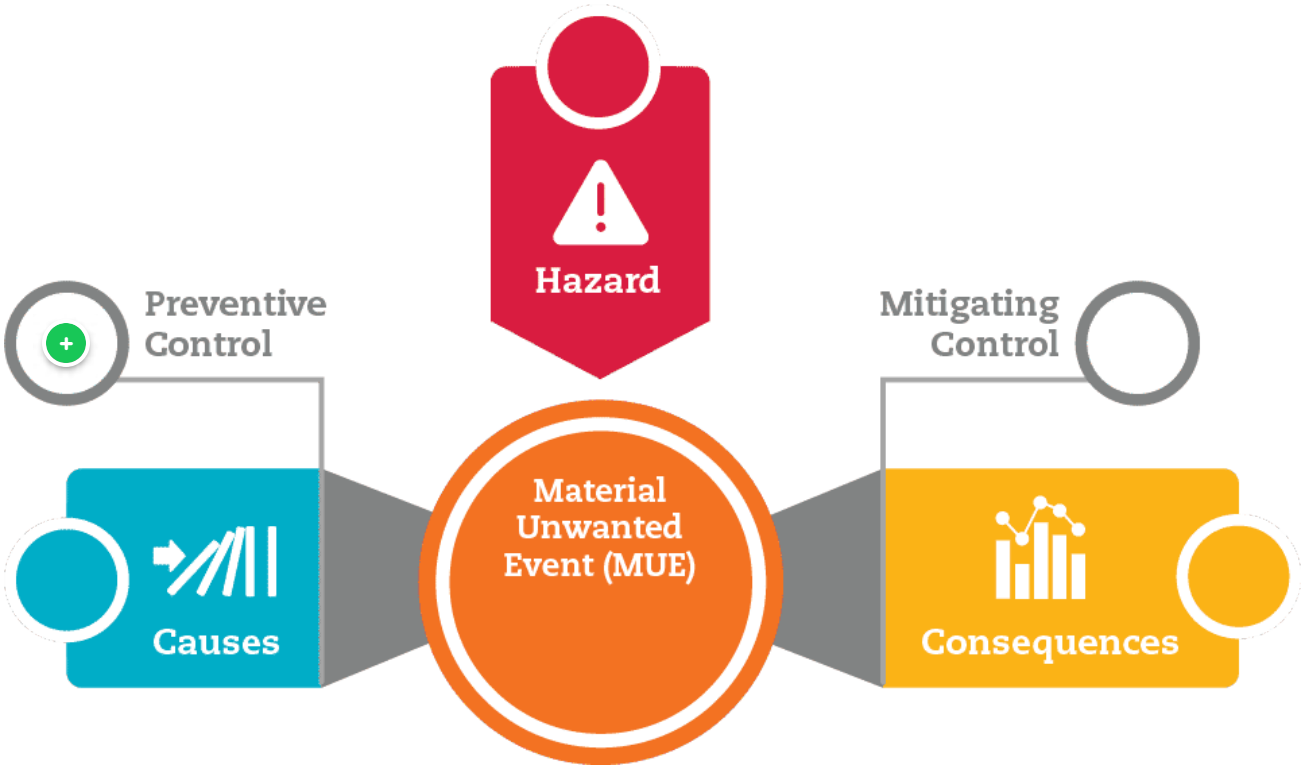




Electrocution



Contact with energized power lines



Preventive Control

Inappropriate speed:

- Speed road signs;
- Location and speed monitoring system;
- Physical barriers or protective devices.

Driver fatigue:

- Fatigue plan;
- Driver drowsiness detection system.

Vehicle instability:

- Anti-lock braking system;
- Electronic braking control;
- Stability control.

Driver distraction:

- Prohibition of TV/DVD, sound with headphones and cell phone while driving;
- Reverse sensor;
- Reverse audible alert.

Poor visibility:

- Reflective striping;
- Visible pennant with LED light at the tip;
- Roof mounted flashing, rotating or strobe light.

Vehicles in poor condition:

- Preventive maintenance;
- Modifications approved;
- Inspection.

Driving under the influence of alcohol and drugs:

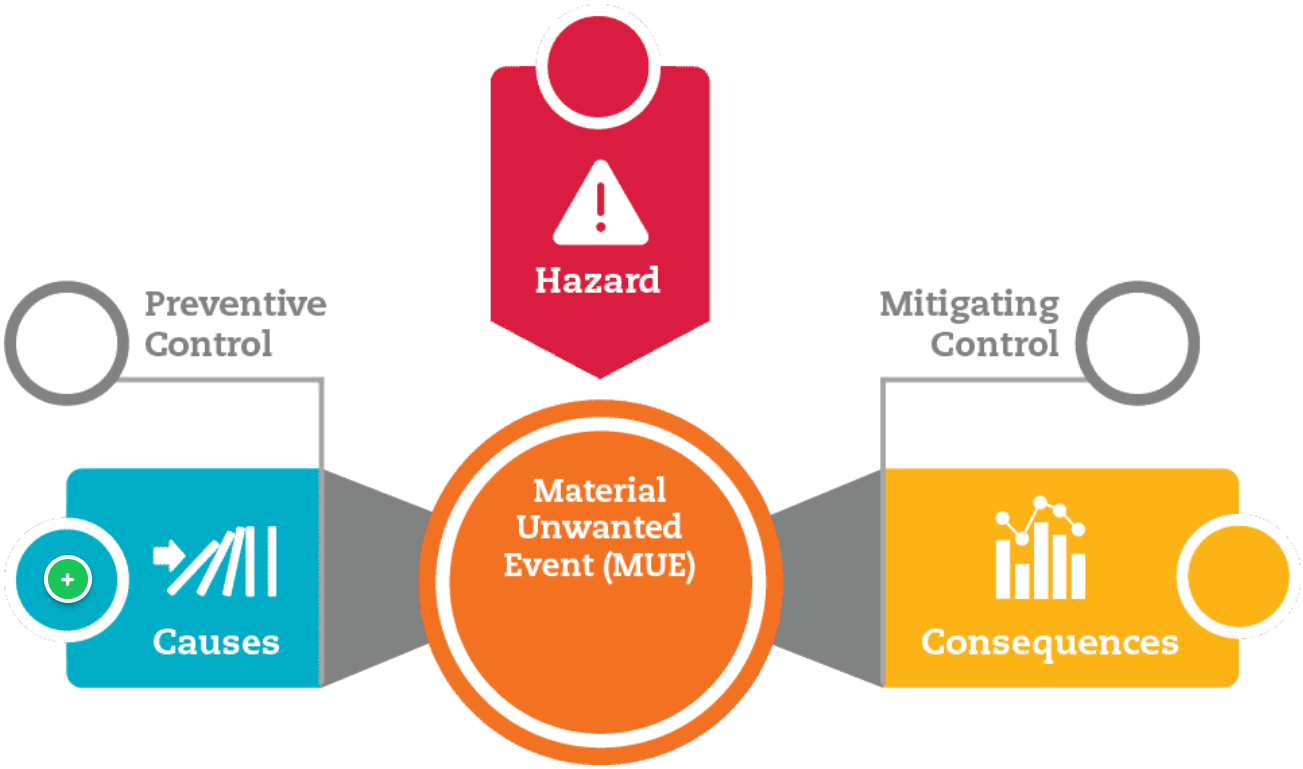
- Prohibition of driving under influence of alcohol or drugs.

Involuntary vehicle movement:

- Vehicle parking brake applied;
- Vehicle engine turned off;
- Chock the wheels.

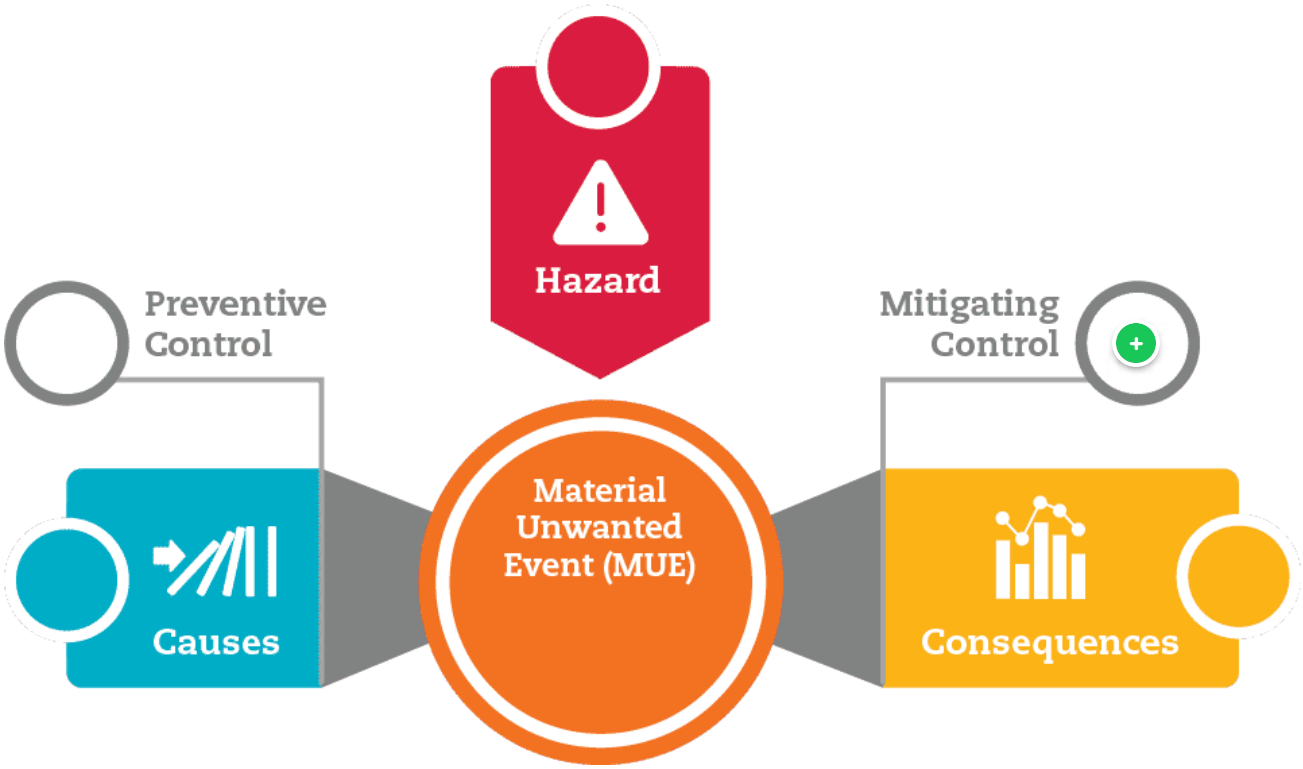
Lack of training:

- Driving license;
- Training for driving.



Causes

- Minimum safe approach distance to energized power lines and parts not maintained during the entire operation of the lift.
- Pre-requisite course not completed in Power Line Hazards, if there is a risk of contact with energized power lines.



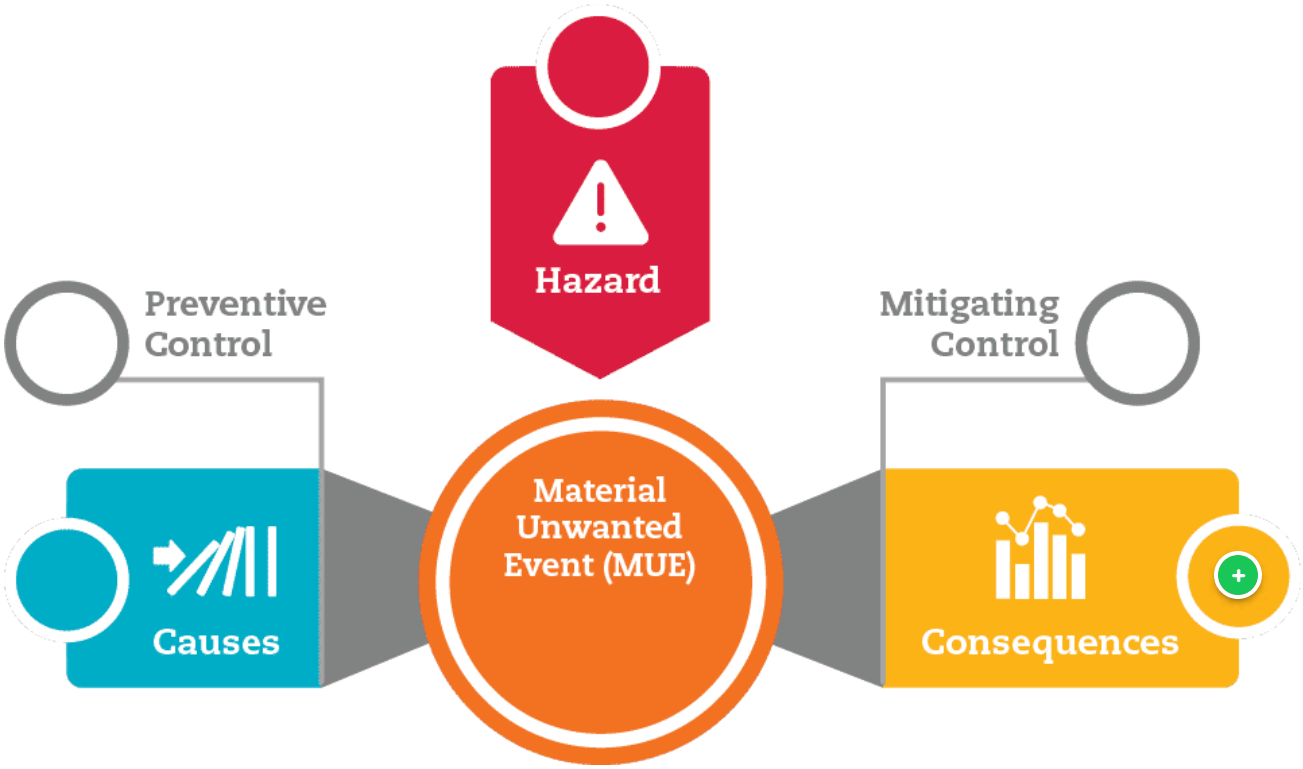
Mitigating Control

Fatality:

- Emergency response plan.

Serious Injury:

- Emergency response plan.



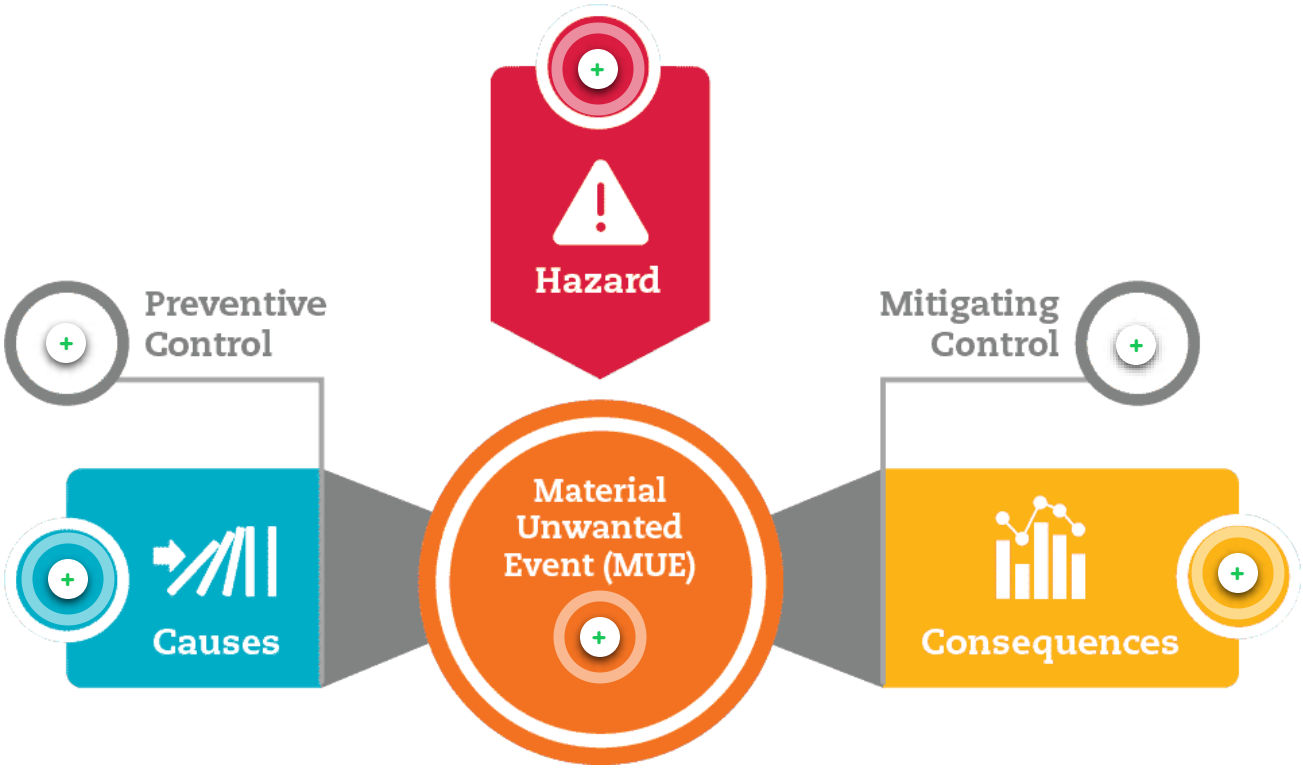
Consequences

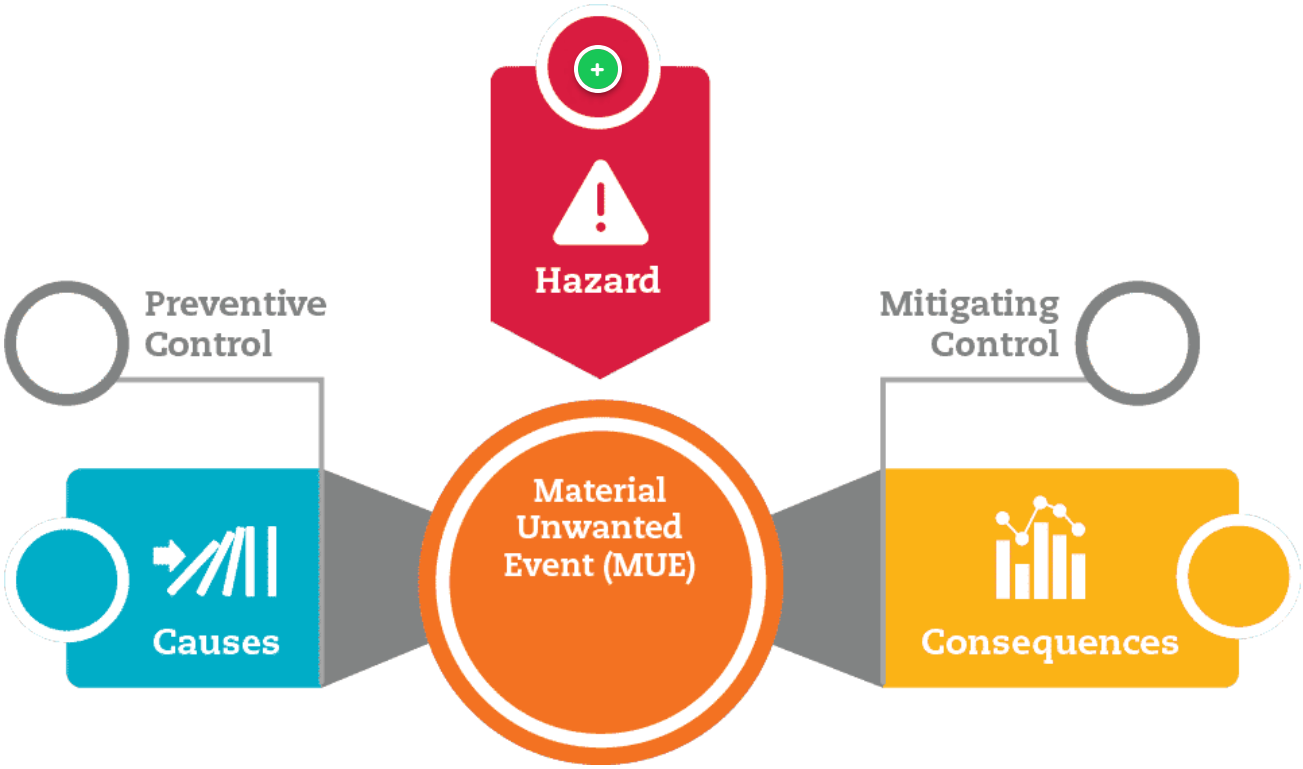
- Fatality;
- Serious Injury.

Complete the content above before moving on.

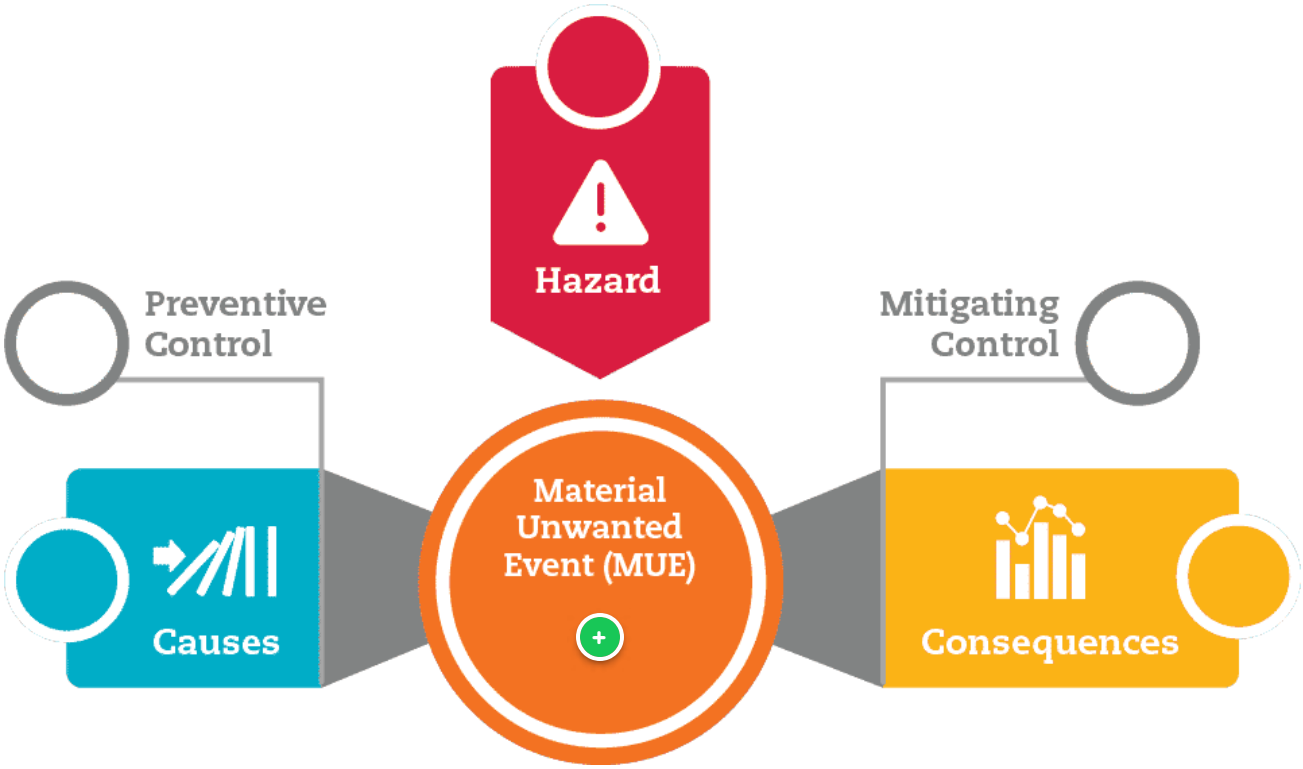
Collision

Click on the markers below and learn more:

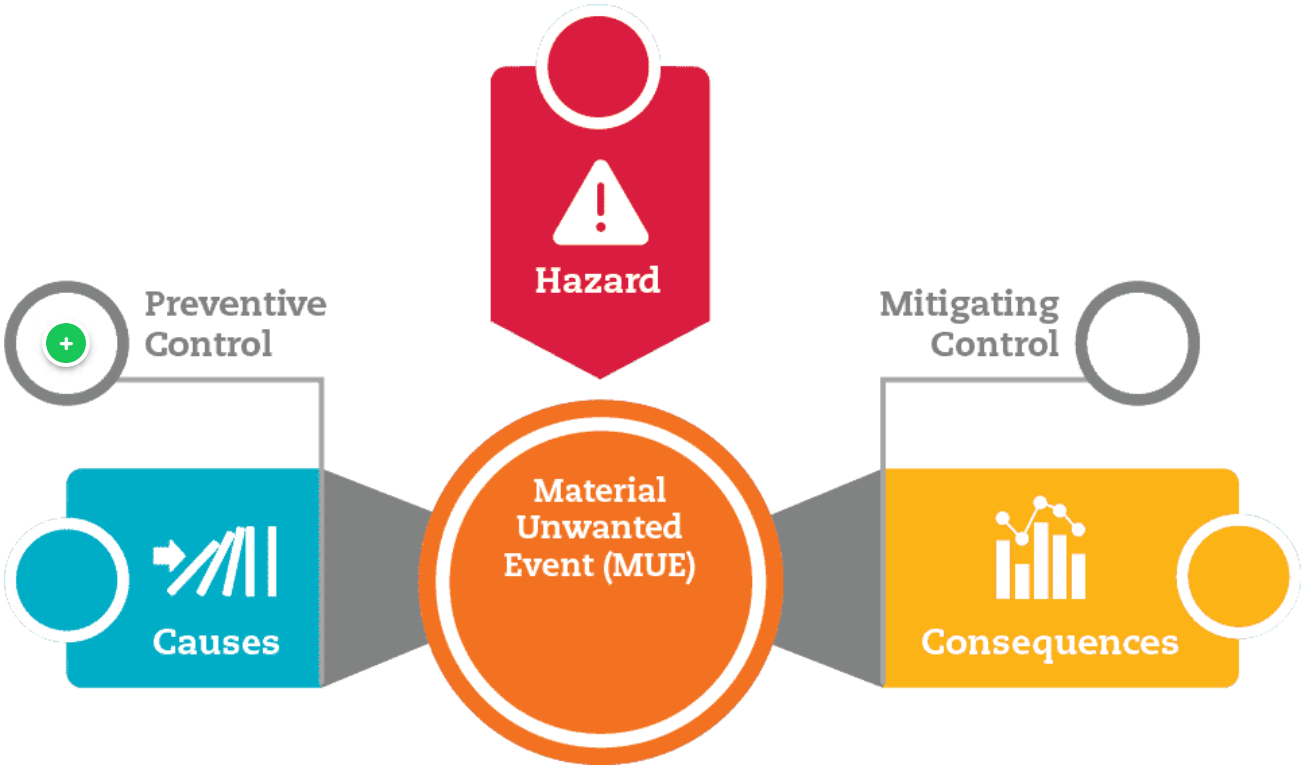

Hazard
Preventive Control
Mitigating Control
Causes
Material Unwanted Event (MUE)
Consequences



Operating MEWPs in congested areas of operations areas


Hazard
Preventive Control
Mitigating Control
Causes
Material Unwanted Event (MUE)
Consequences

Collision



Preventive Control

Poor visibility vehicle:

- Visible pennant with LED light at the tip;
- Reflective striping;
- Roof Mounted flashing, strobe light.

Proximity to heavy equipment:

- Delimitation of roads and parking lots;
- Communication system among vehicles and mobile equipment;
- Proximity alert sensor for heavy equipment, with audible alert sound.

Vehicles with inadequate conditions:

- Preventive maintenance;
- Inspection.

Driver fatigue:

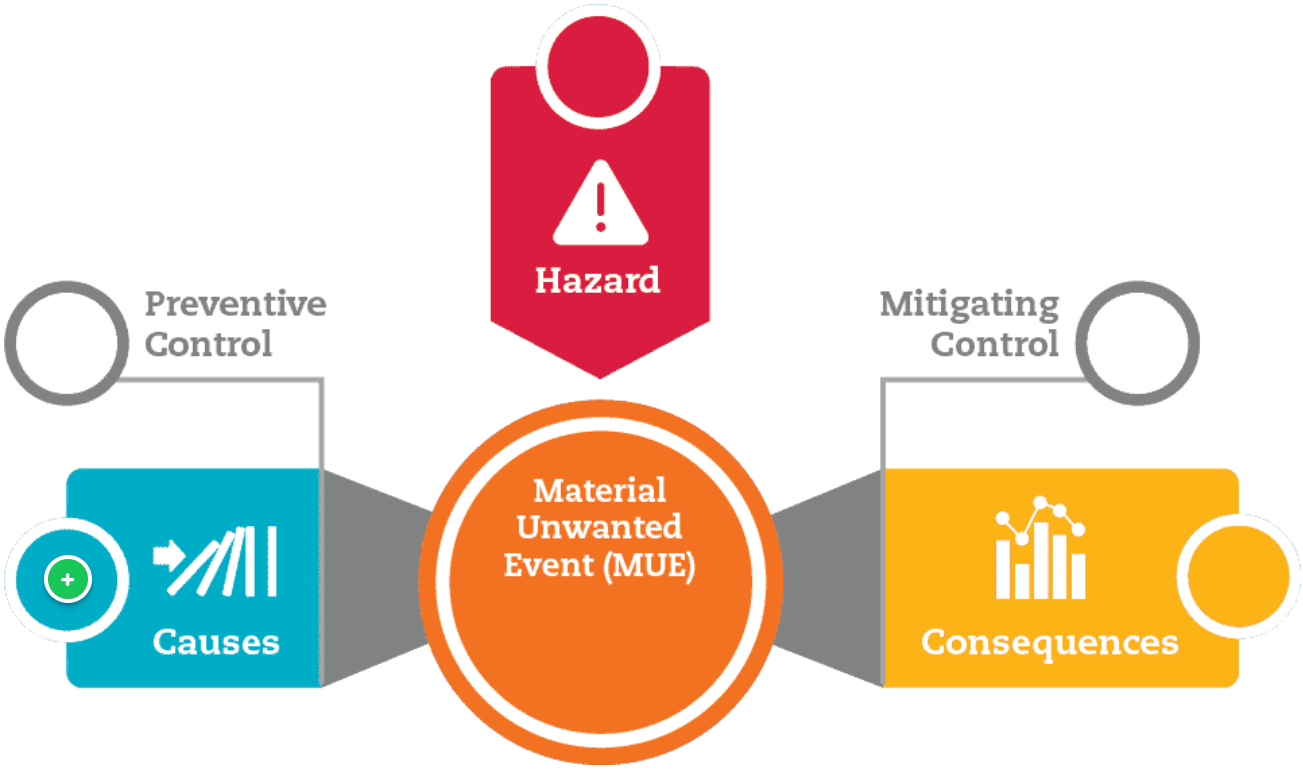
- Fatigue plan;

Lack of training:

- Traffic plan;

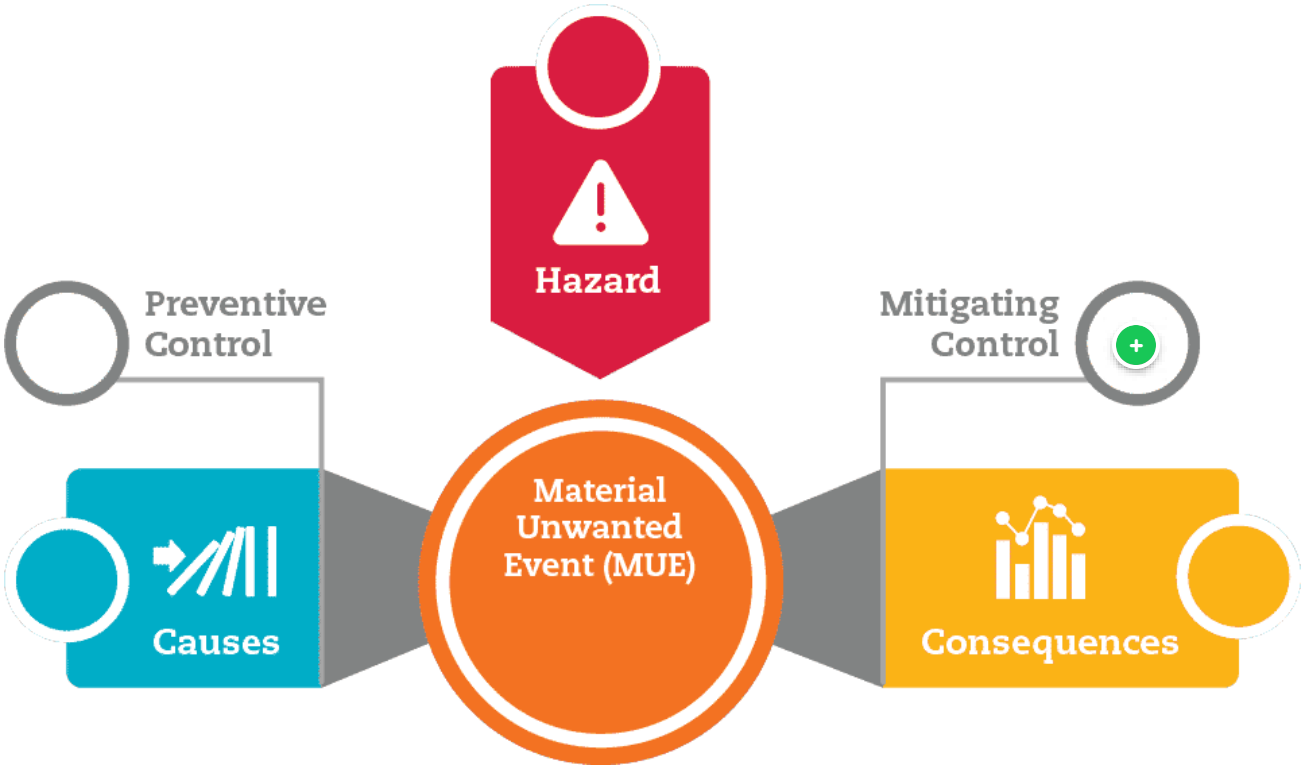
Driver distraction:

- Prohibition of TV / DVD, sound with headphones and cell phone while driving.



Causes

- Vehicle instability;
- Poor visibility;
- Proximity to heavy equipment;
- Vehicles with inadequate conditions;
- Lack of training;
- Operator distraction.



Mitigating Control

Person ejected:

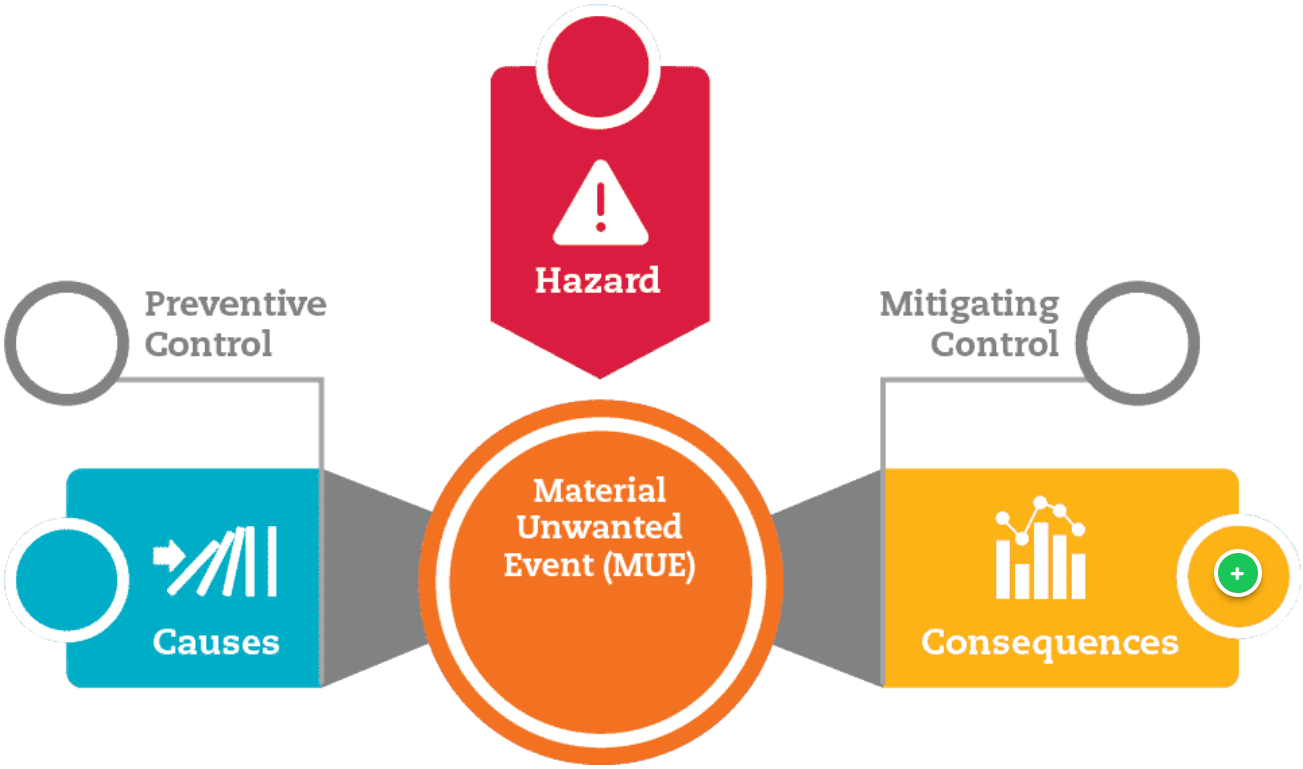
- Fall restraint
- Emergency response plan.

Crushing:

- Emergency response plan.

Object hits the person:

- Emergency response plan.



Consequences

- Person ejected;
- Person hit his head;
- Crushing;
- Object hits the person.

Complete the content above before moving on.

Incident at Vale!

Incident location; Vale New Caledonia

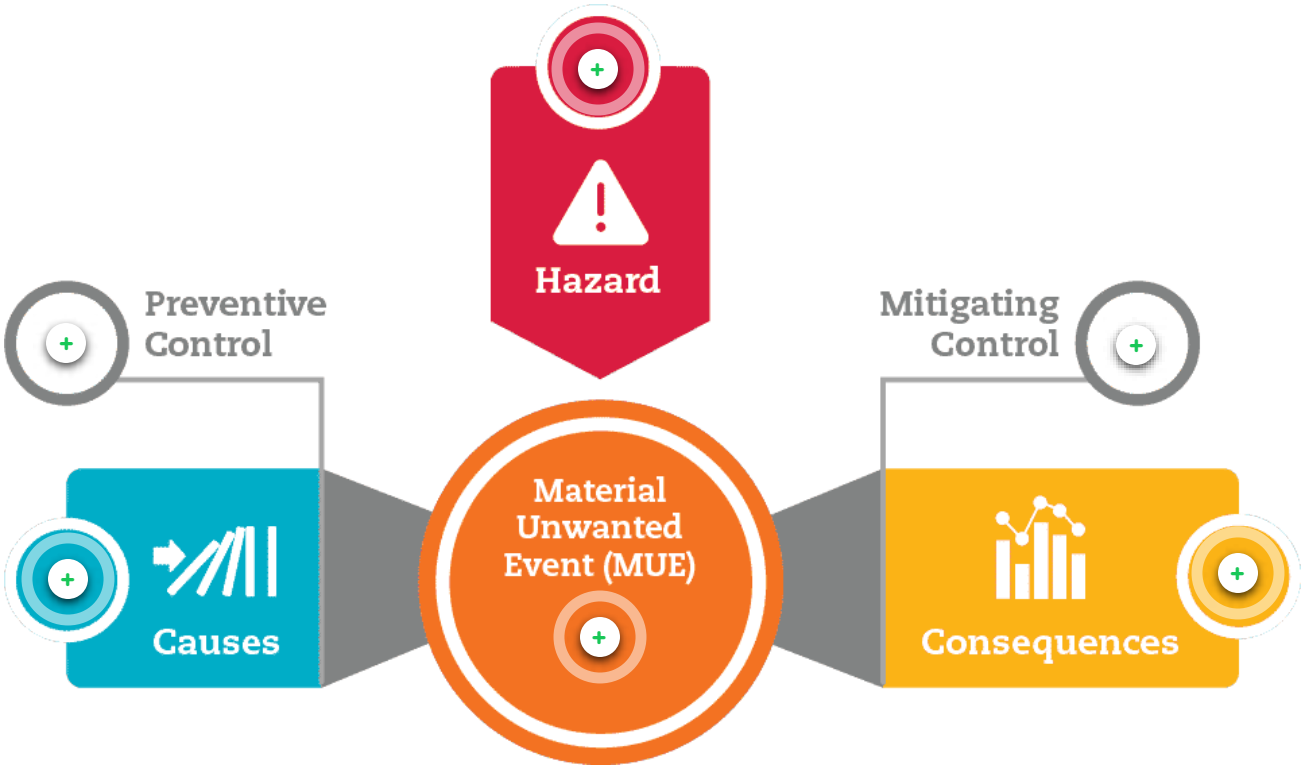
Thursday July 15, 2021 around 10:50, the employee was carrying out the task of insulating a pipe in the area of the Effluent treatment plant on the road between bagging unit No. 2 and bagging unit No. 3.

While controlling the MEWP from inside the basket the employee moved the deck back, striking a back beam and became entrapped between the deck and part of the supporting structure, resulting in a fatality.

00:26

Entrapment/Caught Between

Click on the markers below and learn more: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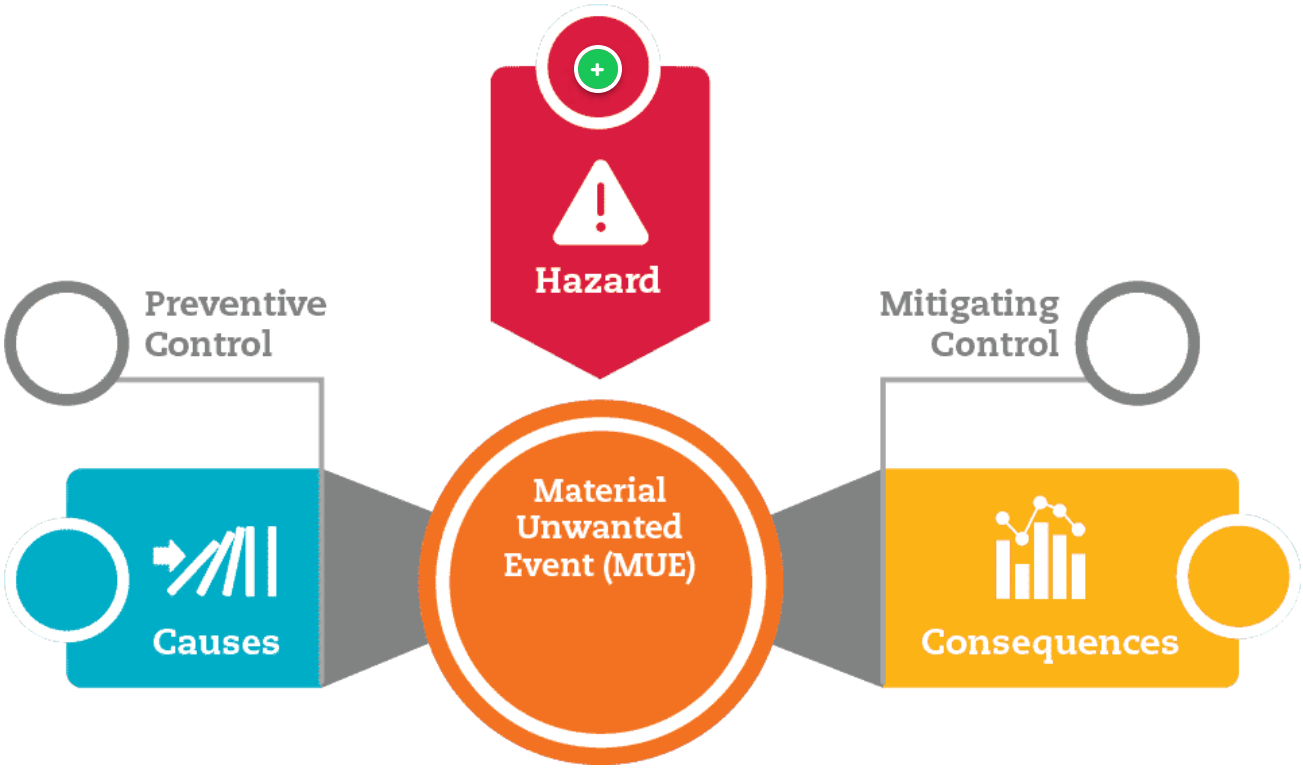
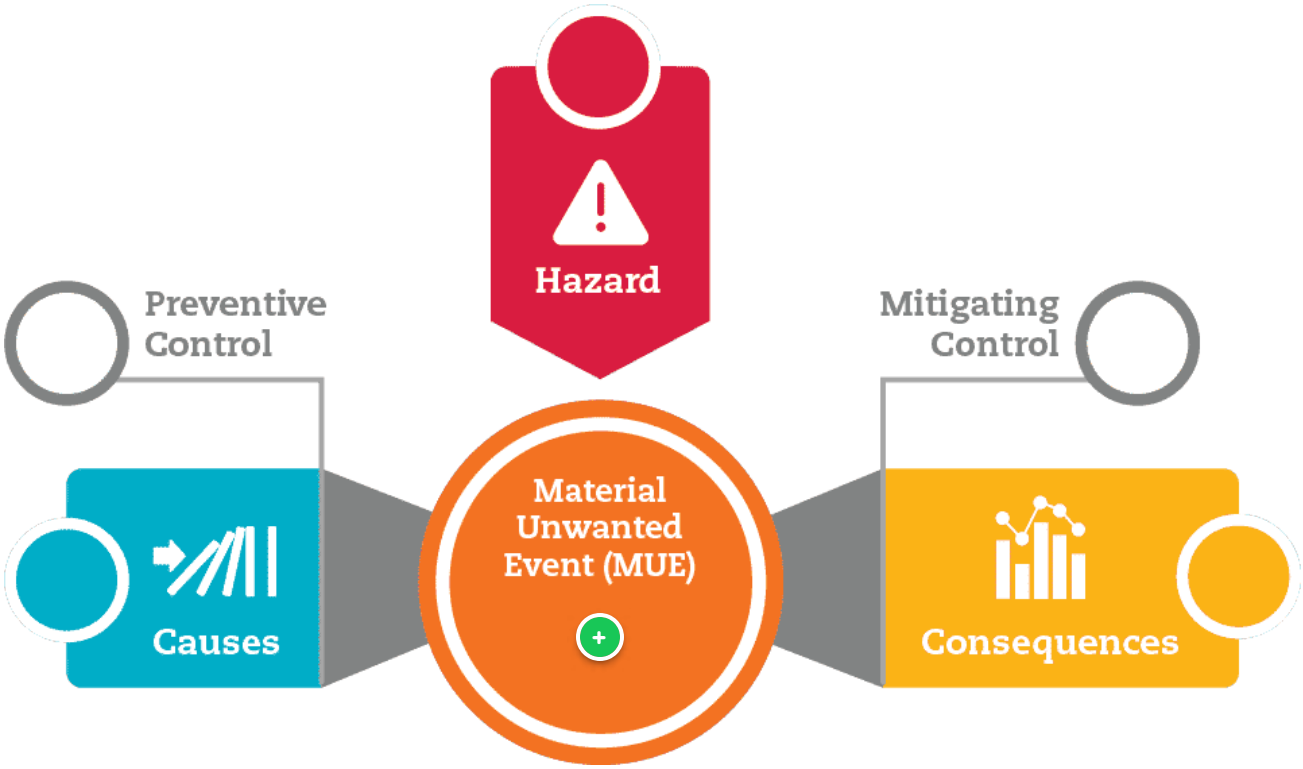
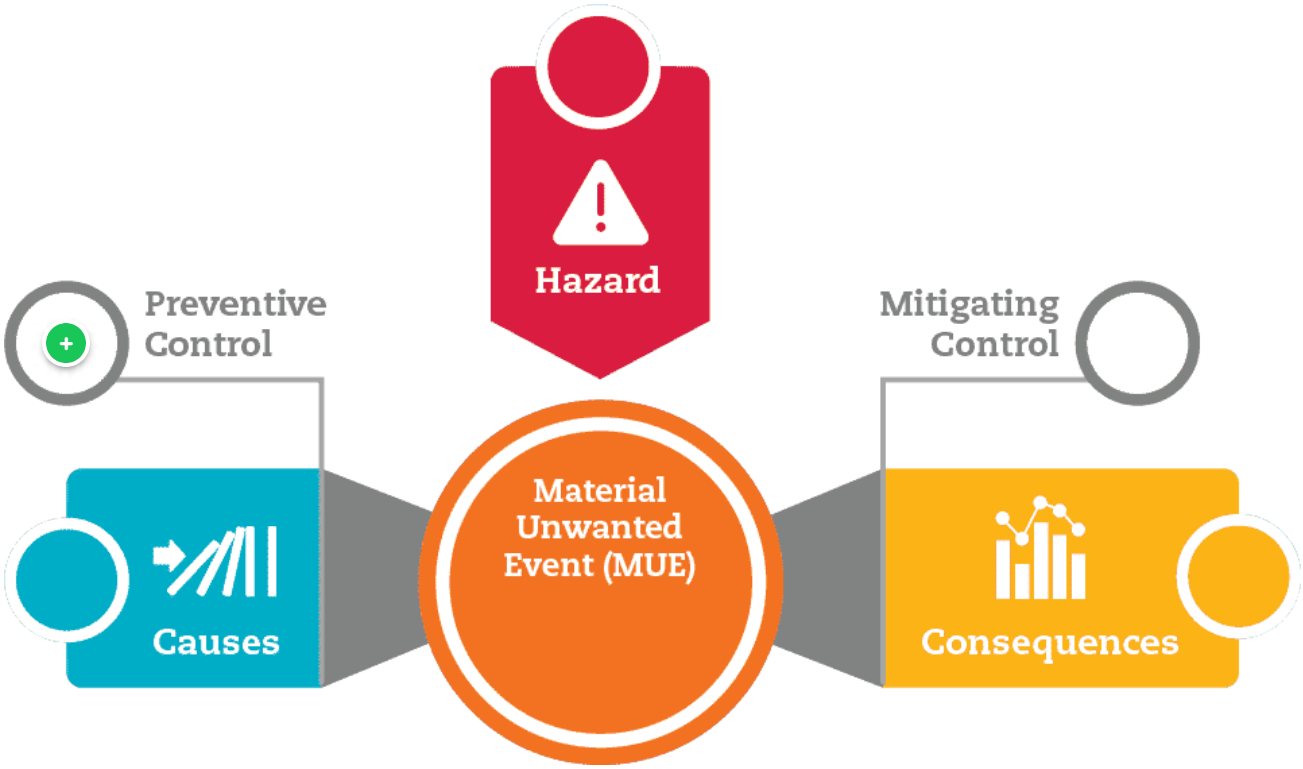


Working on the platform near fixed overhead obstructions



Entrapment on the platform between the fixed structure and the basket



Preventive Control

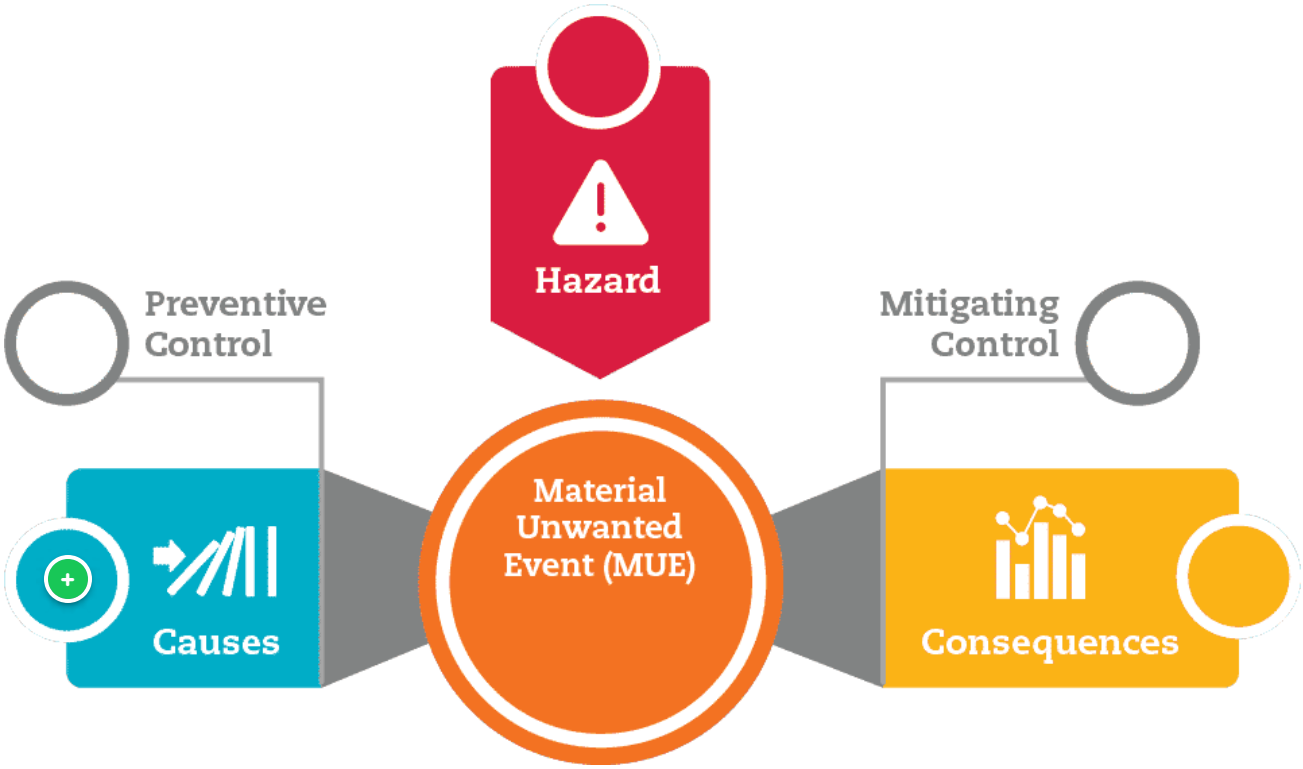
Selection and operation

- Level and firm ground should be used with the platform, avoiding errors with manholes or other obstructions;
- The correct vehicle should be selected that has been designed to mitigate the risk of entrapment;

Physical barriers

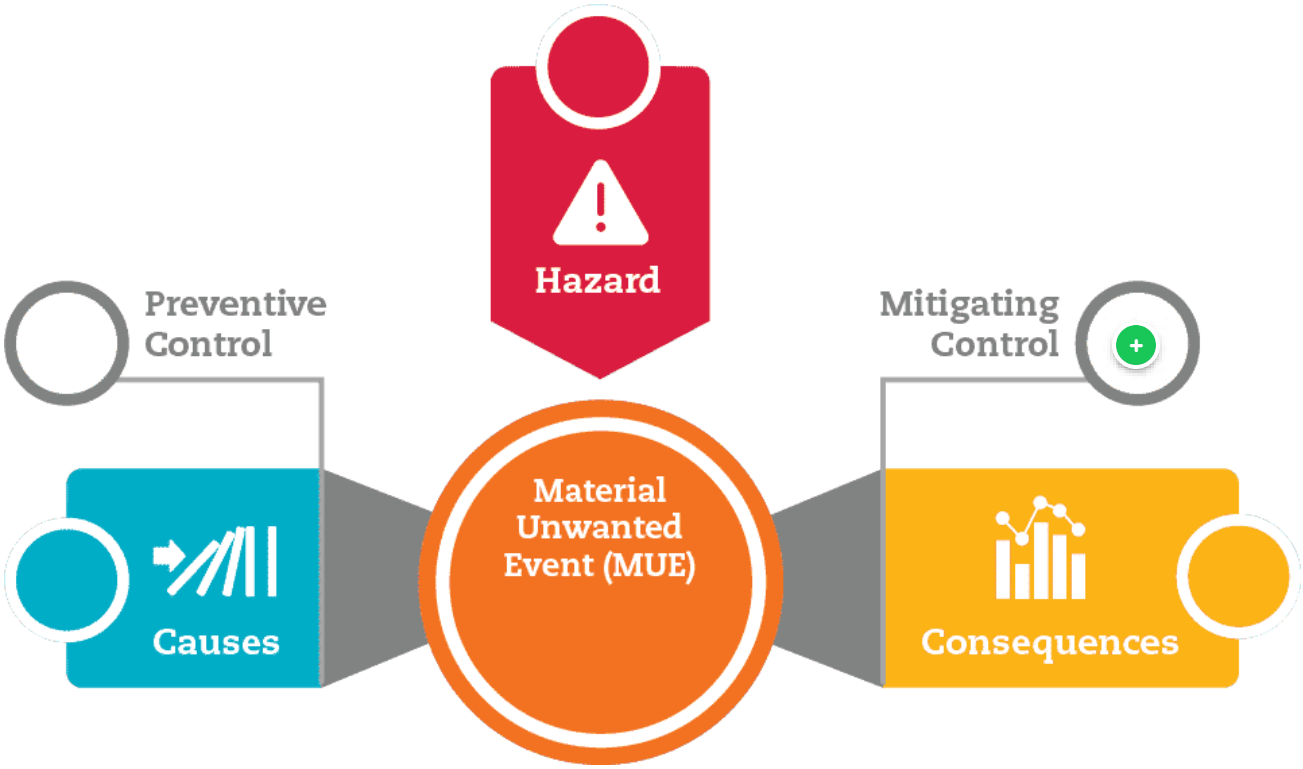
- Fixed cage structure;
- Full cage protective barrier;
- Pressuring sensing device;

Lack of training



Causes

- Other people may position equipment in the way of your lift properly moving.
- Vehicle instability;
- Poor visibility;
- Proximity to heavy equipment;
- Confined overhead conditions
- Vehicles with inadequate conditions;
- Lack of training;
- Operator distraction.



Mitigating Control

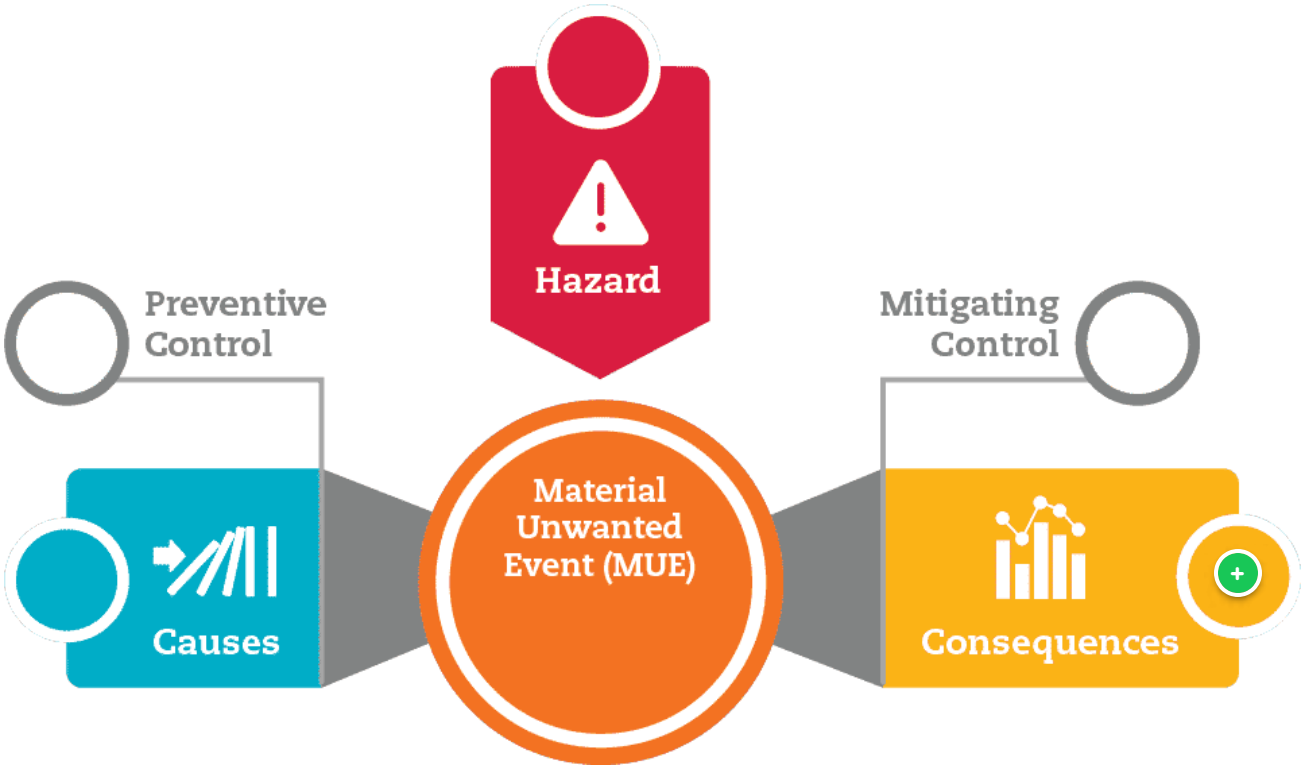
- Fall restraint
- Emergency response plan.

Crushing:

- Emergency response plan.

Object hits the person:

- Emergency response plan.



Consequences

- Person hit his head;
- Object hits the person;
- Crushing;
- Fatality;

Complete the content above before moving on.

Activity

Indicate the controls that could have contributed to preventing or mitigating this event:

Select all that apply.

Question

- [ ] Always be Aware of your surroundings.
- [ ] Ensure other vehicles are not positioned within the area with which the MEWP will be operating.
- [ ] Select the correct vehicle has been designed to mitigate the risk of entrapment.
- [ ] Barricade the area to prevent vehicles or pedestrians from
inadvertently entering the work area.

SUBMIT

Got a Question?

Submit your question here using Valeforms, be sure to include your first name last name and contact information.

CLICK HERE!

Complete the content above before moving on.

Groups and Types Classifications

In this section of the module, you will learn to, recognize and describe different group classifications of mobile elevating work platforms, describe the purpose of the different types of mobile elevating work platforms and identify some of the more common types of mobile elevating work platforms and where they can be used.

00:18

Terminology and Classification

Aerial Work Platforms have been renamed and are now called Mobile Elevating Work Platforms or MEWPs. Along with the new terminology for lifts is a new classification system.

Aerial Work Platforms were classified by product type like scissor lifts, boom lifts, etc. MEWPs, with the introduction of the CSA Standard 354 have been classified into “groups” and sub-divided into three “types.”

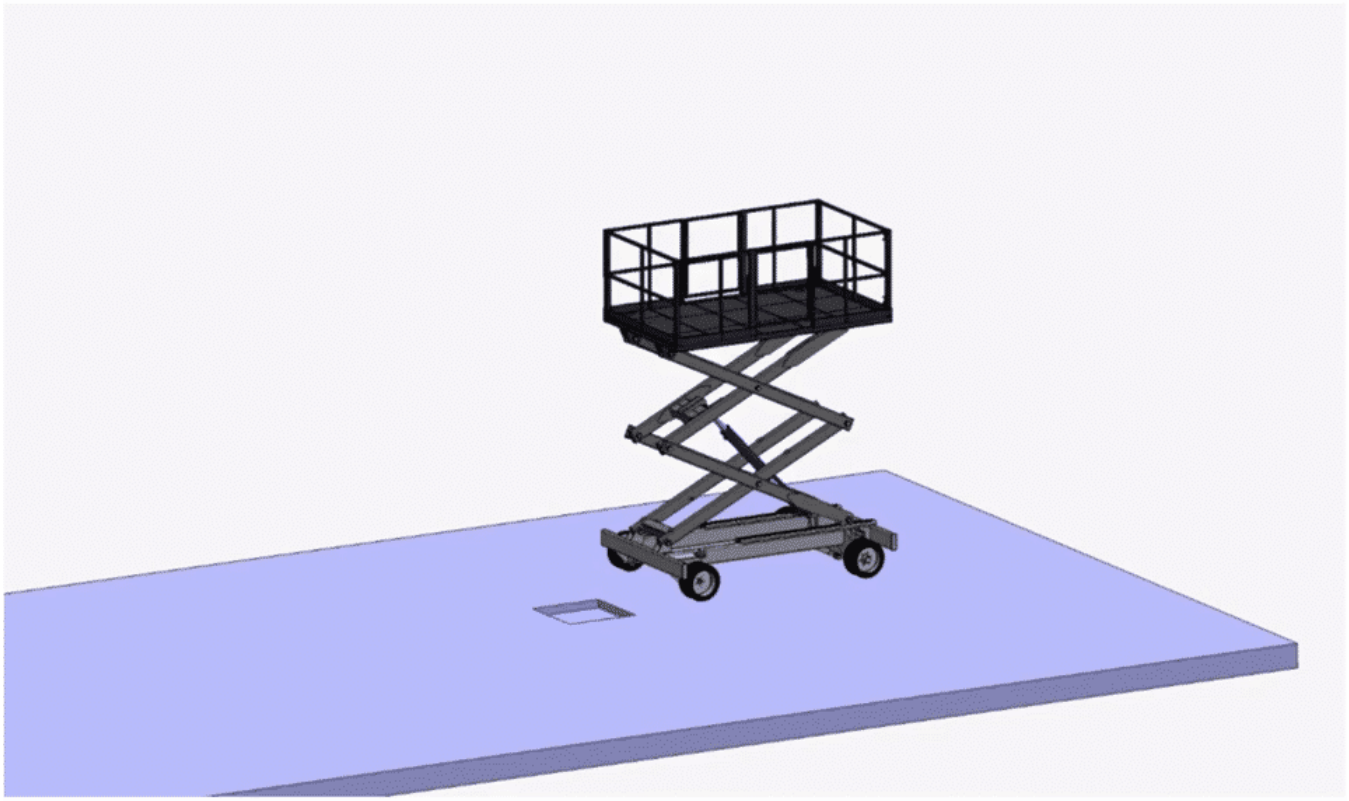
00:29

Group classification:

When a MEWP turns over, it tips across an axis or point. This is called the tipping axis or tipping point. MEWPs typically have four tipping axes—front, back, left, and right. Each MEWP has its own area of stability.

Group classification is determined by whether the lift stays within the tipping lines or moves beyond them.

Click on the tabs below to learn about group classifications.



GROUP "A" MEWPS

GROUP "B" MEWPS

“Group A” MEWPs move vertically but stay within the chassis or tipping lines. Scissor lifts are an example of this group.

GROUP "A" MEWPS

GROUP "B" MEWPS

“Group B” MEWPs are able to move beyond the machine’s chassis or tipping lines (wheels or outriggers). Group B generally refers to boom lifts.

Type classification:

MEWP Type is determined by whether the lift can travel when stowed or elevated, and the location of the controls which allow such travel.

1. **Type 1 MEWPs** can only travel with the platform in a stowed position.
2. **Type 2 MEWPs** can travel elevated and is controlled from the chassis.
3. **Type 3 MEWPs** can travel elevated and is controlled from the platform.

Note: Type 2 and type 3 MEWPs can be combined.

00:35

Listed below are some of the common types of MEWPs you may find in your workplace, click on the tabs to learn more.

Manually Propelled

A manually propelled MEWP must be moved by hand, the base of the lift rides on wheels or casters and supports the elevating portion of the lift.
This MEWP belongs to **Group A – Type 1**.

Self Propelled

Self propelled MEWPs move under their own power with controls mounted on the platform and base.
This MEWP belongs to **Group B – Type 2 & 3 combined**.

Boom Supported

Boom supported MEWPs use a boom that extends beyond the chassis to support the work platform.
The boom may articulate, telescope or rotate on the chassis.
This MEWP belongs to **Group B – Type 3**.

Vehicle Mounted

A vehicle mounted MEWP may be any boom lift, ladder or tower mounted on a commercial truck chassis.
These devices are designed to travel on public roads and are commonly used for power, telephone and cable companies.
This MEWP belongs to **Group B – Type 2 & 3 combined**.

Activity

What type of MEWP is it? Drag the card and drop it to the correct location to find out.

00:06

Group A – Type 1

Manually Propelled

Group B – Type 2

Self Propelled

Group B – Type 3.

Boom Supported

Reminder: Type 2 and type 3 MEWPs can be combined.

Which of the following is Not a type of MEWP?

- Manually propelled

- Suspension mounted
- Self propelled
- Boom supported

SUBMIT

What does the base of the manually propelled MEWP ride on?

- Magnetic current
- Railroad tracks
- Casters

- [ ] A truck bed

SUBMIT

The lifting mechanism of an MEWP lift may be a telescoping or articulated boom, or a:

Type your answer here

SUBMIT

Vehicle mounted MEWPS are commonly used to do maintenance on all of the following. Select all that apply.

Question

- [ ] Cable runs
- [ ] Telephone wires
- [ ] Power lines
- [ ] Inspections at elevated height

SUBMIT

Got a Question?

Submit your question here using Valeforms, be sure to include your first name last name and contact information.

CLICK HERE!

Complete the content above before moving on.

Description

Learning Objectives

Having a sound knowledge of the MEWP components will help you identify hazards in the workplace and implement risk mitigation strategies.

00:20

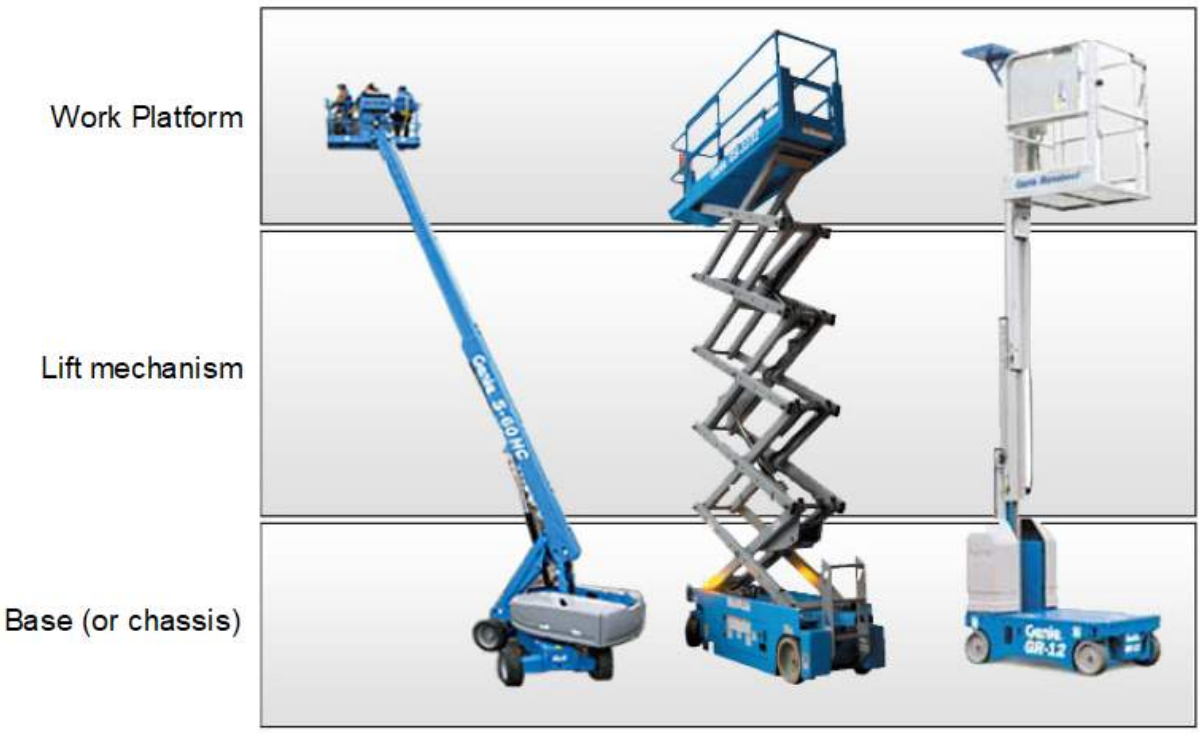
In this section you'll learn about:

- The components of a typical MEWP
- MEWP controls
- Safety components of a MEWP

Components

Although these Mobile Elevating Work Platforms (MEWPs) come in a variety of shapes/sizes, they all consist of three main components, the base or chassis, the lift mechanism and the work platform.

Click on the tabs below to learn more about the different components of a typical MEWP.



00:18

Activity

BASE OR CHASSIS	LIFT MECHANISM	WORK PLATFORM

The base or chassis is the moveable lower portion of the vehicle.
They contain the engine, drive-train, electrical and hydraulic systems, as well as the emergency control panel and counter balance weights.

The lift mechanism can be a telescoping or articulating boom, a tower (known as a mast), or a scissor lift.
Lift mechanisms are usually powered, either electrically or hydraulically, but in some cases, may be manually raised & lowered.

The platform is the part of the MEWP that is occupied by the worker. It could be a bucket, basket, or cage.
MEWPs also contain a set of controls on the platform for controlling various operations of the lift including: Raising or lowering the lift, Adjusting the position of the platform and Driving the unit

Types of Lifts

For the purpose of this training, the various types of mobile elevating work platforms will be referred to as:

- Vertical Lifts
- Boom Lifts
- Lift Trucks
- Manually Propelled
- Mast Booms

00:19

Activity

Click on the flashcards below to learn more about the different types of lifts.

00:05

Vertical lifts are MEWPS that only lift the work platform vertically over the base.

Group A classification encompasses: Scissor Lifts, Vertical Telescopic Masts and "Z" type vertical lifts. The most common of these being the "scissor" styled lift. Vertical Lifts can be used in

Boom lift MEWPs have the work platform carried on the end of an extendable boom which can position the platform away from the base of the vehicle.

Typically, the boom is attached to a turret (swiveling base) located on top of the chassis

2 of 5

Boom trucks are equipped with a lift mechanism attached to the chassis of a commercial vehicle.

Also referred to as "Cherry Pickers", these lifts are designed to position a work in a basket type platform.

This type of MEWP also belongs to Group B, CSA

3 of 5

Manually propelled work platforms must be moved by hand.

The base of the lift rides on wheels or casters and supports the elevating portion of the lift. Typically, the lift can be raised manually or by electric motor. This type of MEWP belongs to Group A, CSA Standard - 354.

4 of 5

MEWPs equipped with mast booms have platforms supported by a jib or boom attached to a mast tower, which can position the work platform away from the base of the unit.

This type of MEWP belongs to Group B, CSA Standard - 354. Mast booms are used in many

5 of 5

Complete the content above before moving on.

A vertical MEWP is used primarily for:

- ○ Lifting Materials
- ○ Transporting Materials
- ○ Lifting People
- ○ Lifting heavy equipment

SUBMIT

All of the types of MEWPS described in this section have unique operational and safety characteristics, and special training is required for each.

- ◯ True
- ◯ False

SUBMIT

Got a Question?

Submit your question here using Vale forms, be sure to include your first name last name and contact information.

CLICK HERE!

Complete the content above before moving on.

The Equipment

In this section of the module, you will learn about the equipment components that make up a typical Mobile Elevated Work Platform.

00:07

Overview

Unlike your personal car or other equipment you may have seen or operated, every component in a mobile elevating work platform is crucial to the operation of the unit.
For this reason, it is important for you to be fully aware of all aspects of the equipment you will be operating.

00:17

Directional controls should have clear markings indicating their function, and an override control that must be continually activated for the rest of the controls to work. This control automatically shuts off when it is released.

Mobile elevating work platforms also have emergency controls at ground level, in case the operator is unable to move the platform.

These controls must also be clearly marked and must be able to override all of the controls on the platform.

All MEWPs must be clearly marked with information about special instructions, cautions, or restrictions necessary for operation, the platform's rated workload, and whether the platform is electrically insulated. Any rotating gears, shafts and other moving parts that are exposed, and pose a potential hazard must have guards installed over them.

00:21

Finally, lifts have attachment points for fall protection devices installed by the manufacturer. Having a good working knowledge of the parts and pieces that make up a Mobile Elevating Work Platform will contribute to your ability to operate the unit in a safe manner.

00:16

Engine

The engine is the component of the lift that propels it forwards or backwards to navigate or position the lift vehicle. They come in various shapes and sizes, but all offer a power source for the lift.

The engine can also create an energy source to assist in the operation of the system for raising or lowering the lift.

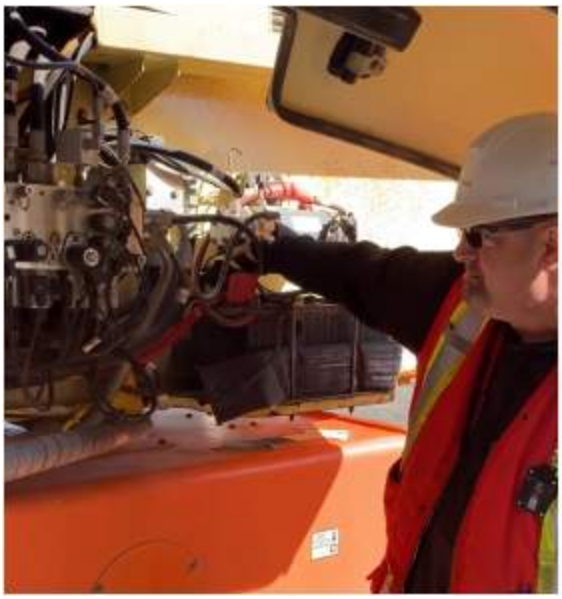
Click on the tabs below to learn about the different types of engines used to power a MEWP.

00:24

Activity

GASOLINE/DIESEL | PROPANE ENGINES | ELECTRIC/BATTERY ENGINES

Several MEWP models contain a combustion engine like that of your personal automobile. As with your personal vehicle, the fuel for these engines is either liquid gasoline or diesel.



GASOLINE/DIESEL | PROPANE ENGINES | ELECTRIC/BATTERY ENGINES

Another popular engine type for mobile elevating work platforms is Liquid Propane Gas (LPG). It is a safe reliable fuel. However, like other fuels, it is highly flammable and can be dangerous if not handled properly.
Unlike other fuels, it is stored as a gas under pressure in liquid form. This creates unique factors in storage and handling.

GASOLINE/DIESEL	PROPANE ENGINES	ELECTRIC/BATTERY ENGINES

As an alternative to compressed gas or liquid fuels, batteries offer a safer method of propelling the MEWP, while reducing the hazards associated with these other types of fuels.

Complete the content above before moving on.

Chassis

The chassis (or base of the unit) holds all the components such as the suspension, drive train, steering, hydraulic and electrical systems, as well as the lifts.

As the operator, you have direct control of the following:

- Speed of the lift.
- Direction (forward/reverse) of the lift.
- Steering (right/left) of the lift.
- Adjustment of the platform position.

00:22

Drive Train

The drive train is connected to the engine and comprises all the equipment used to propel the MEWP while in positioning or driving modes.

As a component of the drive train, the drive wheels come in one of 2 configurations:

2 Wheel Drive - Where the drive wheels are separate from the wheels used for steering the unit.

4 Wheel Drive - Where all the wheels are used for propelling the unit. (These models are typically used in rough terrain environments.)

00:29

Steering

Mobile elevating work platform steering is usually handled by 2 of the four wheels, normally the non-drive wheels. MEWPs do not use a "Steering Wheel" like you would use in your personal vehicle, rather they steer using a control on the platform control panel. A typical MEWP has four modes of steering, front wheel steer, rear wheel steer, crab steer and all wheel steer.

Hydraulic System

The hydraulic system makes use of industrial grade oil forced under pressure through hoses and cylinders to supply mechanical energy to various items such as the lift, steering, and other components.

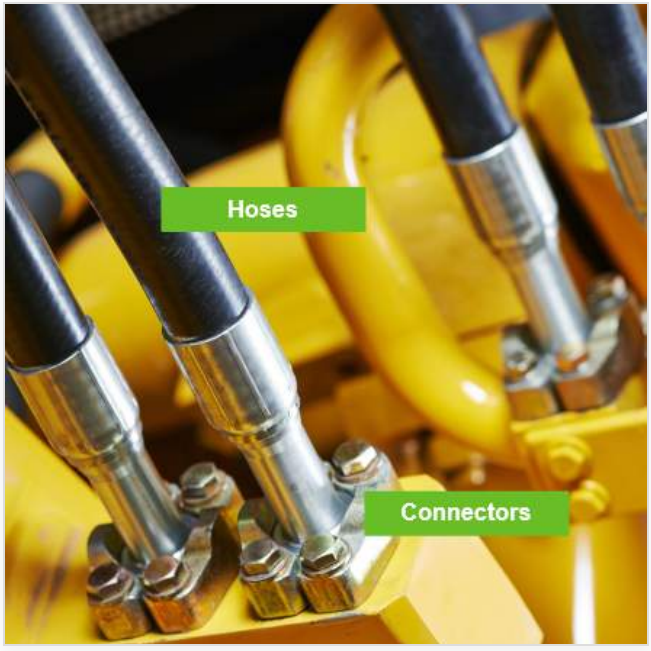
The pistons are connected to moveable portions of the lift and have oil forced into a cavity in the piston chamber to extend the piston either in or out, depending on the type of piston.

00:23

Activity

Click on the flashcards below to learn more about the MEWP hydraulic system.

00:05



The hoses supply the hydraulic oil to the various components of the hydraulic system. They are specially designed to handle the high pressures involved.
The fitting is the device that connects the hoses or components together.
Fittings are the receptacles

A piston consists of a chamber that contains a rod that can be extended or retracted as needed.
As previously stated, the hydraulic oil forces the rod to move by occupying the space within the chamber,

thus forcing the piston in or out as required.

Electrical System

Just like the hydraulic system, the electrical system is comprised of components that transfer energy to the various parts of the lift.
The lift requires electrical energy for:

- Raising and lowering the Lift
- Powering Controls
- Lights
- Alarms
- Motors for stabilizing the unit

00:20

Batteries

Lifts that require electricity to power equipment and/or the engine, typically store the energy in batteries.

The lift will contain a bank of connected batteries that work in unison to supply the power on demand. These batteries require re-charging after each use.

00:17

Switches – Connectors - Wiring

Harness

To activate various elements within the system, a lift makes use of control switches to direct the electricity to the desired component.

Single and multiple wires are combined using connectors to get the desired components connected.

A wiring harness is a group of wires strung together to supply power to various locations throughout the lift.

It is important to be aware of the connectors on the system as disconnected or loose connectors can cause problems with your lift.

Tires

The variety of uses for MEWPs has created a variety of different tires that can be used.

Tires are not typically swapped out as needed. Rather, the lift chosen for the work, will have the appropriate tires installed.

Knowing the various types of tires is important if you need to choose a lift for your work.

The composition of the tread and how the tire is inflated is important when choosing the proper lifts.

00:26

Listed below are some of the common types of tires used on MEWPS you may find in your workplace, click on the tabs to learn more.

00:08

Balloon or Farm Implement

This style of tire is typically used on flat or slab type applications where traction is less demanding, while having the support and strength of a larger tire.

Smooth Treaded

These tires are primarily used indoors or on flat/slab type surfaces. These specialty tires are smooth treaded and are composed of a material that does not leave marks on the surface being traveled on.
These tires are typically used where the floor has been finished such as indoors or outdoors on concrete or tiles found in decorative landscaping.

Pneumatic Tires

Air filled tires are like those of your passenger vehicle, as they can be punctured by nails, rocks, etc.
It is important to monitor these tires often to ensure they are not damaged and are maintained at proper inflation levels.

Liquid Filled

Liquid filled tires are filled with a calcium chloride solution.
This liquid solution is used instead of air to help prevent punctures (it stops leaks), and to add weight to the base of the lift for stability.

Mono-filled

Mono-filled tires have a high-density foam or rubber that turns into a solid over time. Again, this type of filler in the tire helps prevent flats, and adds weight to the lift base

Casters

Casters are used primarily indoors where there is risk of a puncture due to rolling obstructions such as, uneven ground or debris and thus do not require inflating.
The caster bodies are usually made of a solid substance such as metal or plastic.
The tire portion of a caster is typically solid and can have a special non marking surface applied to the tire to protect the surface they are traveling on.

Tire Inflation

What is on the inside of the tire, is just as important as what is on the outside. Tires come with a variety of contents to aid with strength and support of the lift.

As well, some tires are designed to help prevent punctures or deflation that could cause tipping of the lift.

Remember, Mobile Elevating Work Platforms rest the entire weight of the vehicle as well as the platform load on the tires. It is important to always be aware of the condition of the tires.

00:29

Lift Overview

The lift is the portion of the vehicle that propels the platform to the desired height.
The lifting arms are what connect the platform to the base of the equipment. The lifting arms can be scissor type configurations, or "Z" types which contain 1, 2, or 3 different sections that connect to one another in a Zig-zag pattern.
When the lift control is activated in the "raise" position, the hydraulic lift cylinder will move the sections upward, thereby raising the platform to a greater height above the base section.
When the elevate control is activated in the "lower" position, the cylinder will retract, bringing the sections with it and thereby lowering the platform.

00:39

Scissor Lifts

A scissor lift is a type of platform which can usually only move in the vertical plane. The mechanism to achieve this is the use of linked, folding supports in a crisscross 'X' pattern. The upward motion is achieved by the The contraction of the scissor action can be hydraulic,

application of pressure to the outside of the lowest set of supports, elongating the crossing pattern, and propelling the work platform vertically. The Platform may also have a platform extension to allow closer access to the work area (because of the inherent limits of vertical only movement). When the elevate control is activated in the "lower" position, the cylinder(s) will retract, bringing the sections with it and thereby lowering the platform.

pneumatic or mechanical via a lead screw or rack and pinion system. Depending on the power system employed on the lift, it may require no power to enter 'descent' mode, but rather a simple release of hydraulic or pneumatic pressure.
This is the main reason that these methods of powering the lifts are preferred, as it allows a fail-safe option of returning the platform to the ground by release of a manual valve.

Activity

Click on the tabs below to learn about some of the different types of MEWP lifts.

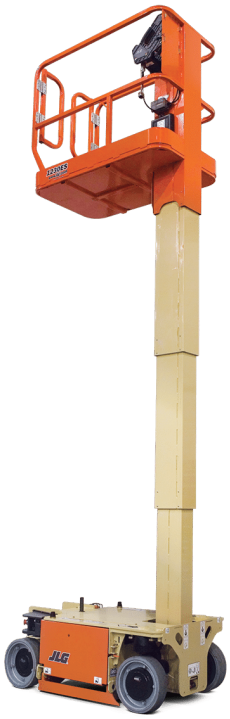
00:05

"Z" TYPE LIFTS | MASTS | JIBS

A variation on the vertical lift, is the articulating "Z" type which have all the same lift characteristics; however, the actual lift mechanism is a combination of vertical lifting arms which are inter-connected in a "Z" pattern.
The lifting arms are independently powered by pneumatic or hydraulic cylinders.

"Z" TYPE LIFTS	MASTS	JIBS

The "mast" refers to a vertical segment that expands to lift the platform.
The platform can be attached directly to the mast, or from a jib or boom attached to the top of the mast.
The mast itself remains stationary, however the base section it is attached to usually contains a turret which can be turned as needed.



"Z" TYPE LIFTS	MASTS	JIBS

The jib portion of the lift, is attached at the end of the boom to add greater flexibility in positioning the platform.
Jibs are typically short segments with the platform attached to pivot points. The platform can then be manipulated in a variety of directions using hydraulic control.

Stabilizer Systems

To increase the stability of a work platform, equipment is added to the base to widen the center of gravity to reduce the chances of the platform moving horizontally while at height.

This equipment comes in a variety of shapes, sizes, and methods to limit the movement of the lift.

00:18

Activity

Click on the tabs below to learn about some of the different types of Stabilizer Systems.

Stabilizers

Stabilizers are designed to extend down from the frame.
They may be telescopic or flip down and both methods are usually hydraulically driven.

Outriggers

Outriggers are moveable arms that can be erected to extend out from the frame.
A stabilizer is attached which can be adjusted to level the unit to suit the terrain.

Jacks

Jacks are typically extended straight down from the chassis or outriggers.
Depending on the type of lift, jacks can be extended either hydraulically or by hand.
Jacks are designed so that if needed, they can support the entire weight of the lift.
However, in most applications, jacks are used to assist in the stabilizing of the lift.

Extendable Axles

The drive train of a lift may have axles that can be extended to widen the overall foot-print of the lift.
Extendable axles may require a jack to lift the chassis while the axle is being lengthened.

Pothole Guards

Although not an actual "stabilizer" like those described previously, pothole guards are designed to help prevent the lift from tipping while being moved.
These devices flip down from under the chassis and prevent the lift from falling into potholes, off ramps, into grates, and other hazards.

Counter Balance

Counter balance is the term for additional weight that has been added to the chassis to help lower the center of gravity and help prevent the lift from tipping when the platform is extended away from the base of the lift.
Typically, the counter balance weights are manufactured to exist as part of the base of the lift. The load capacity of the lift is calculated with the counter balance weight being part of the machine.

Booms

Boom lift MEWPs may be equipped with various types of booms which include, Straight Booms, Articulating Booms and Telescopic Booms.

Click on the arrows below to learn more.

00:12

Straight Booms

MEWPs equipped with straight booms can only extend outward. Straight booms do not contain any joints but may occasionally contain jibs for additional maneuvering.

Articulating Booms

Articulated lifts, are almost exclusively hydraulically powered, and are the closest in appearance to a crane.

They consist of several jointed sections, which can be controlled to extend the lift in a few different directions, which can often include 'up and over' applications.

Telescopic Booms
Telescopic refers to the lifting arm, in which a series of concentric cylinders are expanded by hydraulic pressure.

Platforms

MEWP platforms have features with which you should be familiar. Click on the tabs below to learn about the different requirements that must be in place while working on a MEWP platform.

00:12

Activity

TOE BOARDS	RAILINGS	TIE-OFFS	EXTENSION DECKS

Toe boards are placed around the edge of the floor on the platform. They are there to prevent tools, materials, and debris from falling off the platform into the work area below.
In some instances, platforms will have a "Retaining Mesh" installed to help keep the contents of the platform from falling.

TOE BOARDS	RAILINGS	TIE-OFFS	EXTENSION DECKS

Railings are the welded tubular structure surrounding the platform that makes up the cage. They are designed to keep the worker safely on the platform.

Warning: Railings are not designed to support any other structure or load therefore you are prohibited from using the railings as scaffolding, load supports, or any purpose other than keeping the worker safe.

TOE BOARDS | RAILINGS | TIE-OFFS | EXTENSION DECKS

Tie offs are engineered rings and loops for attaching lanyards as part of a fall restraint system. They are in strategic spots on the platform to ensure the fall restraint equipment keeps the worker inside the platform cage, basket, or bucket.

Platform extensions are just that, extendable portions of the platform that can be spread to give a larger platform work area.
Extension decks have become a very popular accessory item on Vertical lifts. Deck extension design varies from manufacturer to manufacturer, but they all serve the same general purpose, to achieve a greater reach capability.
It is important to note that deck extensions commonly have a restricted load capacity rating.

Warning: Always refer to the Operator's Manual to verify operating characteristics and what load capacity ratings are for your deck extension prior to use.

Bucket Platforms

Buckets get their name because the unit resembles a bucket, as it is typically designed with the sides and floor being a one-piece enclosure.

Click on the tabs below to learn about some of the different components that make up a typical Platform.

00:14

Bucket Enclosures

Buckets are platform enclosures that are designed to hold one or two people.
They are typically constructed of a one-piece molded frame made from composite materials such as plastic or high tensile fiberglass.
Buckets typically do not have a gated entry way, rather one or more sides of the bucket are cutout so that the worker can climb into the bucket, or the unit rotates such that the worker can step into the bucket.

Tie-Offs

Although buckets are designed to enclose the worker, the unique design of the bucket means that tie-offs are still required to aid in keeping the worker from falling out of the lift.

Swivel

What differentiates buckets from other work platforms is the fact that buckets are typically mounted on a swivel.
This pivot/swivel point allows the bucket to be "leaned" giving the worker additional reach.
The swivel action also adds to the need for proper fall restraints while working, because the work platform is not entirely stationary.

Control Station

As with other Mobile Elevating Work Platforms, the bucket is equipped with controls that allow the worker to maneuver the lift.

Activity

MEWP platforms must be equipped with which of the following?

Drag the card and drop it in to the correct location to find out.

00:09

Required

Upper and Lower Controls

A Load Capacity Plate

An Operators Manual

Guardrails with Toe boards

Not Required

Extension Decks

Stabilizing Jacks

Got a Question?

Submit your question here using Valeforms, be sure to include your first name last name and contact information.

CLICK HERE!

Complete the content above before moving on.

Principles of Operation

Introduction

This section contains information every operator should keep in mind while in control of a Mobile Elevating Work Platform. Safe mobile elevating work platform operation depends on stability, concentration and safe work practices.
If you neglect any part of this combination, you're risking disaster.

00:22

Centre of Gravity

Every object on earth is affected by gravity. This is the force that pulls all matter towards the center of the earth. All objects have a centre of gravity.

The centre of gravity of an object is the point about which all forces of gravity are equal. This is vitally important to the Mobile Elevating Work Platform Operator, as the centre of gravity changes.

The operator must be knowledgeable about the concept of center of gravity and understand how operation can affect the centre of gravity of the unit.

The point at which the combined centre of gravity is located is always shifting as the platform is operated in our out, up or down, forwards or backwards, and rotating left or rotating right.

The combined centre of gravity is also affected by any inclined surface.

00:51

Stability

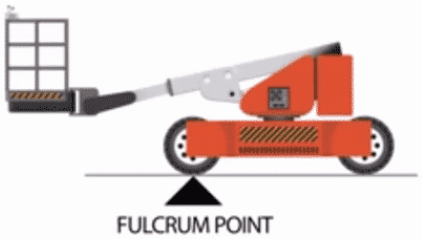
Stability is a function of height, weight support, and surface conditions. The object is to keep the center of gravity as low as possible, and as close to the center of the chassis as possible.
Out riggers, stabilizers and extendable axles help to keep the lift stable by creating a broader base, and more solid support. Use these devices whenever you require them.

Warning: All Mobile Elevating Work Platforms are intended to work on flat, level surfaces.

Watch the video in full to continue.

Fulcrum Point

The Fulcrum Point is the point at which the weight of the unit is balanced. Think of a teeter-totter, and the point of the frame where the balancing takes place.
Lifts that extend the platform away from the base must be operated with this fulcrum in mind.



Watch the video in full to continue.

Fulcrum Point for Straight Mast Boom

The boom lift works on the simple principal of loads balanced over a set of two wheels: the fulcrum. When the boom lift platform is extended over the drive wheels, then the drive wheels become the fulcrum. When the platform is extended 90 degrees to one side or the other, then the set of wheels over which the platform is extended become the fulcrum. The fulcrum point changes from one set of wheels to the other. The fulcrum point also changes as the platform is elevating and swinging into position.

Video Poster

Watch the video in full to continue.

Fulcrum Point for Articulated Boom

The same "fulcrum point" rules apply to the articulated booms as well.

When you: raise, lower, extend, swing, or activate the boom function, the fulcrum point, as well as the center of gravity, changes as the platform changes its position. Sometimes there is only a little change, and sometimes the change is a lot.

The important issue for you to understand and must always keep in mind as you operate the boom lift is, that all of the inter-related boom lift forces are always changing.

Warning: Always be aware of the changing dynamics of the boom lift as you are operating it.

Watch the video in full to continue.

Side-Slope and Grade

An operator must be aware of the side-slope or grade of the terrain where they intend to operate. Always refer to the owner's manual for limits that will affect the operation of your unit. This animation indicates what is meant by side-slope and grade for each type of equipment. While you might have to drive your mobile elevated work platform up a 15% grade to get to your worksite area, the lift is intended to be operated on a flat level surface.

Warning: Do not raise the platform if the grade exceeds the manufacturers specifications.

Watch the video in full to continue.

Wheel Base Widths

Mobile Elevated Work Platforms come in a lot of different shapes and sizes. One Important area for you to be concerned with is the unit's wheelbase width. If the width is too wide you may have difficulty getting into tight spaces.

When in doubt, first measure the area you will be working in, then compare it to the unit's specifications to make certain it will fit.

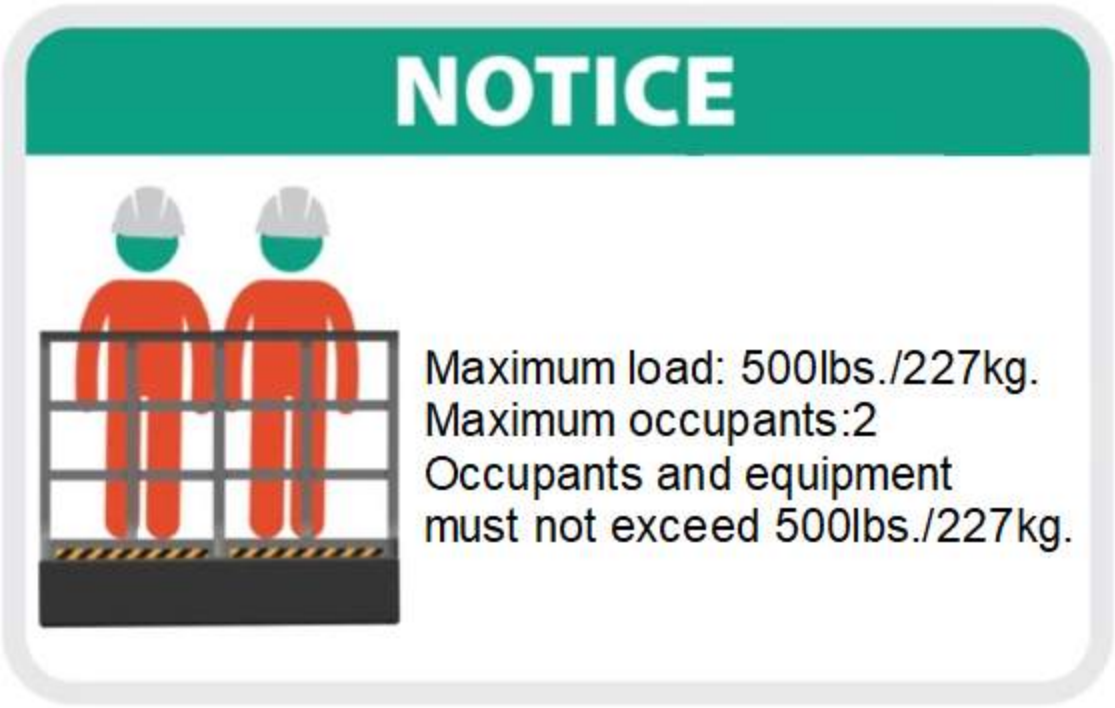
Small scissor/vertical lifts start with a 30" wheelbase width and the largest units utilize up to a 10' wheelbase width.

00:33

Maximum Working Height vs. Maximum Platform Height

Complete the content above before moving on.

Rated Work Load / Load Capacity Rating



Since all Mobile Elevating Work Platforms carry people and materials, they are rated with a maximum lift load capacity.

The load capacity is the Maximum Allowable Weight allowed in and spread evenly over the work platform.

As long as you remain within your rated load capacity and are operating on surfaces that will support your unit's weight and will maintain its stability, you should be able to operate the unit safely. You should check your operator's manual to ensure you are safely within your units' safe operating parameters.

Keep in mind . . . the maximum allowable load weight includes; you, your workmates, all of your tools, and the materials you plan to use.

00:43

The rated work load capacity decals will always be located at each entrance into the platform and at the operator control stations.

You should verify that these decals are in place during your pre-shift inspection.

Keep in mind, each manufacturer has their own style of decal, but they always must supply you with the same basic information.

They always must tell you what the maximum allowable weight load is.

Once again, the maximum allowable weight load includes all personnel, their tools and materials spread evenly over the platform.

00:34

Evidence of Good Operation

The work performed by the Mobile Elevating Work Platform will supply evidence of good operation when:

00:42

- The unit is responding to controls.
- The unit is running smoothly.
- The lift movements are normal.
- The Hydraulic and Electrical systems are operating normally.
- The stopping and braking of the unit is normal.
- The operator has erected appropriate barricades and roped off the area.
- The operator has setup and erected the lift using all of the appropriate safety and stabilization equipment.
- The operator has positioned and erected the lift away from surrounding hazards.

You are about to begin operating a vertical lift with a 25ft. maximum platform height. What is your maximum working height?

Question

- 31ft.
- 34ft.
- 18ft.
- 29ft.

SUBMIT

Lift stability is a function of height, weight, support and:_____.

Question

- Rotation

- ○ Strength
- ○ Speed
- ○ Surface conditions

SUBMIT

How should you handle traveling on a grade?

- ○ Go very quickly to mount the grade.
- ○ Avoid the grade entirely.
- ○ Use your lowest gear.
- ○ Do not exceed your placard specifications.

SUBMIT

Got a Question?

Submit your question here using Valeforms, be sure to include your first name last name and contact information.

CLICK HERE!

Complete the content above before moving on.

Lesson 8 of 11

MEWP Safety

In this section of the module, you will learn about the different aspects of the safe operation that you should be aware of when operating a Mobile Elevating Work Platform.

00:11

Overview

The operation of any mobile elevating work platform
is subject to certain hazards that can only be protected against by following, safe work procedures and practicing situational awareness.
That is, being aware of where you are, where you are supposed to be, and what is happening around you.
More importantly, is there anyone or anything around you that can cause harm to you or others?

00:24

Required Lift Safety Information

The proper operation of the lift is based upon a trained and knowledgeable operator. Much of the information they require can be obtained directly from the lift itself.

Manuals

The owner's manual for the lift is always kept right on the unit. This is a good source for slope and grade ratings, unit specifications, etc.

Stickers and Plates

The lift will be equipped with appropriate stickers and plates depicting vital information regarding load limits, safety hazards (such as pinch points), and other information required for safe operation of the lift.

00:37

Fall Restraint vs Fall Arrest

The unstable nature of a Mobile Elevating Work Platform creates a potential for the occupants of the lift to be ejected out of the platform.

Using the wrong type of safety equipment can only compound the problem as the worker can still be ejected and now becomes part of an unstable load adding additional forces to the platform.

It is important for you to understand the difference between a fall arrest system and fall restraint system.

00:27

The reason a Fall Arrest system is not desired for this purpose, is that it would allow the worker to fall, and subsequently in the process of stopping the fall, generate enough force to topple the lift platform.

In addition, if the Fall Arrest equipment stopped the fall, the worker now becomes a pendulum adding unstable forces to the platform as well as extending the center of balance for the lift.

00:23

Activity

Click on the tabs below to learn more about the differences between fall arrest systems and fall restraint systems.

00:07

FALL ARREST | FALL RESTRAINT | WHEN AND WHERE | REMINDERS

A personal **fall arrest system** means a system used to arrest the forces of a fall by someone working at height.
The system dissipates the violent forces while catching the falling worker. It consists of an anchor point, connectors, a body harness and lanyard, deceleration device, lifeline, or suitable combinations of these.
The entire system must be capable of withstanding the tremendous impact forces involved in stopping or arresting the fall. These forces can be as much as 5000 lbs. for an average sized person.
All occupants in the platform must wear a full body harness with a lanyard attached to an authorized lanyard anchorage point.

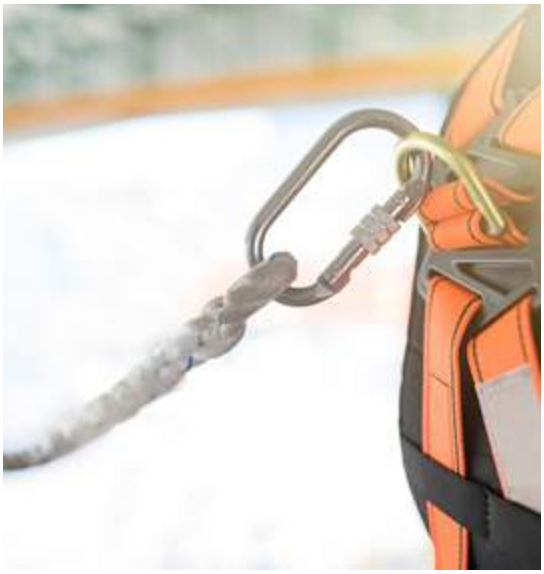
FALL ARREST | FALL RESTRAINT | WHEN AND WHERE | REMINDERS

A **fall restraint system** is used to keep an employee from reaching a fall point, such the edge of an elevated working surface.
The most utilized fall restraint system used for Mobile Elevating Work Platforms is a standard guardrail.
As well, an additional restraint system is the use of a tie-off system and a properly adjusted lanyard that "restrains" the employee from falling off an elevated work platform.
This is typically handled using a full body harness and lanyard connected to the manufacturers tie-off point on the work platform.

FALL ARREST | FALL RESTRAINT | WHEN AND WHERE | REMINDERS

There are different times in the operation of a lift where a worker can be at risk of falling out of the platform.
Therefore, it is mandatory that a worker use a full body harness and a lanyard whenever working on Mobile Elevating Work Platforms.
Warning: The use of fall restraints is enforced by government regulations and Vale Policies. Do

not attach your fall arrest equipment outside of the platform unless you are going to be leaving the platform area.
Always attach your lanyard to the manufacturer's attach point when in the platform.



FALL ARREST	FALL RESTRAINT	WHEN AND WHERE	REMINDERS

Attach only one lanyard per lanyard anchorage point.
Ensure the fall protection system allows you to move around the platform but provides a minimum of lanyard slack.
Make sure that access gates are closed and secured before you raise the platform.
Keep both feet on the platform at all times and do not reach too far out.
Do not use lumber or ladders to get additional height on the platform.
Do not step on guardrails or gate rungs and do not climb out of the platform for any reason.
Reminder:
A fall arrest system shall consist of a full body harness with adequate attachment points and a lanyard equipped with a shock absorber or similar device.
The fall arrest system shall be arranged so that a worker cannot hit the ground or an object or level below the work.

Complete the content above before moving on.

Hazard Awareness - Overview

Being able to identify potential hazards is a key ingredient to the safe operation of the lift.
Some hazards are not immediately visible; therefore, the operator must be aware of the work environment around them.
The following are common workplace hazards that most lift operators encounter.

00:20

Click on the tabs below to learn more about the different types of hazards working with or around a MEWP.

00:07

Blind Spots

Lift designs may have blind spots that pose a problem while driving the unit.
Blind spots can prevent you from spotting hazardous terrain, obstacles and pedestrians.
Ensure you have a clear line of sight whenever moving the lift. If required, have another worker guide you and help spot the hazards.

Obstructions

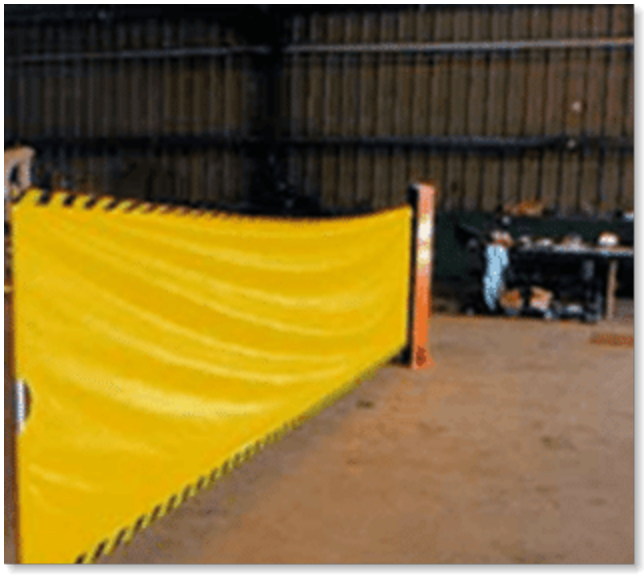
Work areas come in a variety of shapes and sizes. Because of this, various portions of the surrounding area can become a hazard to the safe operation of the lift.
Obstructions can be anything, which the lift or worker can encounter during any part of the operation of the lift.
Examples include, buildings, structures, scaffolding, electrical wires, trees, and other equipment.
Obstacles are also present in a variety of locations around the lift, so constant awareness of both the surroundings and what is above you is important.

Terrain

The terrain being traveled on, including the location where the lift will be positioned should be able to support the weight of the lift and its contents and passengers.
Uneven terrain can cause problems with lifts that are not designed for travel in these areas. As well, slick conditions can cause issues with the traction of the unit.

Pedestrians

Work areas can be busy with people near your lift. Be aware of pedestrian traffic flow and any personnel who may be at risk from the movement of your machine or falling objects from the work platform.
A properly marked area around your lift and alerting other workers of your intention to move the lift are two ways in which you can decrease the risk.



Controls

Activity

There are methods by which you can apply Vale's 10 Golden rules to control the hazards of driving or working around a MEWP.

00:09

00:02

Click on the start button to learn more.

Control 1

When driving on the worksite:

00:32

- Choose the least obstructed and most level path.
- Watch out for other vehicles.
- Keep pedestrians at least six feet away.
- Do not attempt to travel on grades that exceed the placard specifications.
- Avoid high-speed driving in close quarters, in reverse or on grades.
- As with any vehicle, drive defensively, assume that other drivers do not see you, and yield the right of way if other drivers do not see you.
- Always follow any other site-specific regulations.

Control 2

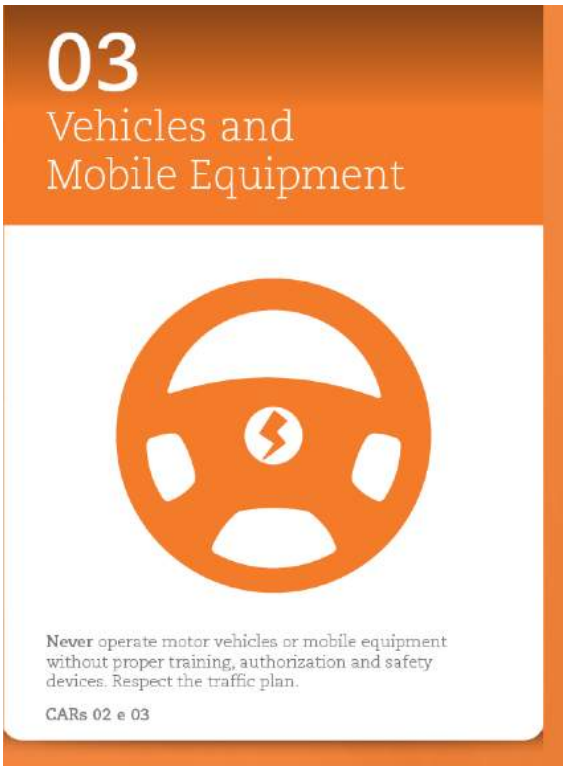
When arriving at the site:

00:30

- Position your lift so you can perform overhead work without moving it again.
- Check clearances above, below and on the sides when you raise or lower the platform.
- Do not use other objects to steady the platform.
- Do not position against, tie to, or be restrained by, another object.
- Set the brakes of the lift to prevent accidental movement.
- If you must park on an incline, install wheel chocks to keep the lift from slipping.

Driving Hazards - Summary

00:13



You have now learned how to control the hazards while driving or working around a MEWP.

Click the continue button to learn about the hazards you may encounter while working on the platform.

Complete the content above before moving on.

Hazards – Working on the Platform

Hazards and Controls

Complete the activities below to learn more about the hazards while performing work on mobile elevated work platforms and the controls to mitigate that risk.

00:11

Entanglement

HAZARD	CONTROLS

Many jobs require the use of electrical cords or air hoses. Improper use or storage of these could cause the operator to become caught up in the hoses while the platform is in motion.

HAZARD	CONTROLS

To reduce the risk of entanglement, always ensure that the cords/hoses are not:

- Entangled in the platform

- Entangled with structures outside of the platform
- Any workers on the platform are not entangled when moving, raising, or lowering the lift.

When working by yourself, or with multiple people on the platform, be mindful of lanyards, cables, and hoses as they pose a constant hazard.
Proper house keeping and situational awareness can help ensure workers do not trip or cause equipment or tools to fall to the ground.

Entrapment

HAZARD	CONTROL

Some hazards are not present when you setup your lift.
For example: Other people may position equipment in the way of your lift properly moving. This may cause you to be trapped on the platform with no safe means of getting down.

HAZARD	CONTROL
	To reduce the risk of entrapment, always be aware of your surroundings. If you become entrapped, every effort should be made to get assistance from others so that you do not have to leave the platform.

Horizontal Forces

HAZARD	CONTROLS
Pushing or pulling objects outside of the lift causes horizontal forces to be applied to the lift. These forces are known as "Horizontal Load" and add to the total load amount of the platform.	

HAZARD	CONTROLS

Avoid horizontal forces from work tasks that could cause the platform to sway and become unstable.
Never push off or pull toward any surface, structure, or object outside of the platform.

Energized Power Lines

HAZARD	CONTROLS

Energized power lines and parts pose very serious considerations for the aerial work platform operator.

HAZARD	CONTROLS

It is mandatory that the operator ensures that the minimum safe approach distance to energized power lines and parts be maintained during the entire operation of the lift.
In some jurisdictions it is mandatory to complete a course in Power Line Hazards as a pre-requisite if there is a chance of power line encroachment.
The MSAD may also vary by jurisdiction. For example it may be 10 feet for voltages of 0 to 300 Volts in one Province and 18 in another. Always refer to local Province regulations and increase this distance for larger energy sources.
This distance is important as electricity can arc from the energized source to the lift. Most mobile elevating work platforms are NOT equipped for working near energized lines or parts.
Warning: Assume all electrical parts and wiring are ENERGIZED unless proven otherwise.

Environment Conditions

HAZARD	CONTROLS
Outdoor operation of the lift can be made less safe by weather conditions: - High winds can affect the stability of a raised platform. - Rain can make the surface slick, affecting traction of the unit. - Rain can also make the floor of the platform slick adding a potential for injury.	

HAZARD	CONTROLS

In more severe storms, use of the lift should be avoided if there is a potential for lightning. Anyone who operates a lift, should have access to ACCURATE, REAL-TIME weather data. Manufacturer's Operating Manual contains maximum operating wind speeds.

Hazard - Hoisting

Never use the lift as a crane. Load limits and additional forces such as the pendulum effect can cause the lift to tip.
As well, do not hoist tools, equipment, etc. over the side of the platform as this too can create a pendulum effect or unbalanced load and tip the lift.

00:20

Hazard - Loading

In addition to the weight of the load on your lift, ensure that the load is spaced evenly. Un-even loads may cause the lift to become unbalanced and tip.

Warning: Remember that people count too! That is, when loading your lift remember to account for passenger weight and leave room to work near or around them safely.

00:22

Hazard - Safety Prop

A hazard exists when working around Mobile Elevating Work Platforms when they are elevated.

There is a potential for the lift to fail and lower prematurely.

This can result in personal injury or damage to the equipment.

The Safety Prop is a device that is inserted within the lift structure to prevent the lift from lowering accidentally.

The prop is usually attached as part of the lift mechanism, or available as an insertable device.

Warning: It is not used when workers are active on the lift, as they need the ability to lower the platform when desired..

00:36

Hazard - Crush Points and Pinch Points

As the lift is being re-located or positioned, keeping body parts within the platform railings will help prevent them from being in situations where they can be pinched or crushed.
As well many parts on the lift are moveable and may be a potential crush or pinch point.
Consider the following examples of incidents that have occurred at Vale operations below.

00:25

(Click on incident report to zoom in)

MATERIAL LOSS EVENT | FAILED ELEVATING PLATFORM | CLOSE CALL EVENT

INCIDENT REPORT

DIR, NORTH ATLANTIC OPER(S) / MGR, INTEGRA ASSET MGMT NA (S) / IAM-PRJ&SHTDWN-CRTN/GRSN CAPEX

NOTIFICATION OF EVENT

☐ EVENT WITH PERSONAL LOSS	☐ EVENT WITH ENVIRONMENTAL LOSS	☐ EVENT WITH MATERIAL LOSS	☐ EVENT WITH COMMUNITY LOSS	☐ OPERATIONAL OCCURENCE	☑ EVENT WITH NO LOSS

SEVERITY	ACTUAL	POTENTIAL
HEALTH & SAFETY	No Consequences	D - Critical
ENVIRONMENT	No Consequences	No Consequences
SOCIAL & HUMAN RIGHTS	No Consequences	No Consequences
FINANCIAL	No Consequences	No Consequences
REPUTATION	No Consequences	No Consequences

DATE: 2021-01-25 TIME: 20:30

LOCATION: Creighton Mine - DIV6 DEV / ID: 2582

CITY/STATE/COUNTRY: Sudbury/Ontario/Canada

SAP - IM IDENTIFICATION NUMBER: 9717131

CLASSIFICATION OF ACTIVITY: Controlled

WAS THERE IMPACT FOR THE COMMUNITY? No

FATAL INJURIES IN COMMUNITY MEMBERS: 0

NON FATAL INJURIES IN COMMUNITY MEMBERS: 0

BRIEF DESCRIPTION:

2021-01-25_20:30__IAM-PRJ&SHTDWN-CRTN/GRSN CAPEX_Creighton Mine - DIV6 DEV

ASSOCIATED RAC: RAC 01 - Working at Heights

TYPE OF SERVICE: Project

CLASSIF. OF ENVIRONMENTAL IMPACT:

DETAILED DESCRIPTION:

Technica worker was standing on top of railing of scissor truck trying to install Fan at 7680 F.A.R without fall protection.

Contacts: WILLIAM W BAILEY - bill.bailey@vale.com - superintendent, prj&shut mgmt;WILLIAM W BAILEY - bill.bailey@vale.com - superintendent, prj&shut mgmt

MATERIAL LOSS EVENT | FAILED ELEVATING PLATFORM | CLOSE CALL EVENT

Inspection of Elevating Work Platforms

Failed Elevating platform – Coleman 2012 / CCM 2015

HAZARD

Employees rely on elevating work platforms (EWPs) to perform their work. Failure of EWPs while working at heights can result in severe injuries or death

RISK

- Previous EWP failures at Vale were linked to lack of inspection on welds / weld repairs repairs.
- Some EWPs have incorrectly setup maintenance plan in SAP for baskets, forklifts, forks, etc.

CONTROLS

- Pre-op Inspection
- CAR 1 – Working at Heights
- All elevating work platforms used at Vale are required to follow a very specific Inspection Plan.
- Minimum requirements are Mandatory and are covered in Vale's Maintenance Standard MSPEC-81002(http://extportal.vale.com/maint/sud/pdf/MSPEC-81002-3.pdf).

Life matters most | Prize our planet | Do what is right | Value our people | Improve together | Make it happen

MATERIAL LOSS EVENT	FAILED ELEVATING PLATFORM	CLOSE CALL EVENT

Example required

NOTIFICATION OF EVENT

☐ EVENT WITH PERSONAL LOSS ☐ EVENT WITH ENVIRONMENTAL LOSS ☑ EVENT WITH MATERIAL LOSS ☐ EVENT WITH COMMUNITY LOSS ☐ OPERATIONAL OCCURRENCE ☐ EVENT WITH NO LOSS

MGR, ENVIRONMENT BM (S) / HEALTH & SAFETY SYSTEMS(S) / ENV AIR PLANT SUPPORT(S)

DESCRIPTION:
While maneuvering a boom lift into position, operator was attempting to keep boom tight to one side to allow other vehicles to get by if need be. The area was roped off and tagged. The spotter was watching the lift operator and failed to notice the swing radius of the other end of the boom. As it was swinging, it grazed a work vehicle that made a noise. The spotter signaled for the operator to stop. Upon inspection, only a slight scratch in the vehicle resulted. After the work was completed, the lift was then descending. Again the spotter failed to notice the opposite side of the boom, focusing instead on the operator and basket. The boom was lowered onto a fenc

ID	10432918
DATE	May 12, 2021
TIME	11:00:00 AM
LOCATION	Sudbury - Concentrate Receiving Fac
ASSOCIATED RAC	NA : Not applicable

	SEVERITY (SAFETY)	SEVERITY (ENVIRONMENT)	SEVERITY (FINANCIAL)	SEVERITY (SOCIAL)
ACTUAL	No Consequences	No Consequences	A - Minor	
POTENTIAL	D - Critical	No Consequences		

VALE

Activity

What is the minimum safe approach distance to maintain between your lift and a 300V energized power line?

Question

- It depends on Province, refer to local regulations.
- 30ft.
- 10ft.
- 5ft.

SUBMIT

How do outriggers, stabilizers and extendable axles help stabilize the chassis?

Question

- Allow the platform the raise higher.

- Extend the boom.
- Create a broader base.
- Allow the use of larger wheels.

SUBMIT

Once you are at your worksite, how do you position your lift chassis to perform overhead work?

- On the downside of a grade.
- So the lift may be moved when needed.
- Steadied against a tree.

- So the lift will not need to be moved again.

SUBMIT

When parking on an incline, what must be installed to keep the vehicle from slipping?

- Flashing lights.
- Access ramps.
- Wheel chocks.
- Caution signs.

SUBMIT

Attachment points are required on a platform for:

- Hanging power cords.
- Securing fall protection devices.
- Securing lunch boxes.
- Climbing down.

SUBMIT

Whenever moving the lift, if you do not have a clear line of sight have another worker guide you and help spot the hazards.

- ◯ True
- ◯ False

SUBMIT

A fall restraint system required on MEWPs consists of the following components. (Select all that apply)

- ☐ Standard Guardrail.

- [ ] Properly Adjusted Lanyard.
- [ ] Full Body Harness.
- [ ] Tie-off Point on the Work Platform.

SUBMIT

Got a Question?

Submit your question here using Vale forms, be sure to include your first name last name and contact information.

CLICK HERE!

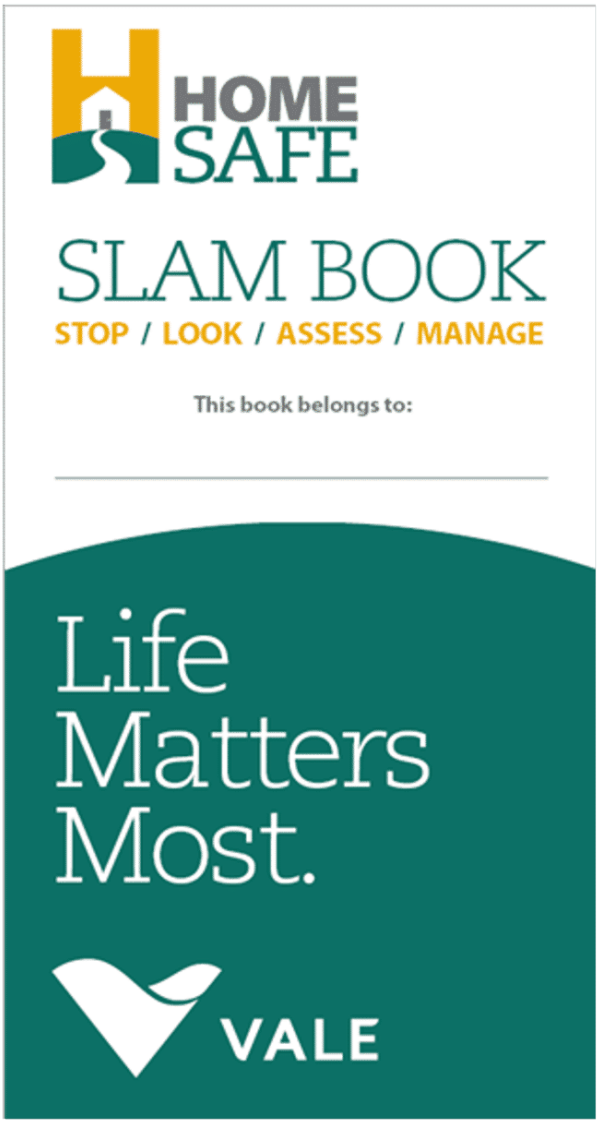
Complete the content above before moving on.

Pre-Operation Requirements

The purpose of this section is to familiarize you with basic operating procedures before actually operating the unit. Upon completion of this section, you will have a basic knowledge of how to start, stop, and operate a MEWP safely.

00:16

Risk Assessment and Rescue Planning



With the implementation of CSA Standard 354, MEWP operators must perform a risk assessment and ensure a rescue plan is in place prior to commencing any work involving MEWPs.

Risks associated with the task specific to MEWP operations shall be identified.

These might be associated with the location where the work is to be carried out, the nature of the MEWP, or materials and equipment to be carried.

The user must develop a written rescue plan that will be carried out in the case of machine breakdown, platform entanglement or fall from a platform.

Furthermore, all occupants must be qualified to operate and receive training that explains the procedures to follow if they fall or witness another worker's fall. This plan must limit the time that a properly restrained worker hangs suspended in the air.

00:52

Prepare to Startup Procedures

One of the responsibilities of each mobile elevating work platform operator is to perform a preoperational inspection.

This inspection is to be performed prior to starting the engine and using the machine to perform

work.

A visual inspection and functional test by the operator includes:

- Operating and emergency controls.
- Safety devices.

00:23

Note: Refer to the Operators Manual for your type of equipment.

Why Perform a Pre-Operational Inspection?

Prior to putting a machine to work each day, an inspection shall be made. This shall be a visual as well as a functional inspection.

While lifts and lift types are different you would be looking for many of the same things on all of them.

The preoperational inspection determines the machine's suitability to operate. It is also a major component in the preventative maintenance program.

00:25

Click on the start button below to learn more about how to perform a pre-operational inspection.

00:06

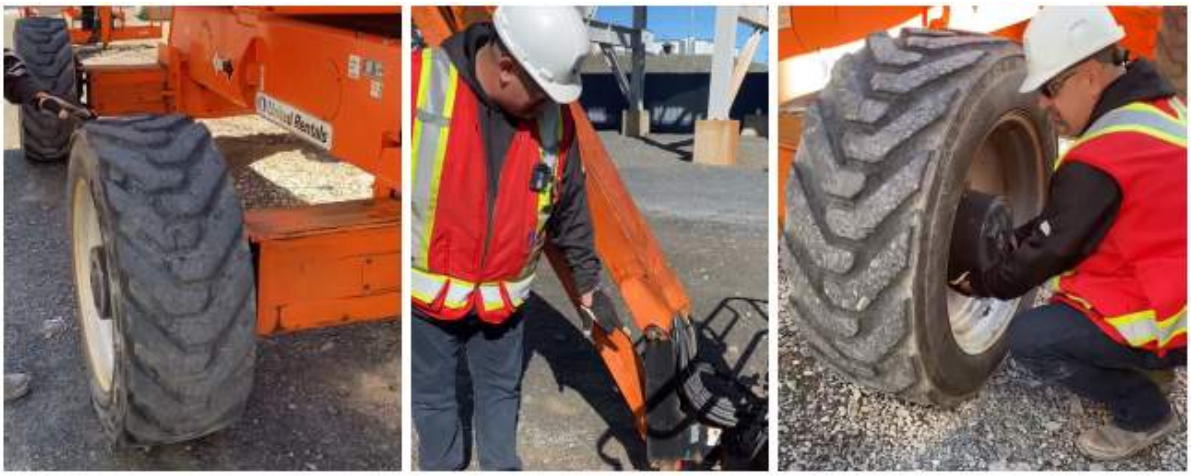
Pre-Operational Inspection

Click each of these to learn more.

Step 1

Chassis

00:28



- Start by inspecting the steering axle for visible damage and for loose or missing parts.
- Check hydraulic cylinders, hoses and fittings for leaks.
- Check all wheels and axles for damage and for loose or missing parts.
- Check the tires for cracks, bulges, cuts and proper inflation.
- Checking the tire air pressure is important, lower pressure in one tire can cause the lift to be out of level, this can increase the potential for turnover.

Step 2

Lift Mechanism

00:14

- Check the lift mechanism for cracks and broken weld points.
- Inspect scissor lift end joints for signs of damage.
- Check the boom for flaking paint, which can be a sign of deformation leading to structural failure.

Step 3

Stabilization System

00:08

- Check the vehicle chassis including outriggers, stabilizers and guardrails for sign of damage.

Step 4

Electrical System

00:14



- Open the battery compartment to see if the cells are properly sealed.
- Look for frayed ends or broken insulation on cables and make sure all connections are tight.
- Check the battery for cracks or corrosion.

Step 5

Fuel System

00:24

- Check the fuel system for leaking hoses and joints.
- Check for cracks in the fuel tank, broken welds or other physical damage.
- Always perform fuel system checks outdoors and keep a fire extinguisher nearby for emergencies.
- It is a requirement that all MEWPs are to always be equipped with a fully charged fire extinguisher ready and available for use.

Step 6

Work Platform

00:51

- Check the work platform or basket for damage, cracks or missing parts on the gate and railings.
- Make sure the floor of the platform is clear of debris and tools and the emergency stop foot pedal is unobstructed and operates properly.
- Be sure to wear a personal fall restraint system while on the platform, even during inspection.
- Review the rated capacity and warning placards.
- Check to see that emergency release valves are tight and ground controls are working properly.
- Start the lift and make sure the controls work smoothly, then shut the lift off before leaving.

CSA Regulations require that all mobile elevating work platforms must have an operating manual attached in a weather resistant storage container, before they can be legally operated.
The presence of this manual must be confirmed during pre-operational checks.

Pre-Operational Inspection - Summary

00:25

Remember:

One of the responsibilities of each MEWP operator is to perform a preoperational inspection. This inspection is to be performed prior to starting the unit and using the machine to perform work.

The preoperational inspection determines the machine's suitability to operate. It is also a major component in the preventative maintenance program.

Complete the content above before moving on.

Tag Out Procedure

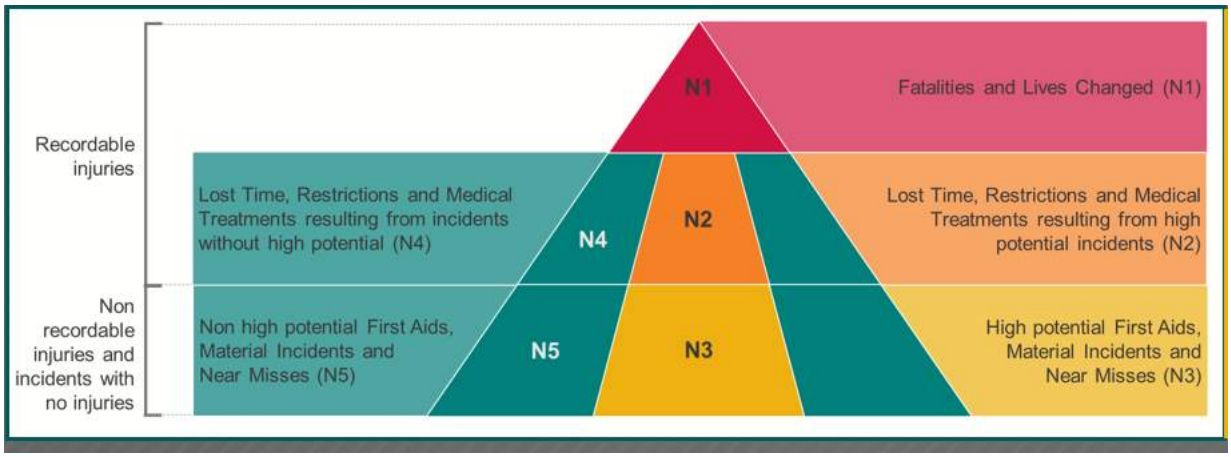
If equipment fails a Pre-Operational Inspection, follow the Tag Out procedure.

00:22

1. Turn off the lift and remove the key.
2. Use a tag and attach to the lift in clear view “Out of Service”.
3. Report the problem to your supervisor and maintenance department.
4. Do not operate until a trained technician has properly repaired it.

Remember: It is mandatory for all occupants to be qualified Mobile Elevating Work Platform Operators.

General Precautions



00:50

- Do not use the machine other than its intended purpose
- If a malfunction occurs, shut down the machine.
- Never slam the controls switches or levers through neutral to an opposite direction.
- Always return to the neutral position and stop before moving the lever or switch to the next function.
- Operate controls with slow even pressure.
- Never leave hydraulic cylinders, other than outrigger or stabilizer cylinders, at the end of travel (fully extended or retracted) before shutting down.
- Do not allow personnel to operate the machine from the ground controls, except in an emergency.
- With 2 or more persons in the platform, the operator is responsible for all machine operations.
- Stand firmly on the floor with both feet while performing work.

- Never sit or climb on the railings and never lean out of the platform.

Flaking paint on the boom can be a sign of:

- Too much humidity.
- Deformation leading to structural failure.
- Traveling at too high a speed.
- Electrical grounding.

SUBMIT

After a complete visual inspection you should review the:

Question

- Serial number on the builder's plate.
- Work logs on the previous shift.
- Traveling at too high a speed.
- Rated capacity and warning placards.

SUBMIT

While visually checking the lift mechanism for cracks, you should be on the lookout for:

- Battery leaks
- Broken weld points
- Electrical grounding
- Proper tire pressure

SUBMIT

When opening the battery compartment, first make sure the cells are:

- Clean.
- Within warranty.
- Properly sealed.
- Aligned properly.

SUBMIT

When checking the platform and gate for damage, check for cracks or missing parts on the:

- Wheels.
- Tool belt.

- Railings.
- Boom.

SUBMIT

What is the most important reason to ensure proper tire pressure?

- To minimize wear on the tires.
- To keep the lift level and reduce the chance of turnover.
- For better gas mileage.
- Boom.

SUBMIT

What should be nearby when you are checking for fuel leaks?

- Fire truck.
- Asbestos suit.
- Fire extinguisher.
- SCBA.

SUBMIT

When inspecting the vehicle chassis for signs of damage, check all the following. Except the:

- Outrigger
- Boom
- Guardrail
- Stabilizer

SUBMIT

After checking the battery cables for frayed insulation and tight connections, you should check the battery for:

- ○ Dust.
- ○ Cracks.
- ○ Moisture.
- ○ Stabilization.

SUBMIT

Match the steps below for correctly parking and shutting down a MEWP:

Bring the MEWP to a complete stop.	Step 1:
Park on a firm, level	Step 2:

service whenever possible.

Step 2:

Retract and lower the boom or platform sections completely down.

Step 3:

Shut off the main power source, either the engine or battery, and remove the key.

Step 4:

Switch main power switch to “Off” position and lock.

Step 5:

SUBMIT

Got a Question?

Submit your question here using Valeforms, be sure to include your first name last name and contact information.

CLICK HERE!

Complete the content above before moving on.

Quiz

You will now take an evaluative test regarding the content of this training.
The test contains 28 questions about the safe operation of Mobile Elevated Work Platforms.
You must obtain a score of 80% or greater to successfully complete this module.

Good luck.

Question

01/28

Which of the following is Not a type of MEWP

- Manually propelled.
- Self propelled.
- Suspension mounted.
- Boom supported.

Question

02/28

The lifting mechanism of an MEWP lift may be a telescoping or articulated boom, or a:

- ◯ Pneumatic lift
- ◯ Screw jack
- ◯ Cable lift
- ◯ Scissor lift

Question

03/28

What does the base of the manually propelled MEWP ride on?

- Railroad tracks
- Magnetic current
- Casters
- A truck bed

Question

04/28

Vehicle mounted MEWPS are commonly used to do maintenance on all of the following. Select all that apply.

- [ ] Power lines
- [ ] Telephone wires
- [ ] Cable runs
- [ ] Inspections at elevated height

Question

05/28

A vertical MEWP is used primarily for:

- ◯ Lifting Materials.
- ◯ Transporting Materials.
- ◯ Lifting People.
- ◯ Lifting heavy equipment

Question

06/28

All of the types MEWPS described in this module have unique operational and safety characteristics, and special training is required for each.

- ◯ True
- ◯ False

Question

07/28

MEWP Platforms must be equipped with which of the following:

- [ ] Upper and Lower Controls
- [ ] Extension Decks
- [ ] A Load Capacity Plate
- [ ] An Operators Manual
- [ ] Stabilizing Jacks
- [ ] Guardrails with Toe boards

Question

08/28

Who has the responsibility of conducting a pre-shift inspection?

- The Company
- The Lift Mechanic
- The Lift Operator
- Your Supervisor
- The Instructor

Question

09/28

You are about to begin operating a vertical lift with a 25ft. maximum platform height . . .what is your maximum working height?

- 31ft.
- 34ft.
- 18ft.
- 29ft.

Question

10/28

Lift stability is a function of height, weight, support and:

- Rotation
- Speed
- Strength
- Surface conditions

Question

11/28

How should you handle traveling on a grade?

- Go very quickly to mount the grade.
- Avoid the grade entirely.
- Use your lowest gear.
- Do not exceed your placard specifications.

Question

12/28

Which Fall protection system is to be used only when working outside of the confines of the work platform?

- ◯ Fall Restraint.
- ◯ Fall Arrest.
- ◯ Fall Deterrent.
- ◯ Fall Suppression.

Question

13/28

What is the minimum safe approach distance to maintain between your lift and a 300V energized power line?

- 10ft.
- 30ft.
- 5ft.
- It doesn’t matter, as long as you are careful.
- It depends on Province, refer to local regulations.

Question

14/28

How do outriggers, stabilizers and extendable axles help stabilize the chassis?

- Create a broader base.
- Extend the boom.
- Allow the platform the raise higher.
- Allow the use of larger wheels.

Question

15/28

Once you are at your worksite, how do you position your lift chassis to perform overhead work?

- ◯ On the downside of a grade.
- ◯ So the lift may be moved when needed.
- ◯ So the lift will not need to be moved again.
- ◯ Steadied against a tree.

Question

16/28

When parking on an incline, what must be installed to keep the vehicle from slipping?

- Caution signs.
- Access ramps.
- Wheel chocks.
- Flashing lights.

Question

17/28

Attachment points are required on a platform for:

- Securing lunch boxes.
- Hanging power cords.
- Climbing down.
- Securing fall protection devices.

Question

18/28

Whenever moving the lift, if you do not have a clear line of sight have another worker guide you and help spot the hazards.

- ◯ True
- ◯ False

Question

19/28

A fall restraint system required on MEWPs consists of the following components. (Select all that apply)

- [ ] Standard Guardrail.
- [ ] Properly Adjusted Lanyard.
- [ ] Full Body Harness.
- [ ] Tie-off Point on the Work Platform

Question

20/28

Flaking paint on the boom can be a sign of:

- Too much humidity.
- Traveling at too high a speed.
- Deformation leading to structural failure.
- Electrical grounding.

Question

21/28

After a complete visual inspection you should review the:

- Serial number on the builder's plate.
- Work logs on the previous shift.
- Rated capacity and warning placards.
- Operating instructions.

Question

22/28

While visually checking the lift mechanism for cracks, you should be on the lookout for:

- Battery leaks
- Electrical grounding
- Broken weld points
- Proper tire pressure

Question

23/28

When opening the battery compartment, first make sure the cells are:

- ◯ Aligned properly.
- ◯ Within warranty.
- ◯ Properly sealed.
- ◯ Clean.

Question

24/28

When checking the platform and gate for damage, check for cracks or missing parts on the:

- Railings.
- Wheels.
- Tool belt.
- Boom.

Question

25/28

What is the most important reason to ensure proper tire pressure?

- To minimize wear on the tires.
- To keep the lift level and reduce the risk of turnover.
- For good traction on soft surfaces.
- For better gas mileage.

Question

26/28

What should be nearby when you are checking for fuel leaks?

- Fire truck.
- Asbestos suit.
- Fire extinguisher.
- SCBA.

Question

27/28

When inspecting the vehicle chassis for signs of damage, check all the following. Except the:

- Outrigger
- Boom
- Guardrail
- Stabilizer

Question

28/28

After checking the battery cables for frayed insulation and tight connections, you should check the battery for:

- ◯ Dust.
- ◯ Moisture.
- ◯ Cracks.
- ◯ Stabilization.

Conclusion

Congratulations.
You have successfully completed the Knowledge component of your Mobile Elevating Work Platform Operation training. You have learned how to;

- Identify the groups and types of mobile elevating work platforms.
- Identify safety equipment used on mobile elevating work platforms.
- Describe the training required before you may operate a mobile elevating work platform.
- Describe pre-operation procedures and;
- Recognize potential hazards and determine the safe operating procedures to be followed.

00:45

You are now ready to proceed to the skills based component of your training, where you will be expected to demonstrate specific skill sets as part of the evaluation and qualification process.

Online Training Survey

Submit your evaluation here using Valeforms, all submissions are anonymous.
Thankyou.

CLICK HERE!

Thank you for completing the Vale Online Module Training.

Complete Your Module Validation

PLEASE CLICK HERE