

CAR 02 - Light Motor Vehicles (Vale North Atlantic)



Hello and welcome to the **CAR 02 course - Light Motor Vehicles**.

The purpose of this awareness module is to provide an overview of the Vale Critical Activity Requirements that have been introduced to Vale's operations globally. These requirements are in the process of being fully implemented across our operations.

- ≡ Welcome
- ≡ Context
- ≡ Bowtie
- ≡ Requirements for Operational Roads
- ≡ General Requirements for Light Vehicles
- ≡ Specific Requirements According to the Type of Vehicle
- ≡ Procedures Requirements

☰ Requirements for Training

☰ Accidents

📋 Quiz

☰ Conclusion

Welcome



Watch the video in full to continue.

Context



CARs are part of Vale's safety culture. Their application is essential for the execution of critical activities.

PNR-000069 Rev1 Nov. 24 2020

Critical Activity Requirements are described in the document number 00813. In December 2019, CARs 01 to 05 were revised.

PNR-000069 Rev1 Nov. 24 2020 has changed both in form and in content, with the aim of making requirements more robust, making critical activities SAFER and fulfilling our value life matters most.



In this course, we will cover CAR 02 – Light motor vehicles.



CAR 02
Light Motor Vehicles



CONTINUE

N1 - Fatal Incidents - N2 - Recordable Injuries With High Potential



Watch the video in full to continue.

CAR 02 presents requirements for driving vehicles. Events that occurred during maintenance are not part of the scope of CAR 02.



Which of these events are not in the scope of CAR 02?

- ☐ Running over.
- ☐ Rollover.
- ☐ Collision/ crash.
- ☐ Events during vehicle maintenance.

SUBMIT



Complete the content above before moving on.

What are the exceptions in CAR 02?

- ☐ Vehicles such as Uber, Taxis, and personal vehicles.
- ☐ Vehicles for emergency response.
- ☐ Both alternatives are correct.

SUBMIT



Complete the content above before moving on.

Before continuing with the requirements, check out what Bowties are in the next topic, and how they can help us to define the best requirements for each type of event we want to prevent or mitigate.



Complete the content above before moving on.

Bowtie

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 CARs, bowties assist in understanding the requirements. This training will show some bowties diagrams about the main events of the CARs. It is important that you know this tool!

During this training, several bowties diagrams with the requirements of CAR 02 will be shown. Interact with the bowties and learn more about CAR 02 requirements.



**Important: the diagrams were made for the main
CAR events and requirements.**

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

Watch the video below and understand bowties better!

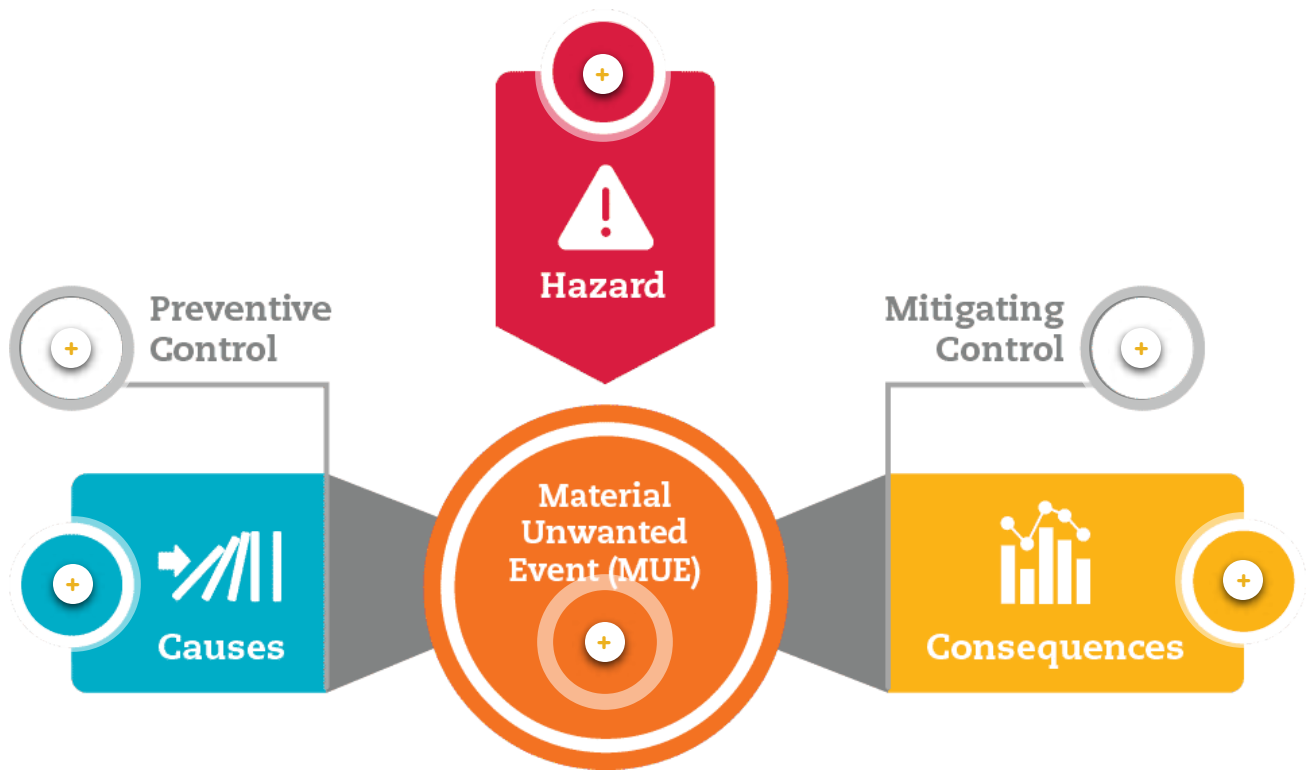


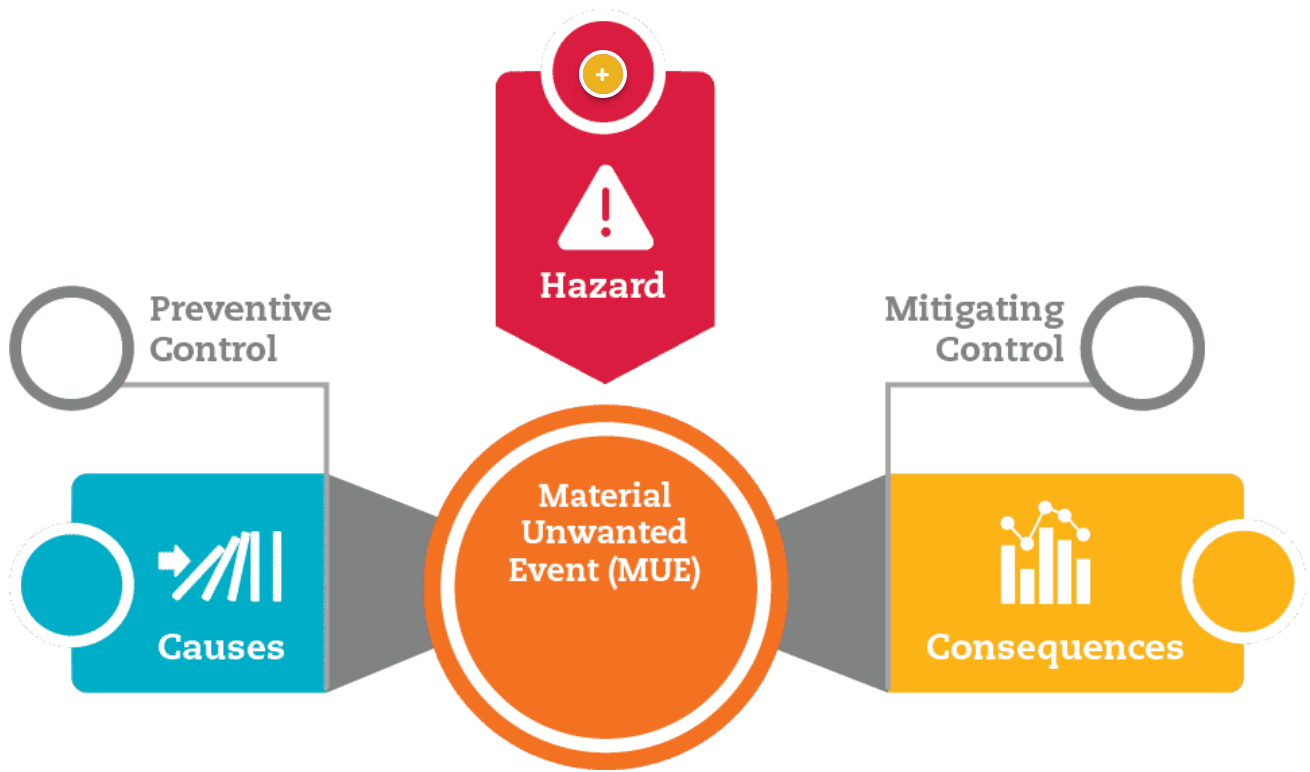
Watch the video in full to continue.

Below, check the bowtie of CAR 02 related to the main events that may occur with light motor vehicles.

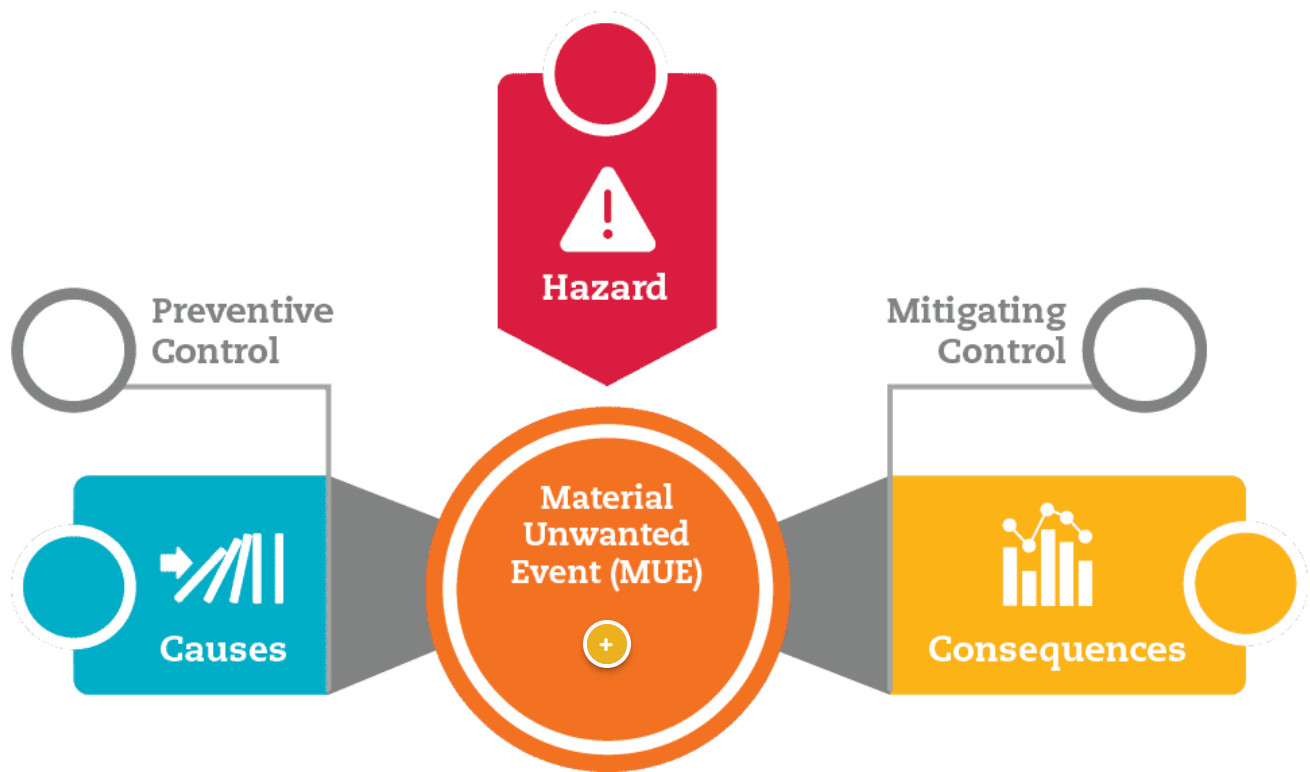
Running over

Click on the indications below and learn more:

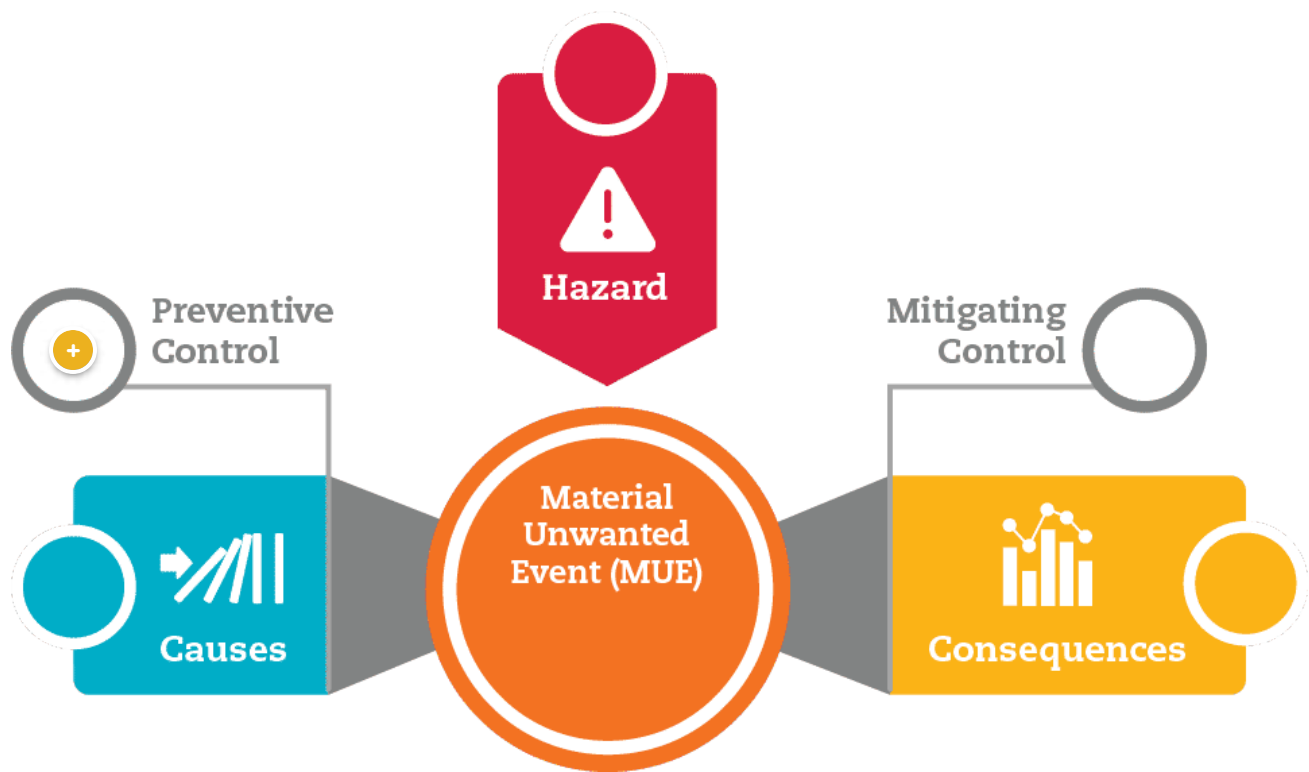




Driving vehicles



Run over



Preventive Control

A number of the listed controls are not in place at all locations in Base Metals.

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:

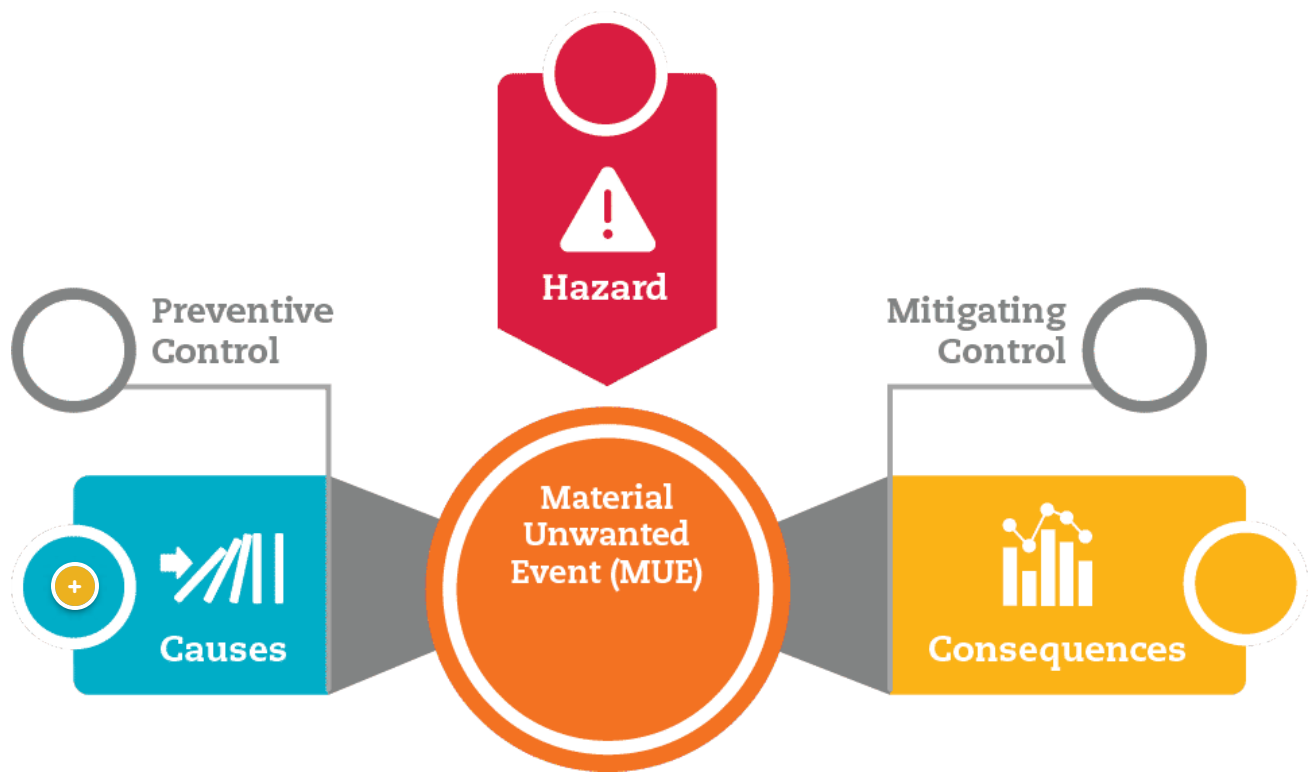
- Prohibition of driving under influence of alcohol or drugs.

Involuntary vehicle movimentation:

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

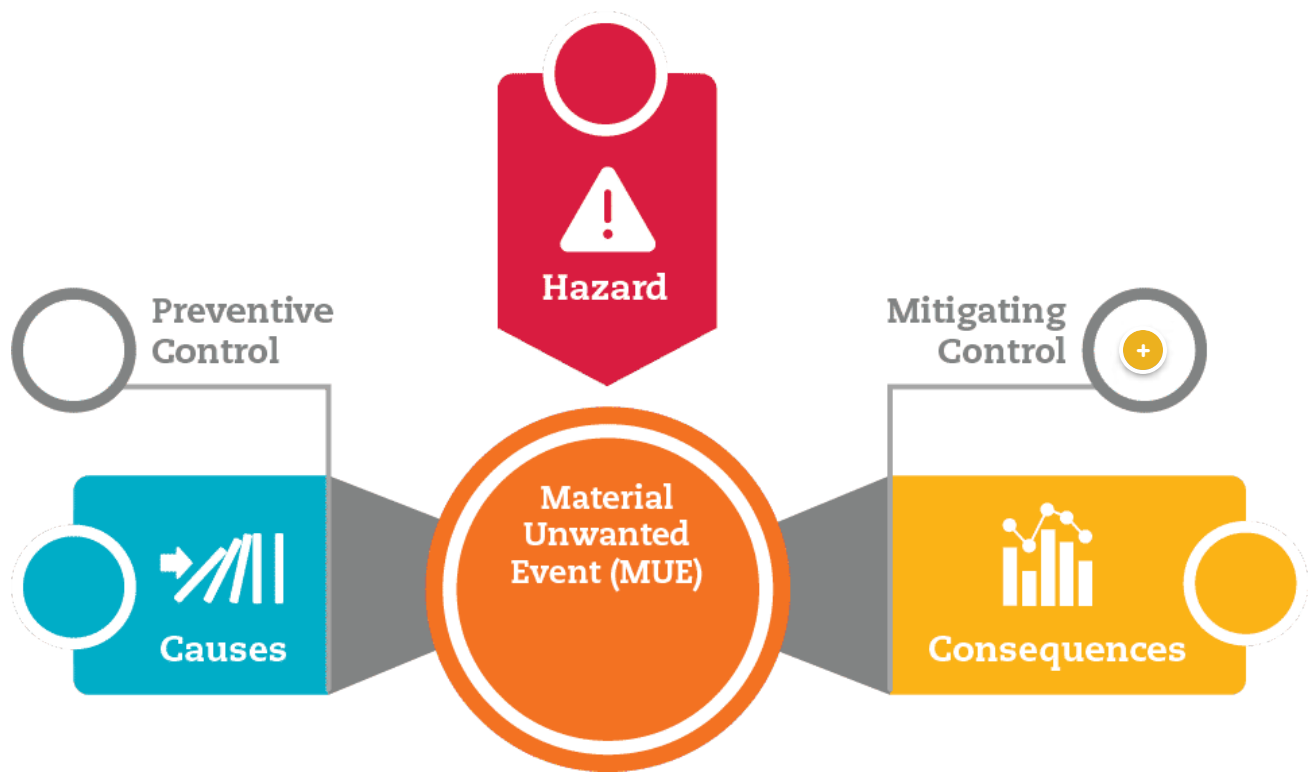
Lack of training:

- Driving license;
- Training for driving.



Causes

- Inappropriate speed;
- Driver fatigue;
- Vehicle instability;
- Driver distraction;
- Poor visibility;
- Vehicles in poor condition;
- Driving under the influence of alcohol and drugs;
- Involuntary vehicle movimentation;
- Lack of training.



Mitigating Control

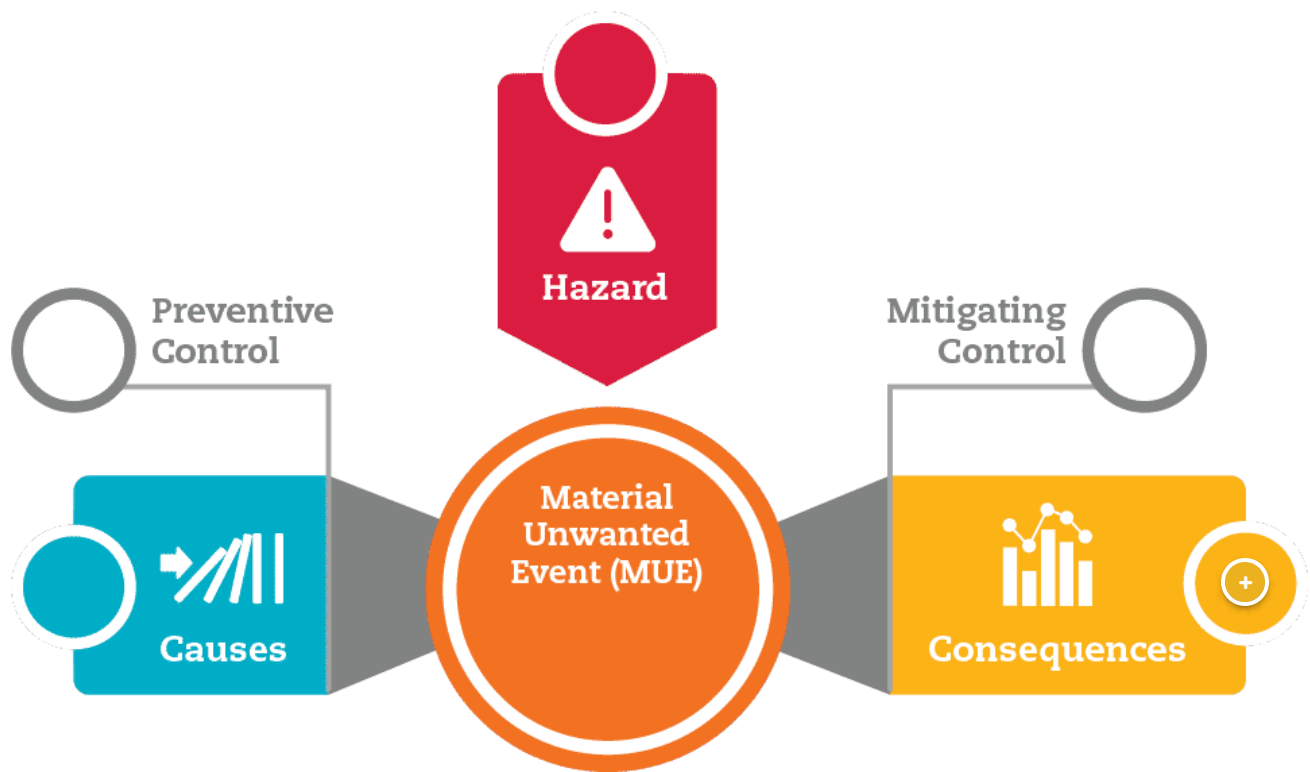
A number of the listed controls are not in place at all locations in Base Metals.

Fatality:

- Emergency response plan.

Serious Injury:

- Emergency response plan.



Consequences

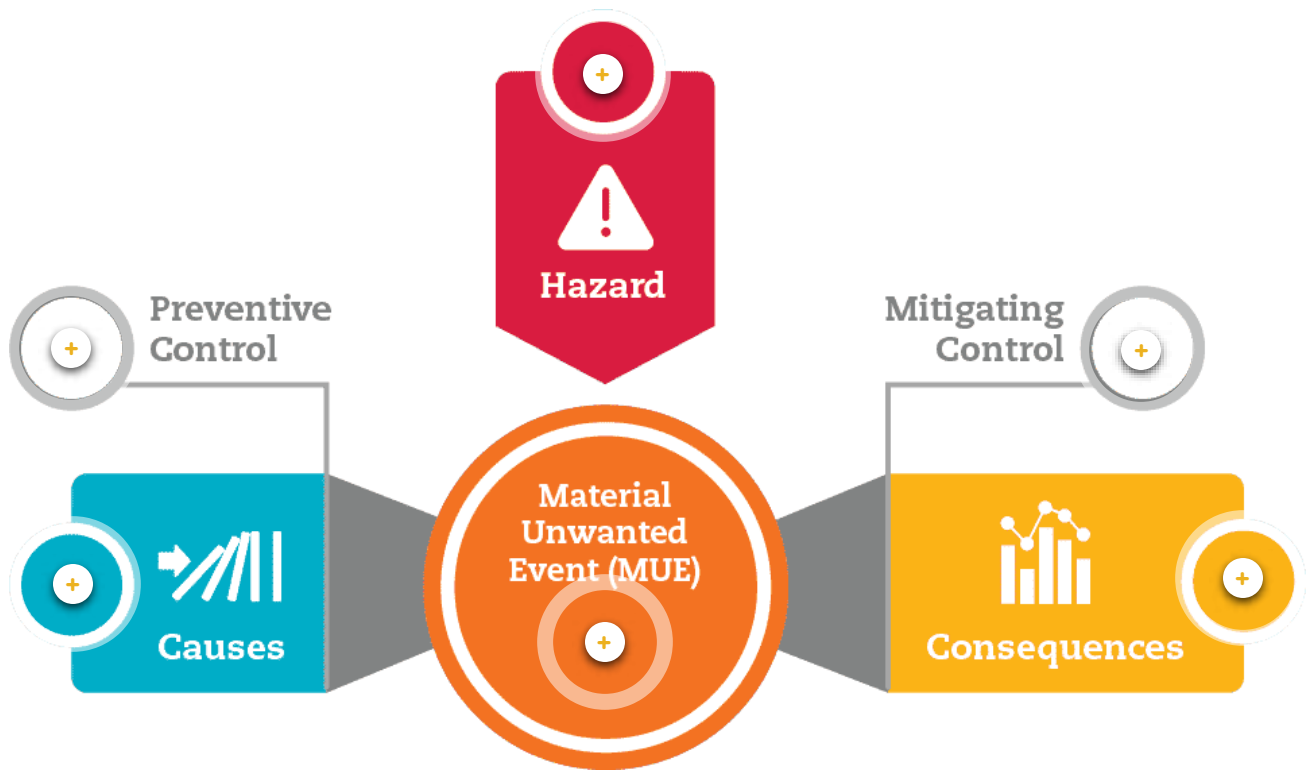
- Fatality;
- Serious Injury.

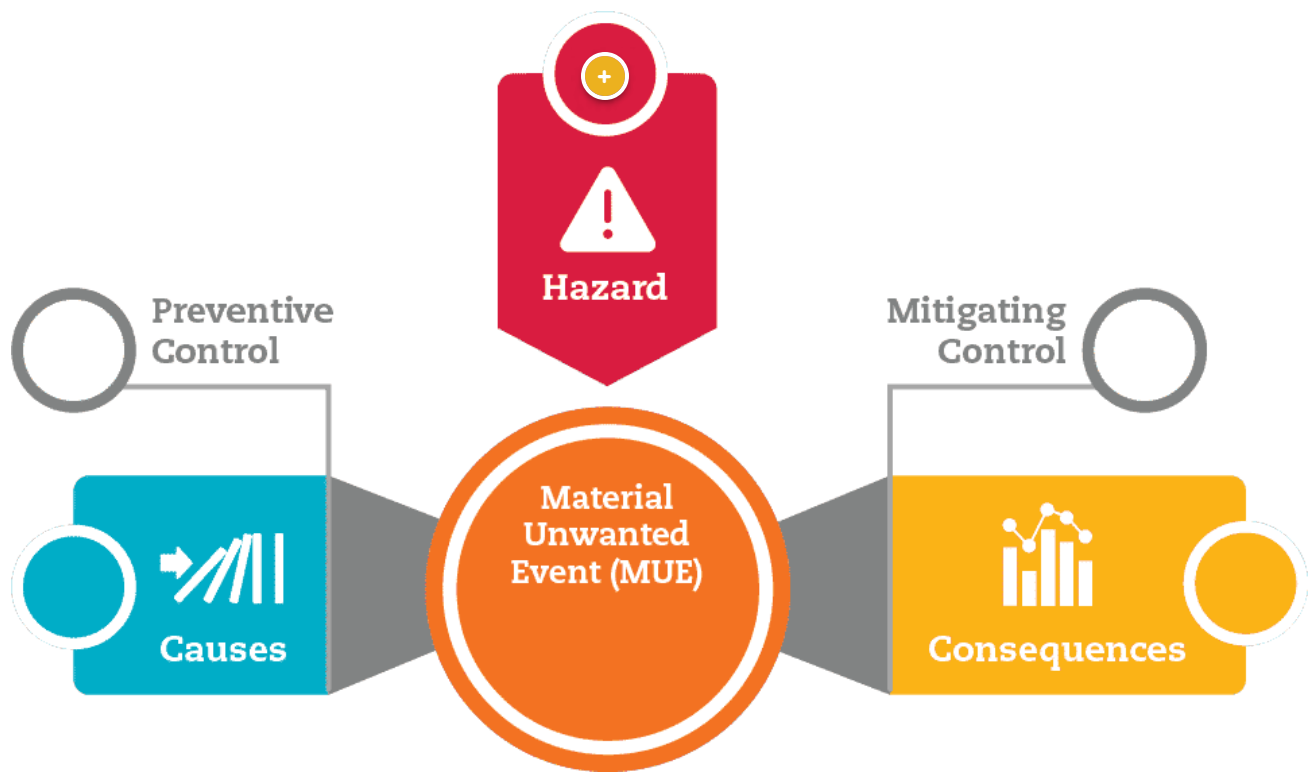


Complete the content above before moving on.

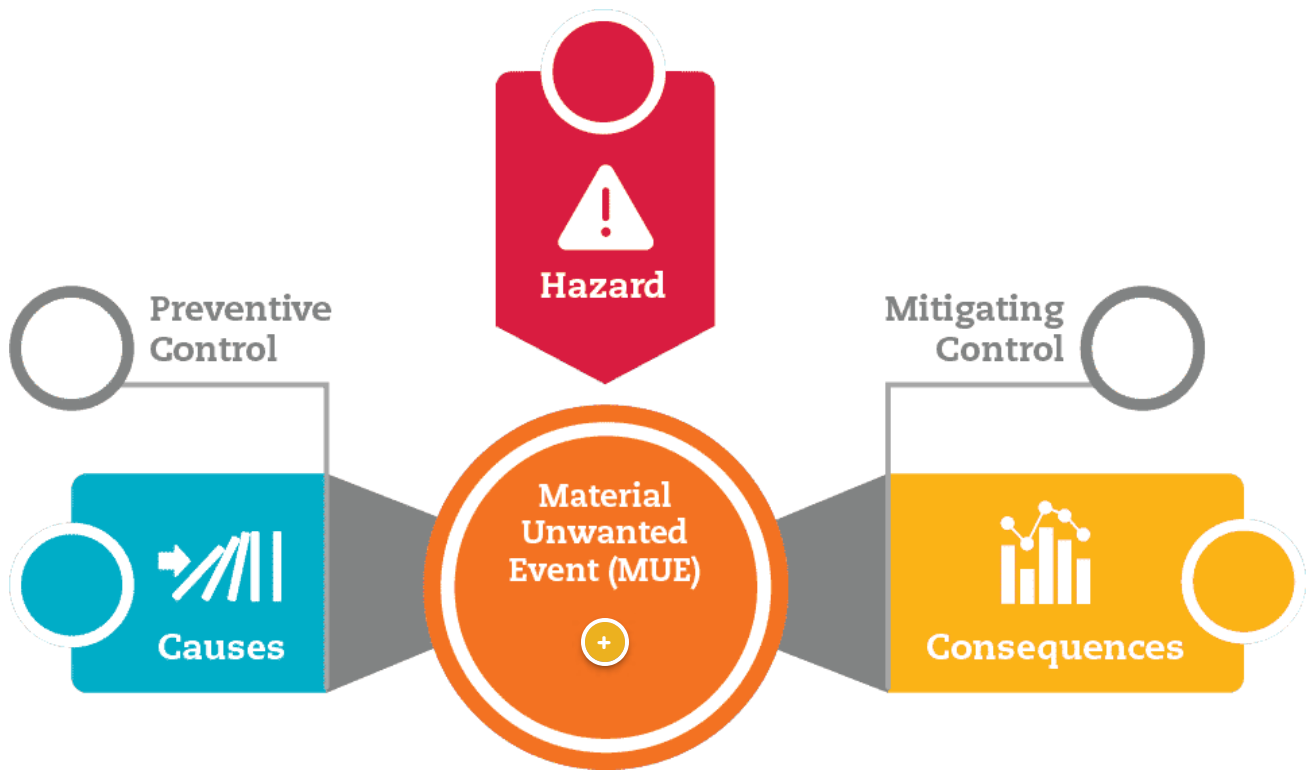
Collision

Click on the indications below and learn more:

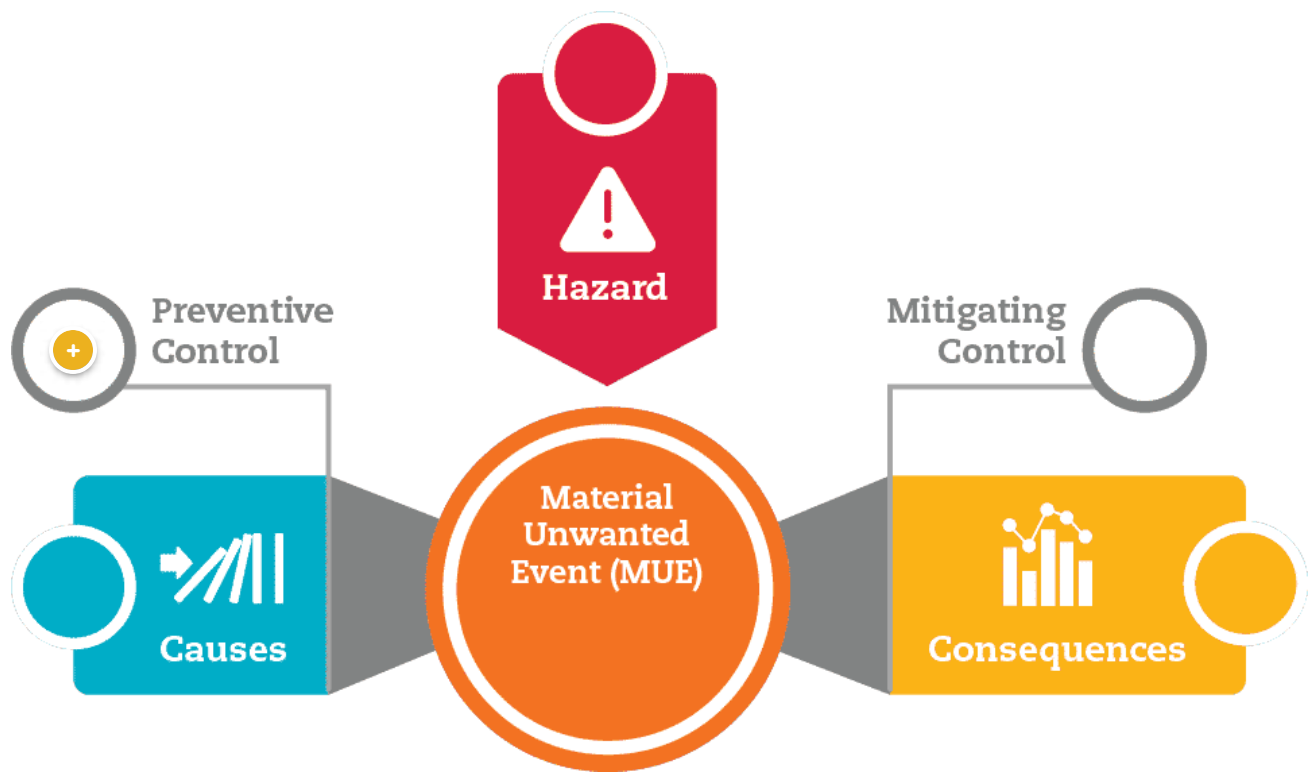




Driving light motor vehicles in mining areas



Collision



Preventive Control

Vehicle instability:

- Traction control system;
- Anti-lock braking system (ABS);
- Electronic braking control (EBD);
- Stability control.

High speed:

- Speed road signs;
- Telemetry;
- Physical barriers or protective devices.

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:

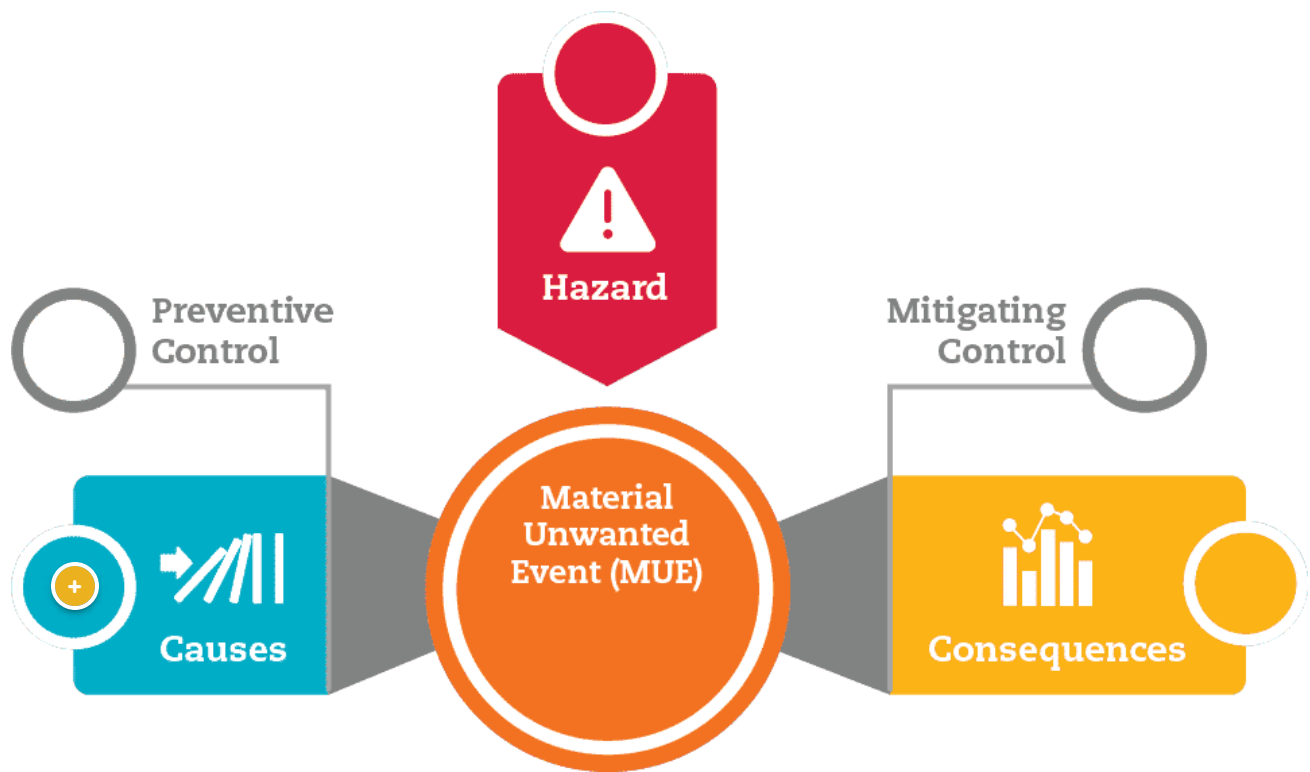
- Fatigue plan;
- Driver drowsiness detection system.

Lack of training:

- Traffic plan;
- Defensive driving training.

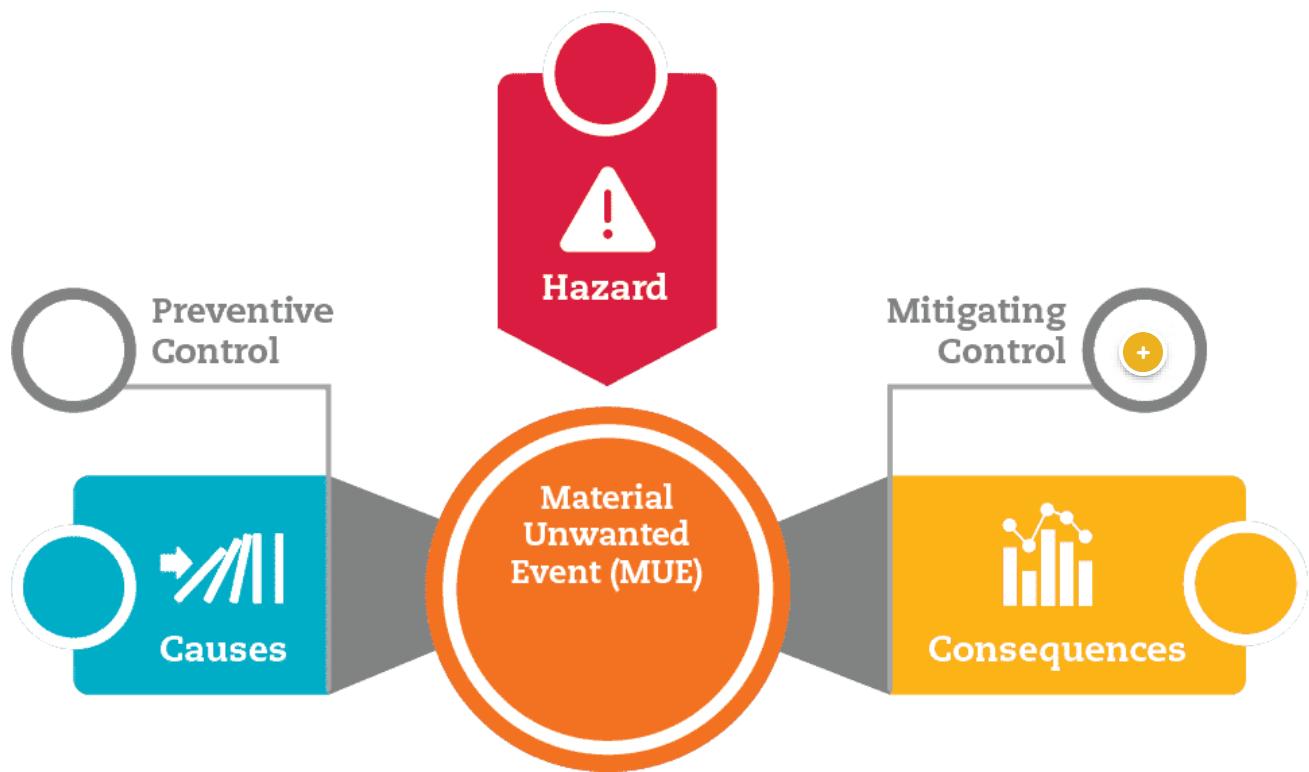
Driver distraction:

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



Causes

- Vehicle instability;
- High speed;
- Poor visibility;
- Proximity to heavy equipment;
- Vehicles with inadequate conditions;
- Driver fatigue;
- Lack of training;
- Driver distraction.



Mitigating Control

Whip effect of the head / neck:

- Headrest for all passengers;
- Emergency response plan.

Person ejected:

- Three—point seat belts;
- Emergency response plan.

Person hit his head:

- Front airbag;
- Emergency response plan.

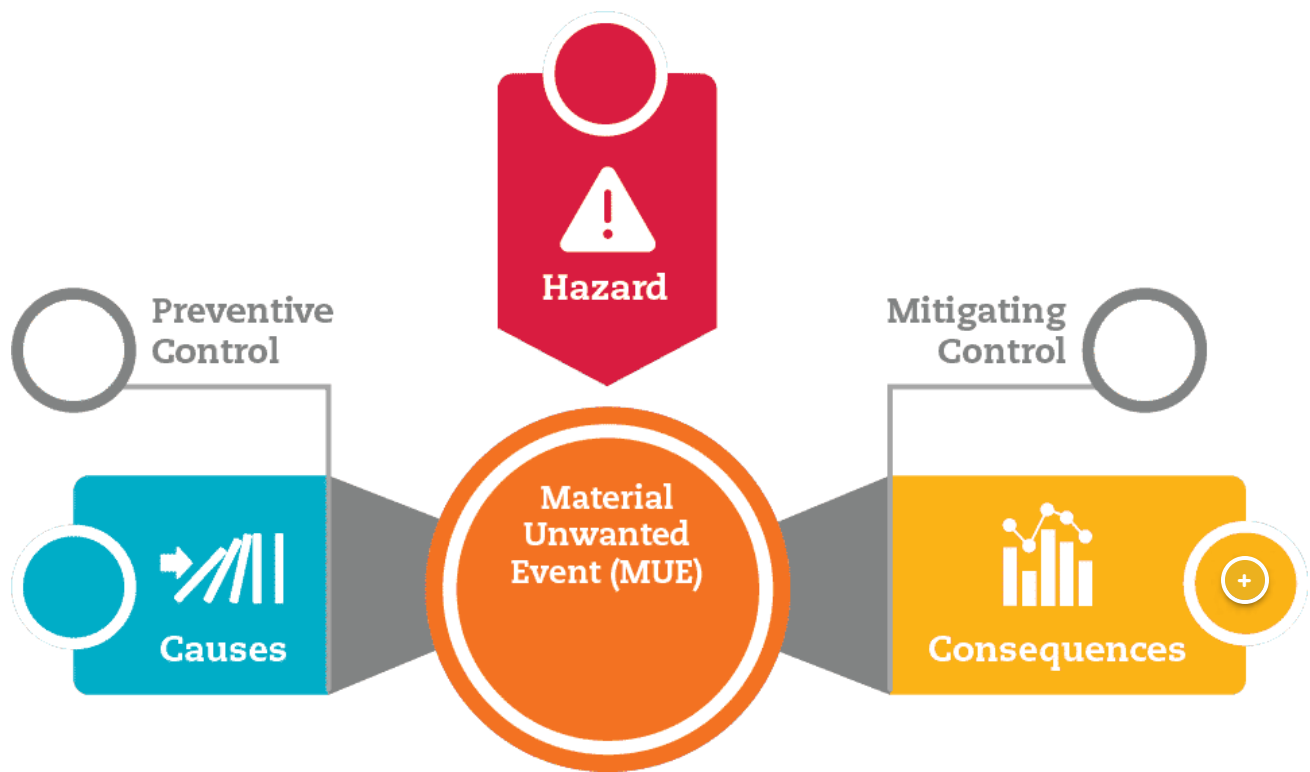
Crushing:

- ROPS;

- Emergency response plan.

Object hits the person:

- Packed and restrained luggage;
- Emergency response plan.



Consequences

- Whip effect of the head / neck;
- Person ejected;
- Person hit his head;
- Crushing;
- Object hits the person.



Complete the content above before moving on.

i During this training, several bowties diagrams with the requirements of CAR 02 will be shown. Carefully

analyze the bowties and learn more about CAR requirements!



Complete the content above before moving on.

Requirements for Operational Roads

In this chapter, we will learn the requirements of CAR 2 for operational roads circulation of light vehicles and how they can contribute to the prevention and mitigation of events.



Watch the video in full to continue.

Observe the examples of barriers below and answer subsequent question.



Aerial walkways



Bump



Traffic light



Barriers



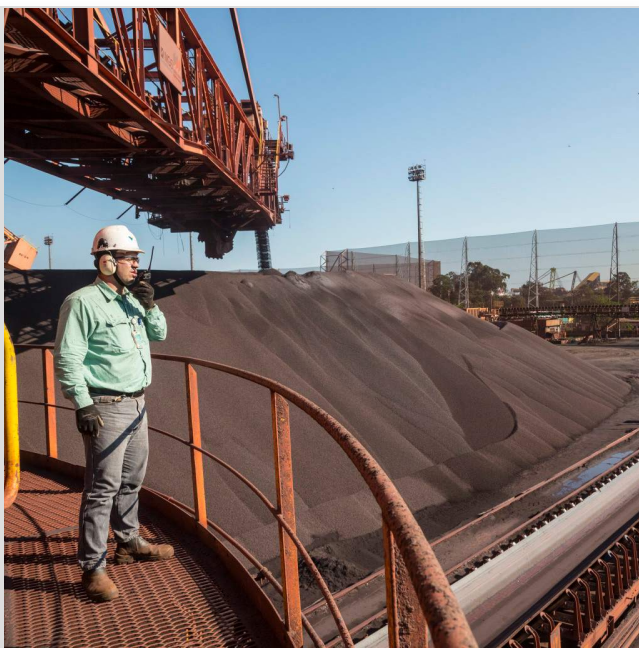
Speed sign



Crosswalk

Activity

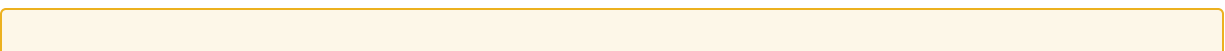
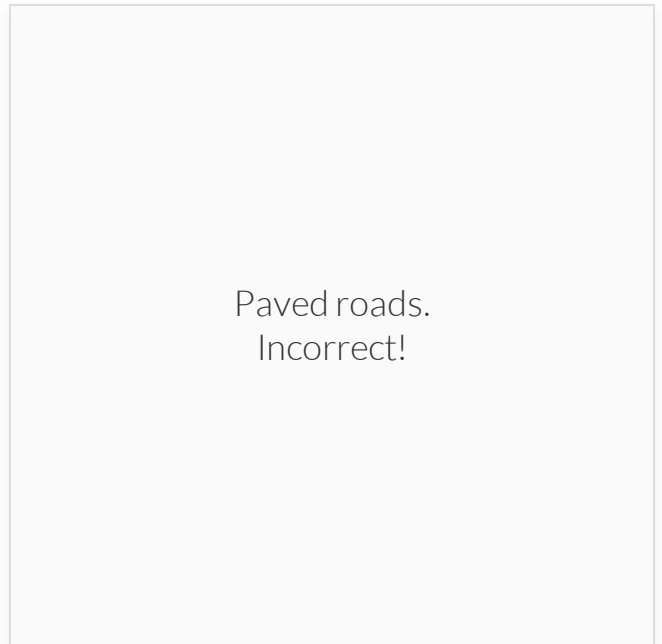
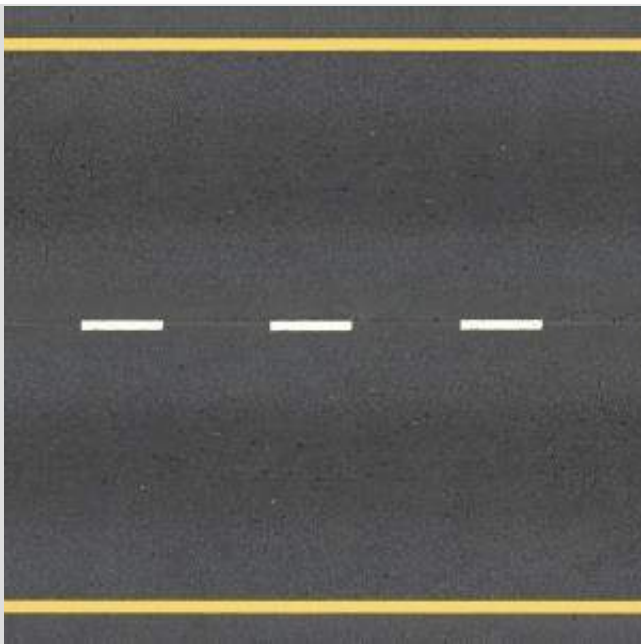
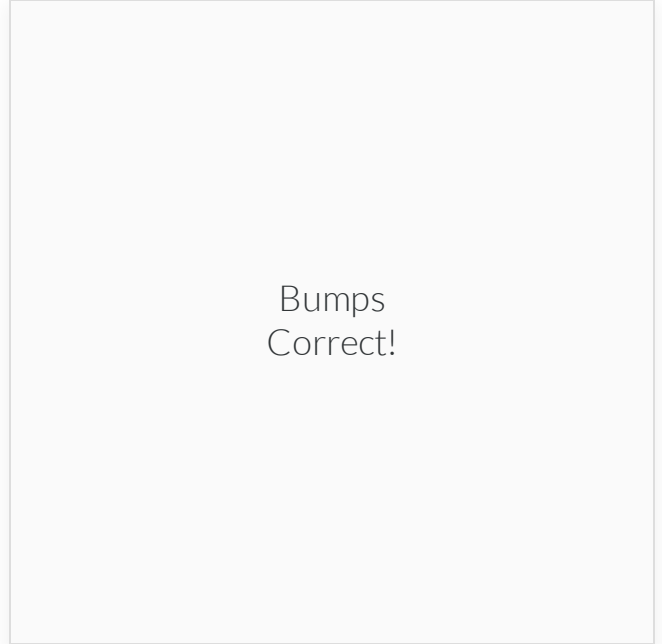
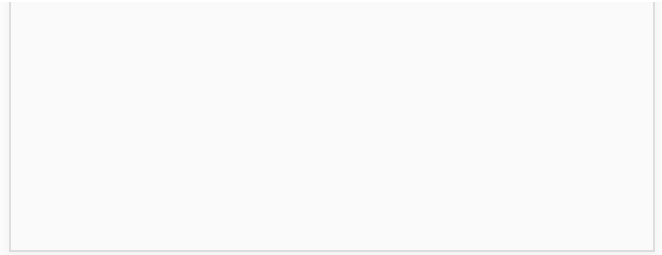
Explore the figures below and find out which are physical barriers and / or protective devices to segregate the interface between people and motor vehicles:




Aerial walkways
Correct!



Pedestrian-activated gates or
lights on safe paths.
Correct!



 Paved roads are essential for preventing accidents, but they are not physical barriers or protective devices to prevent contact among vehicles and people.



Complete the content above before moving on.

General Requirements for Light Vehicles

In this chapter we will learn about the **General** requirements of CAR 02 for **Light Motor Vehicles**.

Modifications to light vehicles should only be performed after the formal approval of the manufacturer.



Complete the content above before moving on.

Specific Requirements According to the Type of Vehicle

In this chapter we will learn about the requirements of CAR 02 that are applicable, **according to the type of vehicle.**



Specific Requirements According to Type of Vehicle

CAR 02



Watch the video in full to continue.

Check the mandatory requirements for each type of vehicle:

Specific requirements	dedicated vehicles	Over-the-counter rental vehicles	Vehicles that access mining areas	Vans	Minibuses	Buses
3-point seat belt for all occupants	X	X	X			
3-point seat belt only for the first row of seats, and for the other seats, 2-point belts.				X	X	X
Headrest for all passengers	X	X	X	X	X	X
Front airbag for the driver and the front seat passenger	X	X	X	X		
Anti-lock braking system (ABS)	X	X	X	X		
Signaling devices	X	X	X	X	X	X

Specific requirements	dedicated vehicles	Over-the-counter rental vehicles	Vehicles that access mining areas	Vans	Minibuses	Buses
Reverse audible	X		X	X	X	X
Reverse sensor	X		X	X	X	X
Location and speed monitoring system (Telemetry)	X		X	X	X	X
Driver drowsiness detection system	(*)		(*)	X	X	X
Electronic braking control - EBD			X			
Stability control			X			
4x4 Traction			X			
Reflective striping			X			
Communication system between vehicles and mobile equipment			X			
Visible flag with led light on the tip			X			

Specific requirements	dedicated vehicles	Over-the-counter rental vehicles	Vehicles that access mining areas	Vans	Minibuses	Buses
Roof mounted flashing, rotating or strobe light			X			
Proximity alert sensor for heavy equipment			X			
Primary speed retarding system (engine brake)					X	X
Secondary speed retarding system (electrical or hydraulic)						X
Emergency exits with opening mechanism and simple handling					X	X

* There should be a management according to the item below.

2.7. C.V - Management of drowsiness detection systems, including:

- Which vehicles will have drowsiness detection systems;

- System for periodic and routine verification of the information available;
- Reporting of anomalies;
- Actions to be taken in case of deviation.



Complete the content above before moving on.

Incident at Vale!

In 2019 the employee of a contractor was traveling on a municipal road, when he dozed at the wheel, colliding with a pole, causing the vehicle to tip over.



Indicate the control that could have contributed to prevent or mitigate this event:

- ☐ Driver drowsiness detection system.
- ☐ Reverse Audible Alert.
- ☐ Three-point seat belts.
- ☐ Reflective striping.

SUBMIT



Complete the content above before moving on.

Imagine the next situation:

You are driving a vehicle that has the drowsiness Detection System, in a given section of the route the system emits an audible alert, because it has identified signs of drowsiness in you. **In this case, what would you do?**



Disregard the alert and continue driving the vehicle, as it is almost reaching its destination.



Stop driving immediately and, after parking in a safe place, contact your immediate supervisor, as you are not in a condition to drive.

SUBMIT



Complete the content above before moving on.

Procedures Requirements

In this chapter, we will learn about the requirements of CAR 02 for **procedures**, which must be followed by people who drive light vehicles at Vale's service.



Procedures Requirements

CAR 02

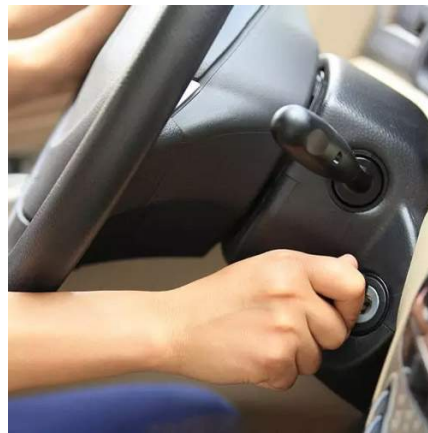


Watch the video in full to continue.

When parking, before leaving the vehicle the driver must:



Check if the parking
brake is applied



Check that the vehicle's
engine is switched off



Remove the ignition key



Local procedures may require that the key should be left in the vehicle due to emergency situations.

Stop chasing **your thoughts** in circles. **Open your eyes**, breathe deeply, and then **pay attention**. The air is sweet. **The sun is warm.**

There's a path ahead.



Drag the boxes to the applicable square.

Precautions BEFORE the
movement of light vehicles

Make sure the quantity of 3-
point seat belts and headrests

Check and comply with the
local traffic plan

Never drive under the
influence of alcohol or drugs

Obey the maximum capacity
of each vehicle

**Precautions DURING
movement**

Respect the speed limits

**Keep the headlights on all the
time**

**Do not use TV, DVD, stereo or
cell phone**



Complete the content above before moving on.

Requirements for Training

In this chapter, we will learn about the requirements of CAR 02 for **Training**.

Follow local procedures to operate a vehicle and include RAC requirements for training.

Accidents

Check here an example of an unwanted event that occurred at Vale.



Crash

In November 2016, a vehicle was hit by an ore train, causing serious injuries to the two passengers of vehicle.



Complete the content above before moving on.



Indicate the controls that could have prevented this event.

☐

Reverse sensor.

☐

Telemetry system, monitoring the location and speed of the vehicle.

☐

Stability control.

☐

4 x 4 Traction.

☐

Respect the signage.

SUBMIT



Complete the content above before moving on.



Important: in our operations, there is a high probability of an interface among vehicles, mobile equipment and people. The controls of CAR 02 serve to avoid this interaction!

For each unwanted event there is one or more preventive requirements.

Be aware in your daily life of risk situations that have not yet been mapped. CAR 2 is constantly evolving, and new requirements may be inserted in future reviews.



Complete the content above before moving on.

Quiz

Question

01/07

The requirements of CAR 02 aim to prevent or mitigate events that may occur while driving light motor vehicles, providing safe operation in all motor vehicles that are at Vale's service.

Check the correct alternative (s) regarding the events that the requirements of CAR 02 aim to prevent or mitigate:

☐

Running over.

☐

People falling.

☐

Rollover.

☐

Collision.

Question

02/07

Regarding the requirements for operational roads and traffic routes for light motor vehicles,

Check all answers that apply:

☐

Speed road signs shall be installed at regular intervals indicating maximum allowable speed on the internal roads.

☐

Traffic routes for the circulation of mobile equipment, vehicles and pedestrians shall be clearly identified.

☐

Parking areas shall be designated for parking light motor vehicles.

☐

All the operating roads shall not be identified in the Traffic Plan.

Question

03/07

In the case of general requirements for light motor vehicles all the sentences below are correct, except:

- ☐ All vehicles must receive the required preventive maintenance as recommended by the manufacturer.
- ☐ Modifications to light vehicles can be performed by simply consulting of the manufacturer.
- ☐ Modifications in motor vehicles shall only be done with the formal approval of the manufacturer.
- ☐ The use of motorcycles, bicycles, tricycles, quadricycles at service of Vale and/or in Vale's sites is prohibited.

Question

04/07

All of the requirements below are mandatory for light motor vehicles, however, some are only applicable to vehicles that access mining areas. Check the option that presents the exclusive requirements for light motor vehicles that access mining areas.

- ☐ Visible pennant with LED light at the tip and roof mounted flashing, rotating or strobe light.
- ☐ Three-point seat belts and headrest or high backed (bucket) seat with fixed head restraint.
- ☐ Reverse Audible Alert and Reverse Sensor.
- ☐ Anti-lock braking system (ABS) and vehicle warning signaling devices.

Question

05/07

These are mandatory procedures when driving light motor vehicles, except:

- ☐ Respect the speed limits established by the road signs or the legislation.
- ☐ Keep the headlights turned on only during the day.
- ☐ Do not use the following devices, except when the vehicle is parked in a safe place: TV / DVD, headset sound and mobile phone (including headphones and handsfree features).
- ☐ All of the above.

Question

06/07

Check the correct answer when parking your vehicle:

- ☐ Shut off the engine.
- ☐ Remove the key from the ignition.
- ☐ Apply the parking brake.
- ☐ All of the above.

Question

07/07

Driving light motor vehicles can only be carried out following some training criteria. Analyze the alternatives below and check the correct option.

- ☐ Have a valid driving license specific for the type of motor vehicle, according to local legislation.
- ☐ Be trained according to the “Valer” guidelines. (Valer; Vales' Corporate University).
- ☐ Have all the required training within the expiration date.
- ☐ All alternatives are correct.

Conclusion



Remember, the purpose of this awareness module is to provide an overview of the Vale Critical Activity Requirements that have been introduced to Vale's operations globally. These requirements are in the process of being fully implemented across our operations.



00:14

Click on the button beside to exit.

SAVE AND EXIT