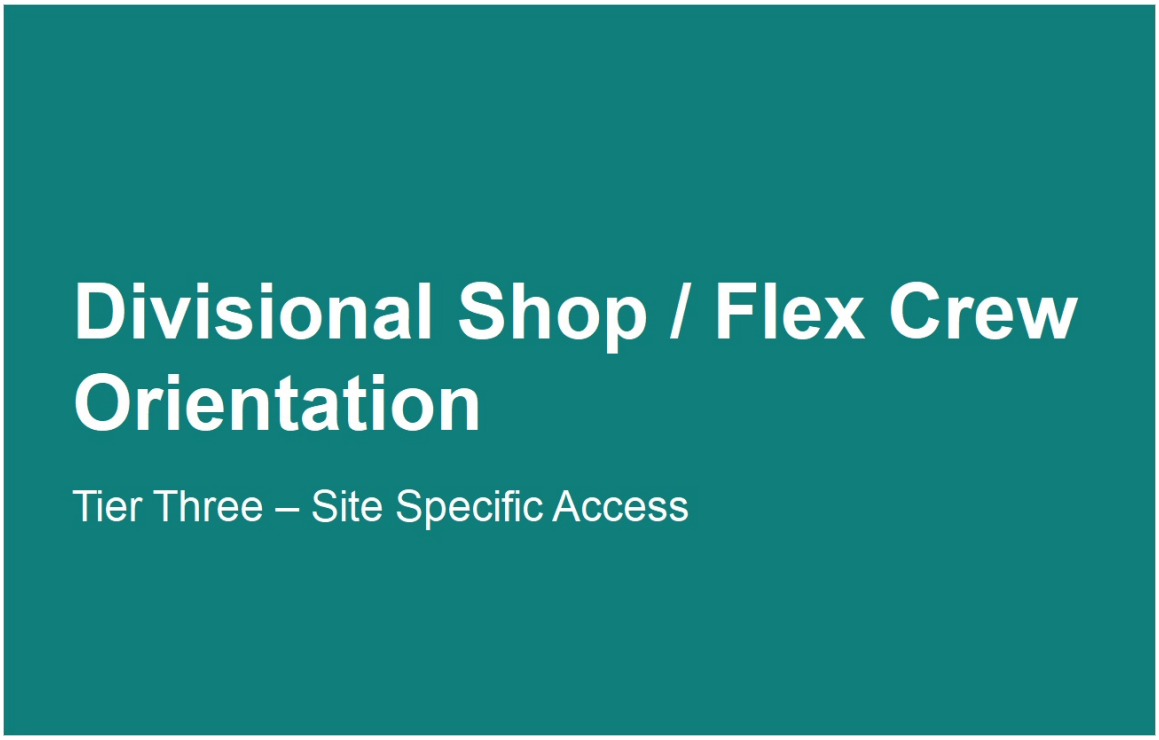
Tier 3: Divisional Shops Orientation - 26

1. L&D_Orientation_PowerPointDesign_T3_Tailings

1.1 Divisional Shop / Flex Crew Orientation

1.2 Divisional Shop / Flex Crew Orientation



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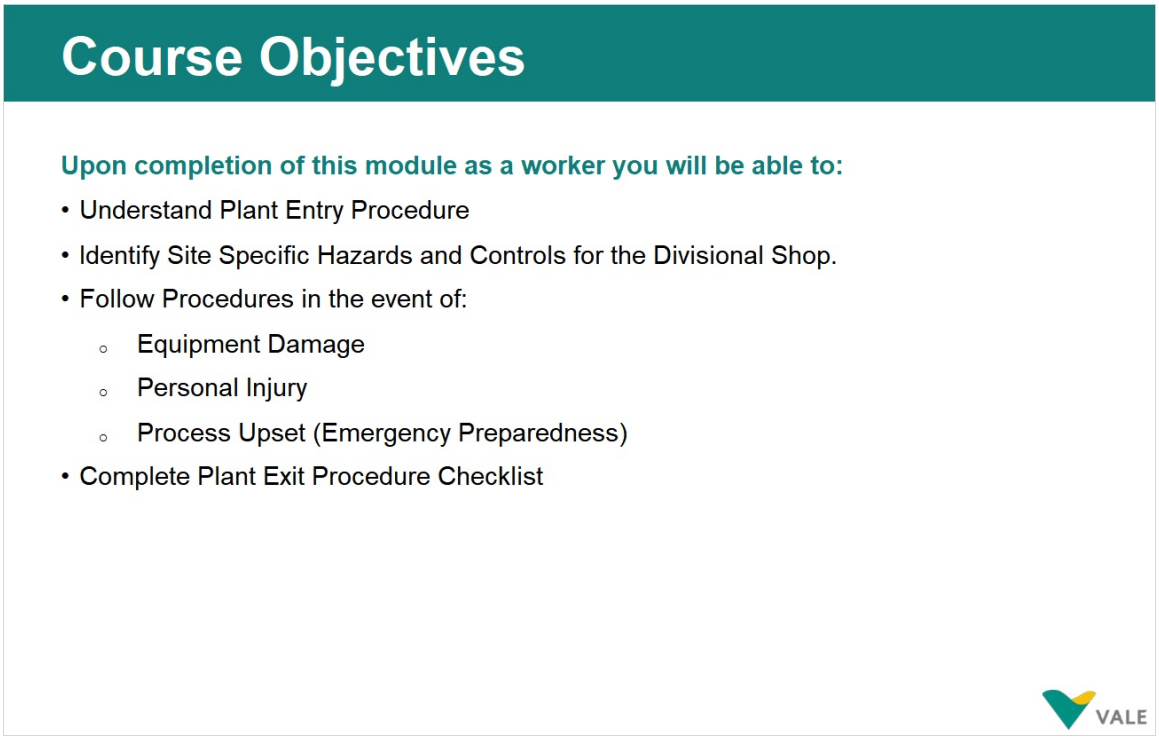
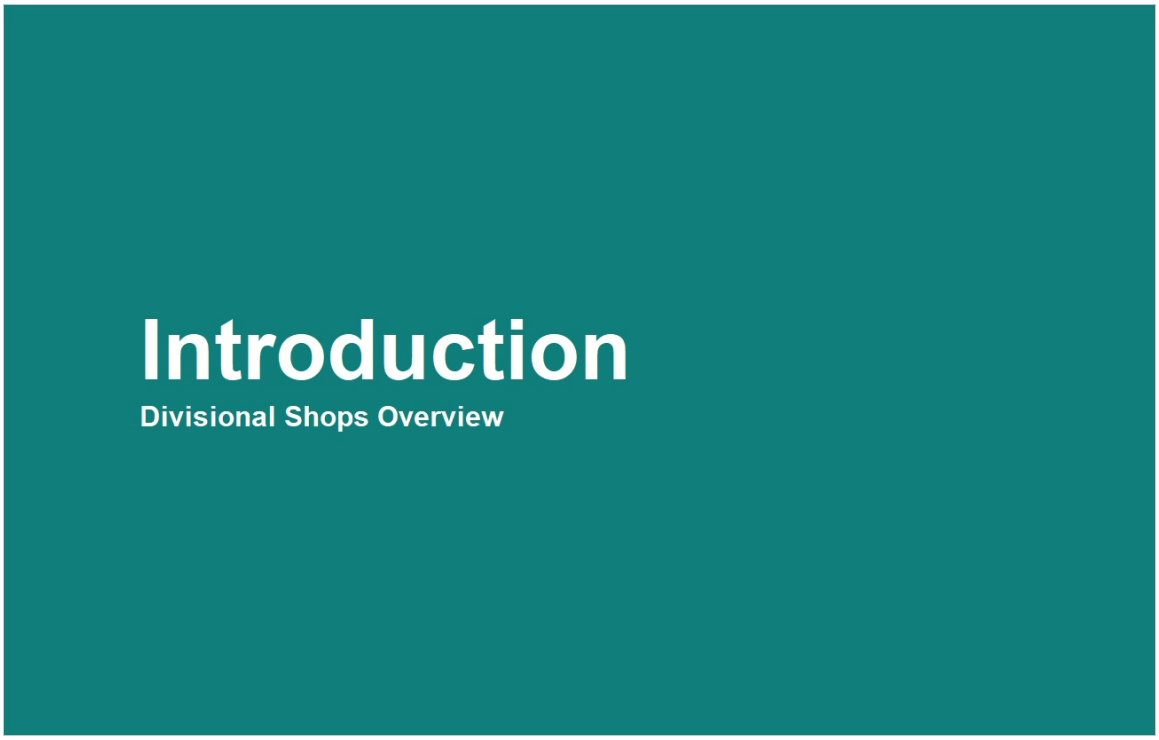
1.3 Course Objectives



1.4 Introduction



1.5 Divisional Shops Overview

Divisional Shops Overview

Divisional Shops perform a variety of jobs for Vale customers; ranging from shaft conveyance overhauls to hand-held instrument repairs. In addition, a wide range of products are manufactured for use in the repair of production equipment.

Within the building, there are several departments:

- Machine Shop
- Steel Fabrication Shop
- Winding Shop
- Construction Group
- Warehouse 64

Divisional Shops Mission:
Provide efficient, effective fabrication and repair service to our customers

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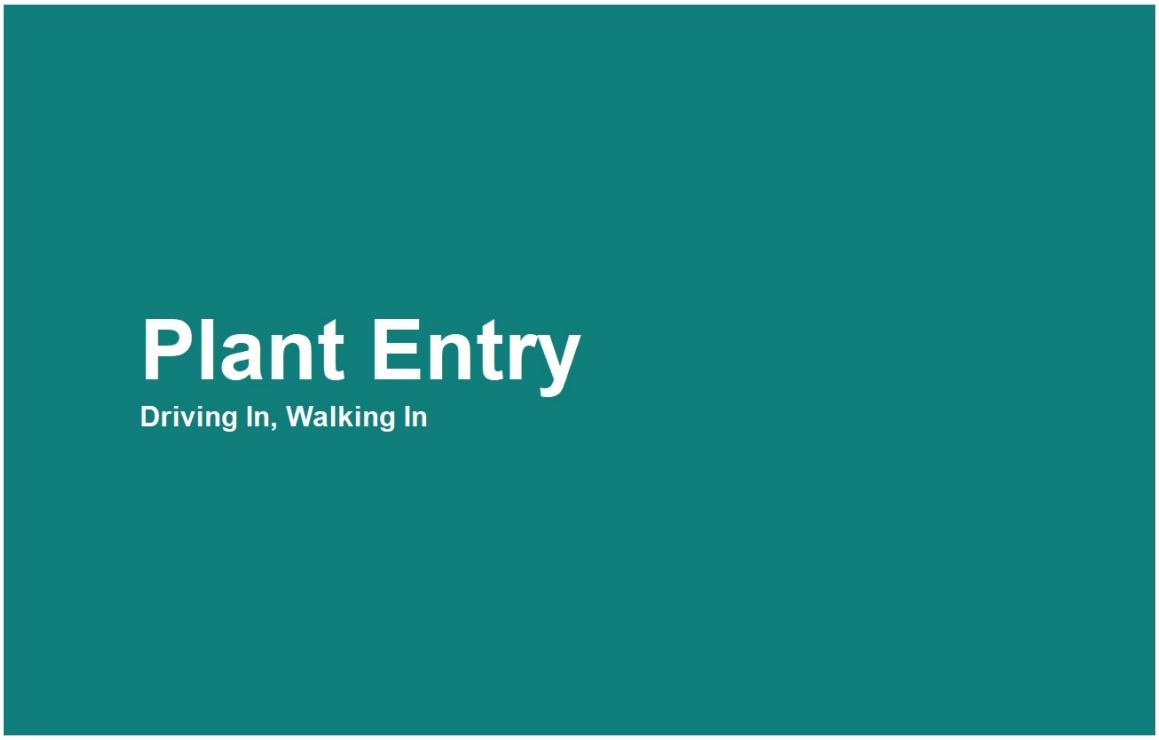
1.6 Plant Entry

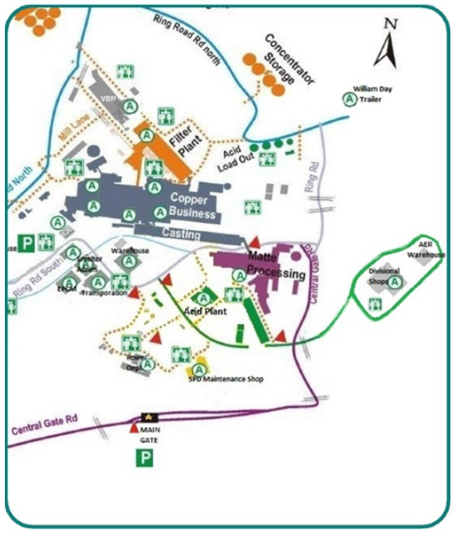


1.7 Approaching The Plant

Approaching The Plant

The Divisional Shops are accessed from Central Gate Road.

Access via the Main Gate is restricted unless you have received authorization and have Lenel access.



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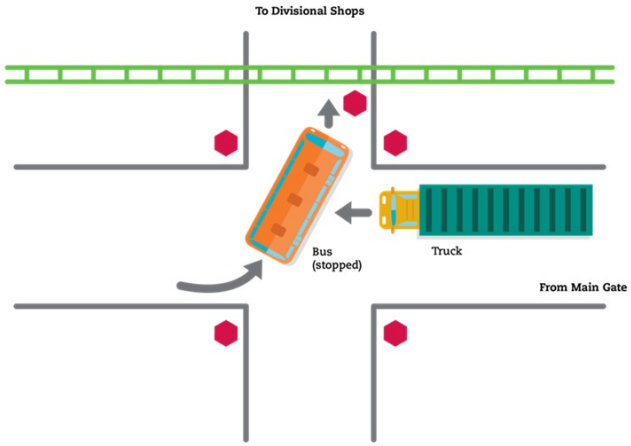
1.8 Approaching The Plant

Approaching The Plant

At the intersection of the Central Gate Road and Divisional Shops Road, there is a history of near miss collisions.

Be aware that adjacent to this intersection lies a set of railway tracks with an additional stop sign.

Be sure that before proceeding through the intersection that vehicles at this stop sign are completely clear of the crossing before you proceed through the 4-way stop.



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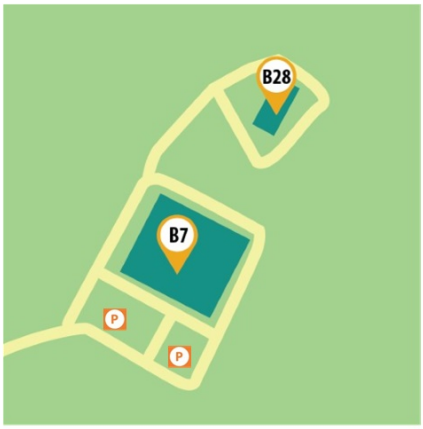
1.9 Parking

Parking

The parking lot consists of one main parking area with a small designated area for visitors and emergency response vehicles.



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1.10 Approaching Sign in Location

1.11 Plant Hazards and Controls

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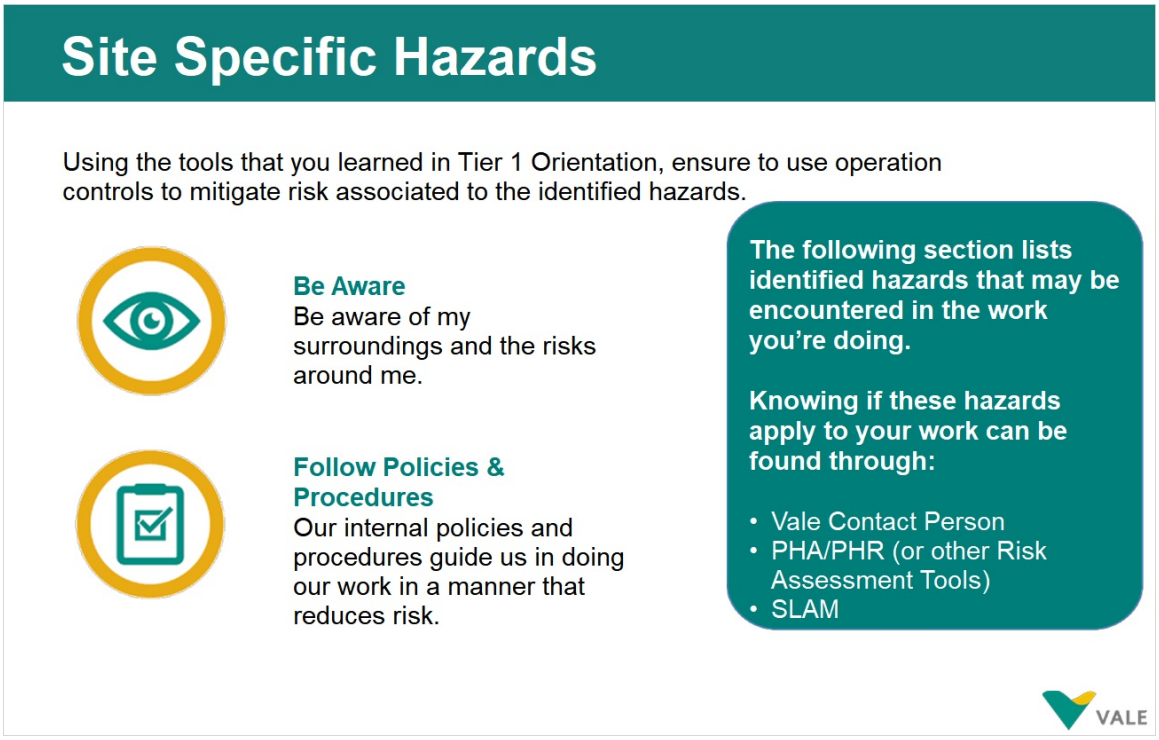
1.12 Site Specific Hazards



1.13 Site Specific Hazards

Site Specific Hazards

At Divisional Shops, workers need to be aware of site specific hazards and their related controls.

These include but are not limited to:

- Mobile equipment
- Storage hazards
- Varnish dip tank
- Hydraulic presses and shears
- Steam room
- Rotating equipment
- Automated equipment
- Electric motor test bench
- Cranes
- Asbestos

VALE

1.14 Mobile Equipment - Hazard

Mobile Equipment - Hazard

Divisional Shops utilize various pieces of mobile equipment to aid in the movement of materials or in the maintenance of areas.

- **Forklifts:** transporting supplies and materials.
- **Sweepers:** dust control and collection.
- **Elevated Work Platforms:** used to perform various maintenance activities.
- **Service Vehicles:** ½ ton trucks or cube vehicles deliver small quantity goods to the building.
- **Transport Trucks:** most of the larger equipment brought on-site for servicing is done so with large transport trucks.

Mobile equipment presents several hazards including restricted visibility, limited clearance, shifting loads all lending to collisions with pedestrians, machinery or other mobile equipment.

VALE

1.15 Mobile Equipment - Hazard

Mobile Equipment - Hazard

Warehouse Specific

The warehouse area has it's own unique set of hazards due to the work and arrangement of the area:

- Numerous aisles that can be narrow and have reduced visibility by mobile equipment operators to see pedestrians.
- Increased frequency of mobile traffic within the area increases the possibility of collisions with pedestrians and/or other equipment.
- Some of the mobile equipment is semi-automated and uses a guidance system to locate storage areas.
- There is work being done at elevated heights with mobile equipment introducing hazards such as suspended loads, unsecured materials or unstable loads.

VALE

1.16 Mobile Equipment - Control

Mobile Equipment - Control

Warehouse Specific

To manage the hazards in the Warehouse area, the following controls have been implemented:

- Always notify a warehouse person of your presence when entering the warehouse (64) for a job and when leaving the warehouse.
- Utilize and obey the flag system. Red flags are installed at the entrances to aisles whenever a worker or machine is in the aisle.
- Walk within designated walkways (hatched yellow lines) where available.

VALE

1.17 Steel Storage Racking - Hazard

Steel Storage Racking – Hazard

Steel racking presents a number of hazards including:

- Materials being stored at varying heights of elevation.
- Possible unsecured materials.
- Unstable or off-center loads.
- Reduced visibility.

VALE

1.18 Steel Storage Racking - Control

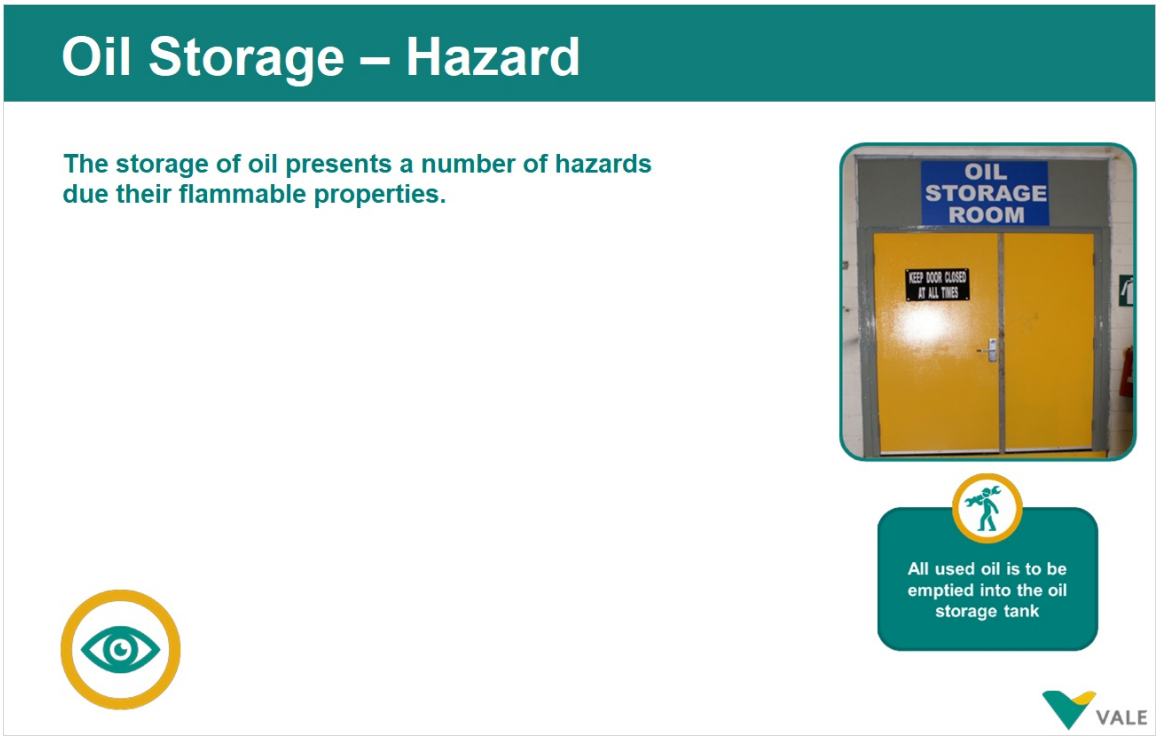
Steel Storage Racking – Controls

Applicable Controls

- Steel Storage Racking is installed by qualified and authorized workers.
- Recurring inspections and audits on racking and material placement.
- Exercise caution when using mobile equipment.

VALE

1.19 Oil Storage - Hazards



1.20 Oil Storage - Control

Oil Storage – Control

To manage the hazards associated with oils, Divisional Shops has implemented the following controls:

- Oil is to be stored in the designated Oil Storage Room, access to this area is restricted to authorized personnel.
- The doors to the oil storage room must remain shut at all times.

All used oil is to be emptied into the oil storage tank

VALE

1.21 Varnish Dip Tank - Hazard

Varnish Dip Tank – Hazard

The varnish dip tank is used to clean various parts or pieces of equipment and presents a hazard of fire and/or explosion because varnish is an extremely flammable solvent.

VALE

1.22 Varnish Dip Tank - Hazard

Varnish Dip Tank – Control

To manage the hazard Divisional Shops has implemented the following controls for the varnish dip tank area:

- There is a Carbon Dioxide (CO_2) fire suppression system installed in the area.
- The area has been marked with red lines to identify a boundary around the varnish dip tank.
- The area inside these lines is to be kept free from sparks and open flame.

VALE

1.23 Steam Room - Hazard

Steam Room - Hazard

Steam is another way that Divisional Shops workers use to clean mechanical parts. The main hazards with the Steam Room are:

- Equipment generates steam at temperatures in excess of 300ºF.
- Steam has the potential to burn your skin if it's unprotected.

VALE

1.24 Steam Room - Control

Steam Room - Control

To manage the risk of workers being exposed to this hazard, while working in the area the following controls have been implemented:

- Job Procedure associated to the use of the Steam Room.
- Mandatory PPE:
  - Face Shield
  - Long Sleeves
  - Gloves
  - Hearing protection

Restricted access to qualified and authorized workers

VALE

1.25 Hydraulic Presses and Shears - Hazard

Hydraulic Presses and Shears – Hazard

Divisional Shops use various hydraulic presses and shears for different rebuild operations.

These pieces of equipment have a press capacity from 50 to 600 tons.

Due to it's pressure capabilities, there is the potential hazard of a release of stored energy, resulting in flying objects/projectiles.

VALE

1.26 Hydraulic Presses and Shears - Control

Hydraulic Presses and Shears – Control

To mitigate this hazard be aware of the following controls:

- Always be alert for the potential of a release of energy.
- Follow equipment operation procedures.

VALE

1.27 Rotating Equipment - Hazard

Rotating Equipment – Hazard

In order to perform various mechanical functions, there are pieces of rotating equipment at Divisional Shops that present the hazard of:

- Entanglement of clothing in moving parts.
- Being hit by loose objects on the lathe, such as chuck keys or tools.
- Being struck by a workpiece that has not been adequately secured in the lathe or is oversized.

Drill press

Lathe

VALE

1.28 Rotating Equipment -Control

Rotating Equipment – Control

To mitigate the risk of these hazards workers need to be alert at all times and comply with the following controls:

- Be aware of the possibility of entanglement in the rotating equipment.
- Ensure guarding is in place and maintained.
- Follow identified weight ratings on equipment.
- Never have loose clothing/hair/jewelry around the equipment.
- Have required training/trade certification.

Plate Roller

VALE

1.29 Automated Equipment - Hazard

Automated Equipment – Hazard

Divisional Shops has various computerized pieces of equipment that perform automated tasks:

- CNC mills
- CNC lathes
- Key seaters
- Saws

The hazards associated with these types of equipment are typically personal injury from moving parts on the equipment or being struck by flying debris.

VALE

1.30 Automated Equipment - Control

Automated Equipment – Control

To mitigate the risks associated with automated equipment, there are a number of controls that may be in place:

- Guards, shields and enclosures (fixed or moveable).
- Interlocks
- Emergency Stops
- Restricted Areas through signage and/or boundary lines.

VALE

1.31 Electric Motor Test Bench - Hazard

Electric Motor Test Bench – Hazard

Divisional Shops has a designated area for testing electric motors within the Winding Shop area.

The hazards associated with this area are:

- Electrocution from electrical conductors/housings.
- Entanglement from moving parts such as motor shafts.

VALE

1.32 Electric Motor Test Bench - Control

Electric Motor Test Bench – Control

To mitigate the risks associated with this area the following controls are in place:

- Signage and red flashing lights.
- Restricted access defined by the fenced off area.
- Mandate of access to the winding shop by authorized personnel only.

VALE

1.33 Overhead Cranes and Jib Hoists - Hazard

Overhead Cranes and Jib Hoists – Hazard

There are 57 overhead cranes and jib hoists throughout Divisional Shops to either move materials throughout the shop or to assist in the installation of mechanical components. Cranes present the hazards of:

- Suspended loads.
- Unstable loads.
- Collisions and entanglements.
- Open bus-bars.
- Contact with other equipment.

VALE

1.34 Overhead Cranes and Jib Hoists - Control

Overhead Cranes and Jib Hoists – Control

To mitigate the risks with cranes and jib hoists, Divisional Shops has implemented the following controls:

- Overhead cranes and jibs may not be operated by non-Vale personnel without pre-authorization and review of Vale procedure.
- Mandatory daily inspections.
- Mandatory log book entries completed daily.
- Ensure no material comes within 3 meters of open bus bars.

VALE

1.35 Asbestos - Hazard

Asbestos – Hazard

The manufacture of certain products at Divisional Shops includes Asbestos such as brake components, gaskets or bearings.

Asbestos is a designated substance with friable properties that become airborne, where unprotected workers can inhale fibers deep into lung tissues causing lung damage and diseases such as asbestosis, lung cancer and mesothelioma.

VALE

1.36 Asbestos - Control

Asbestos – Control

To minimize the exposure of asbestos to workers at Divisional Shops, the following controls have been put in place:

- The storage of asbestos containing material is stored in a designated shed outside of door 916.
- Restricted access; do not enter unless qualified and authorized to do so.
- Asbestos inventory maintained by Occupational Health.
- Training and awareness for workers,

VALE

1.37 Hot Work - Hazard

Hot Work – Hazard

Hot work is defined as any burning or welding as well as work with any heat generating tools.

Divisional Shops performs a wide range of hot work activities through many maintenance and fabrication tasks.

Without following and adhering to appropriate controls, hot work presents the hazard of creating fires or explosions within the facility.

VALE

1.38 Hot Work - Control

Hot Work – Control

To mitigate the risk of fires or explosions from hot work, the following controls are in place:

- Fire Suppression installed in any area where the work will take place; those that do not have fire suppression must adhere to Vale's Hot Work Policy including the initiation/completion of appropriate hot work permits.
- Pre-operational checks for workers, equipment and work places.

For a comprehensive checklist to be performed prior to any hot work at Divisional Shops, refer to your T3 Divisional Shops insert

VALE

1.39 Hot Work - Control

Work Permits – Control

Due to the nature of hazards at Divisional Shops, it's critical that all work is authorized and controls are followed.

- In addition to the hazards and controls already identified, all work at Divisional Shops must include:
- Contractor Checklist

For a comprehensive checklist to be preformed prior to any hot work at Divisional Shops, refer to your T3 Divisional Shops Insert.

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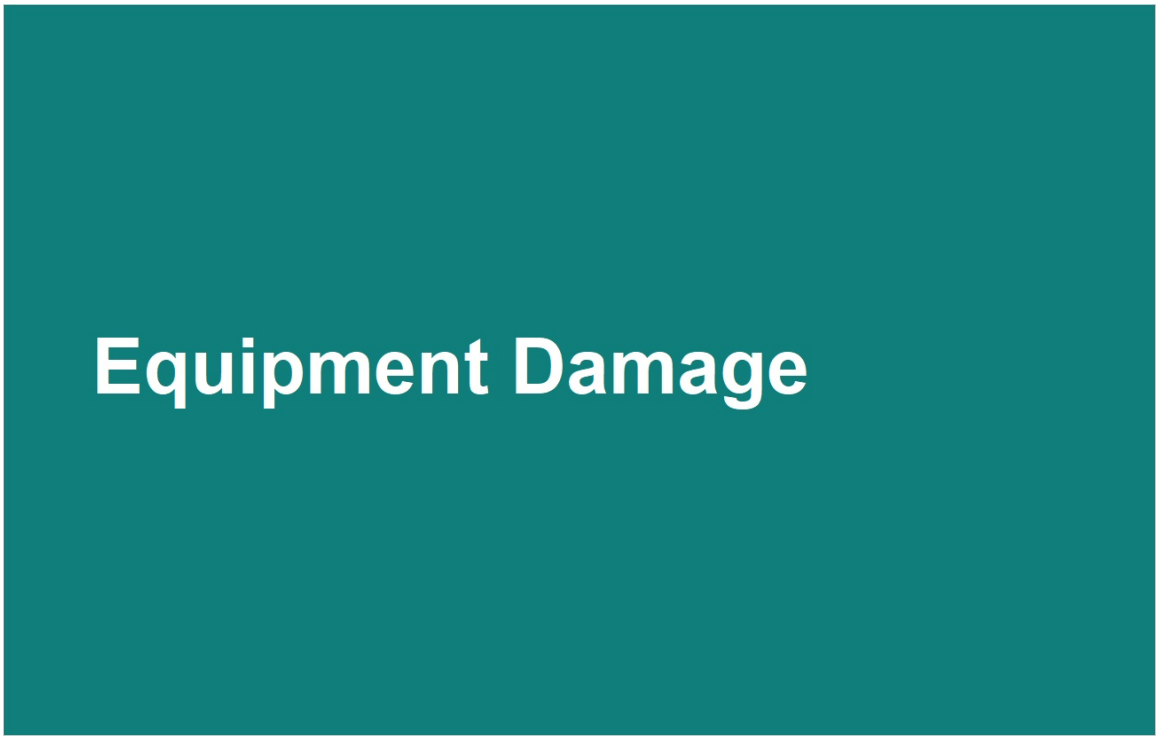
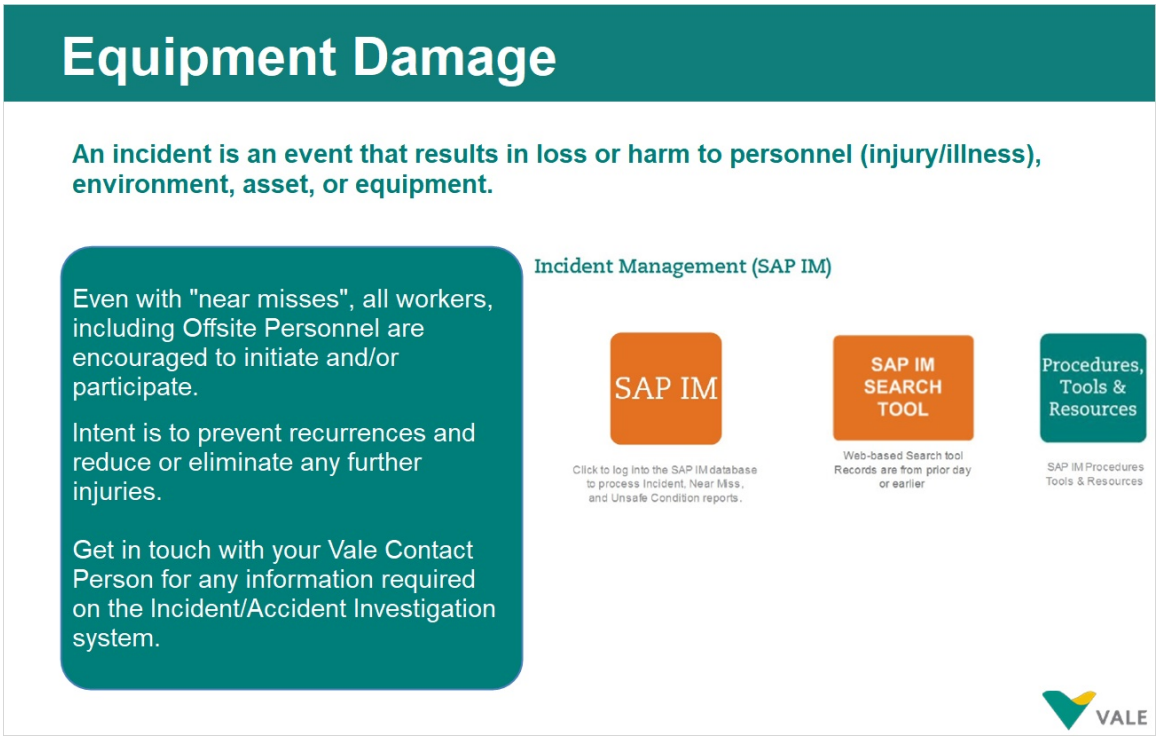
1.40 Equipment Damage



1.41 Equipment Damage



1.42 Personal Injury

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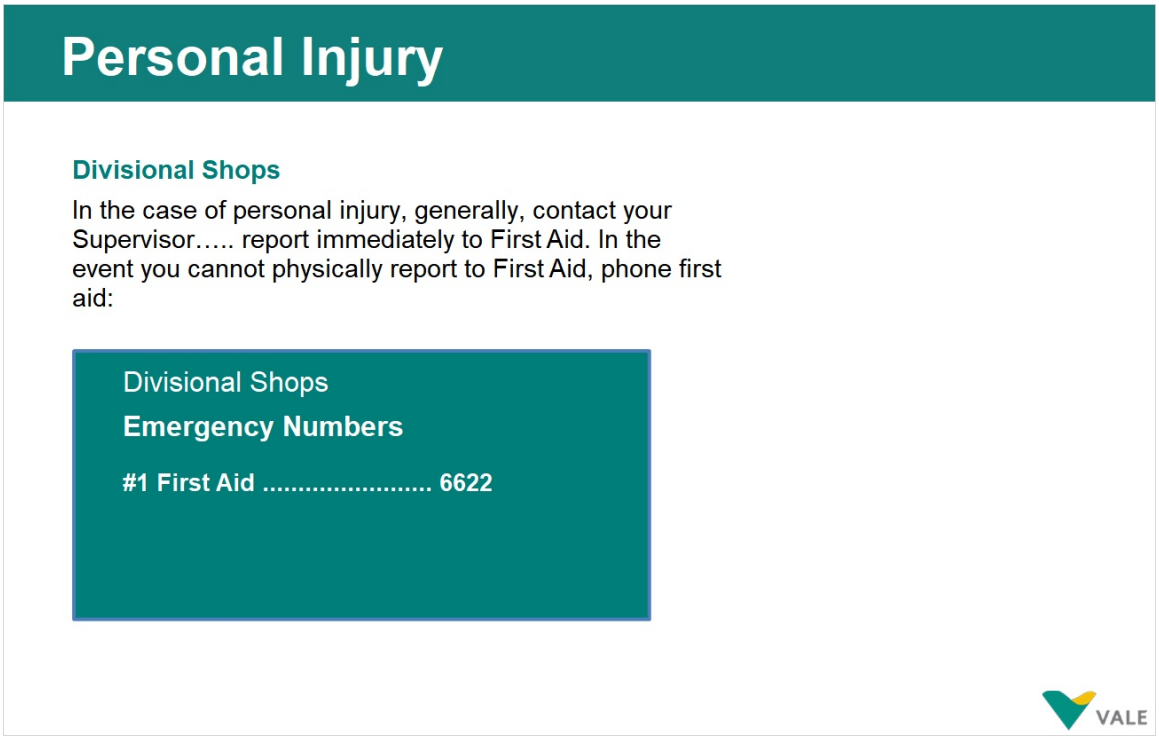
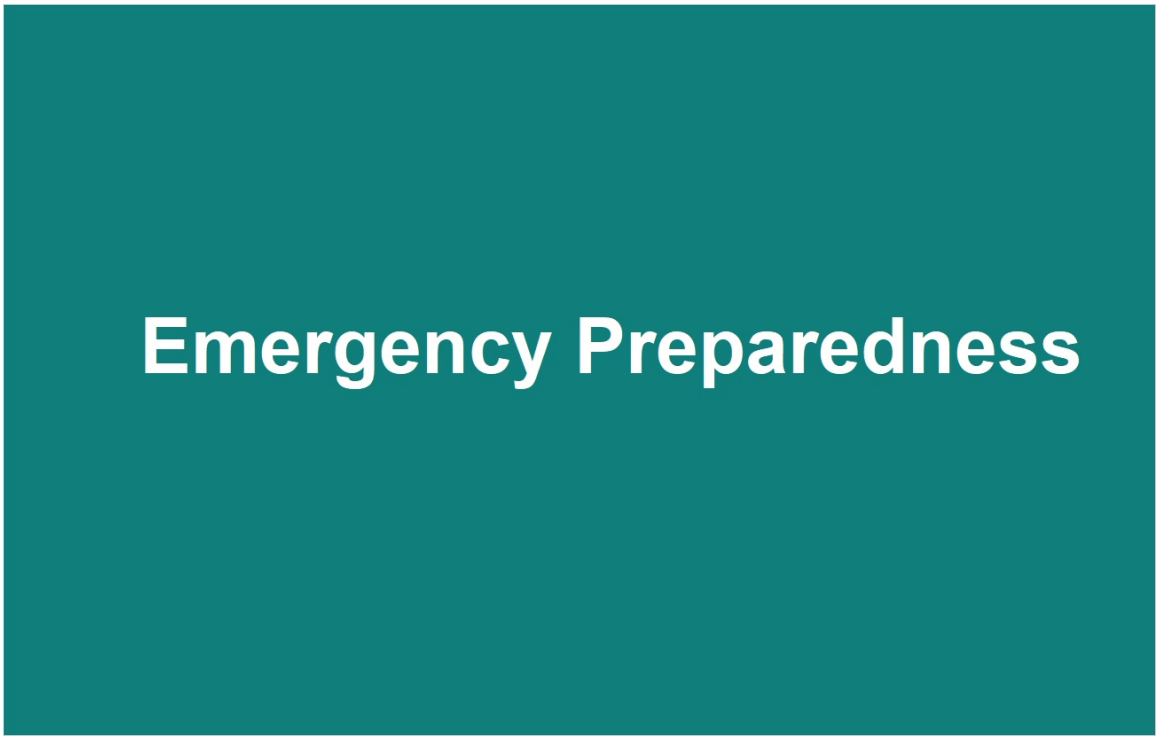
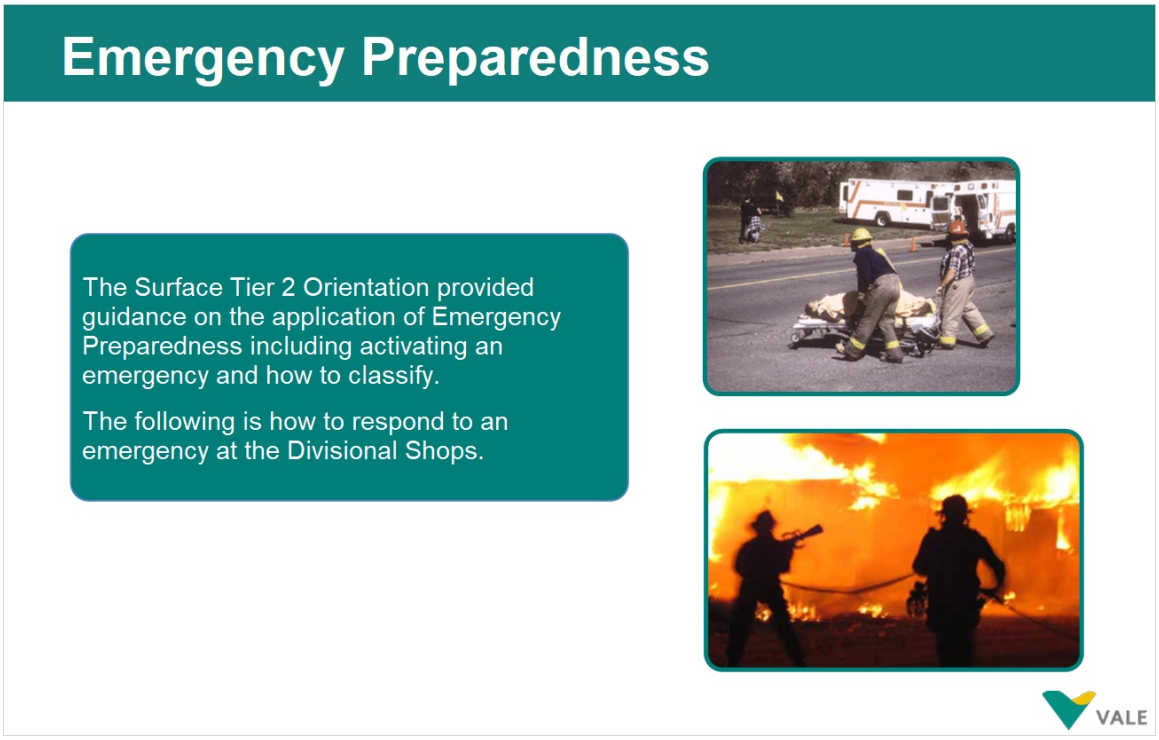
1.43 Personal Injury



1.44 Emergency Preparedness



1.45 Emergency Preparedness



1.46 Notification

Notification

Intermittent Wail (High-Low)

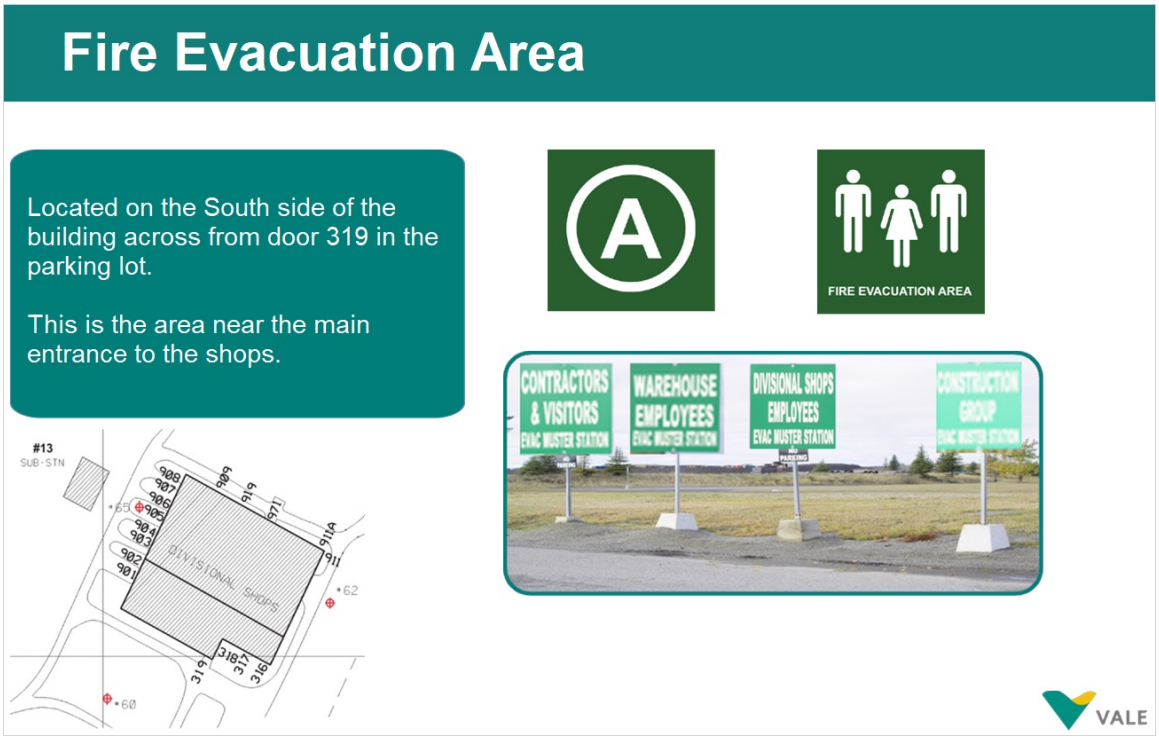
All personnel are to immediately report to the designated containment (Assembly) area.

Fire Alarm (Continuous Bells)

All personnel are to leave the shops by the closest route of exit and assemble together as a group in the designated evacuation assembly area.

VALE

1.47 Fire Evacuation Area



1.48 Safe Assembly Area

Safe Assembly Area

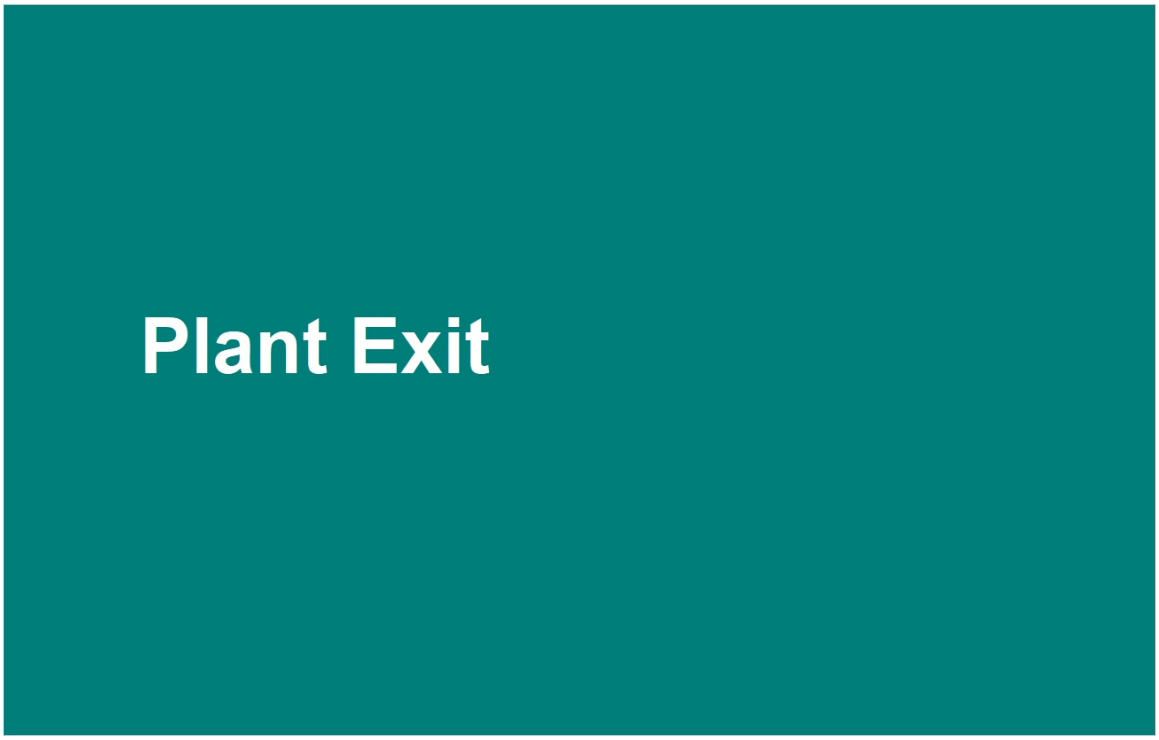
Located in the east side of the building in the low-bay area at door 316.

When entering, check in with person accountable for attendance in the Safe Assembly Area.

Emergency procedures will be outlined in a red book, directly beside the office hallway door.

VALE

1.49 Plant Exit



1.50 Plant Exit

Plant Exit

Good work practices dictate that you close the loop on work you were doing to avoid creating risks or hazards for other work groups, cross shifts, or other work in the area. Here are some tasks to consider when getting ready to exit the plant to ensure the safety to you and those around you:

- ✓ **Housekeeping** – Is your worksite cleaned up after your job?
- ✓ **Personal Lock and Tag** – Has your personal protection been removed at the end of the shift.
- ✓ **Status Tagging** - Is there ongoing work that needs a status tag placed or is there equipment in Bad Order that needs to be identified?
- ✓ **End States** – Have you left the process in the proper state?
- ✓ **Waste Segregation** - Have you disposed of materials in the appropriate waste receptacles/bin/area?
- ✓ **Control room** – Do I need to let the control room know that I'm clear of an area?
- ✓ **Vale Contact Person** – do they need an end of shift report from me?
- ✓ **Permits** – do I need to close or hand in any permits?

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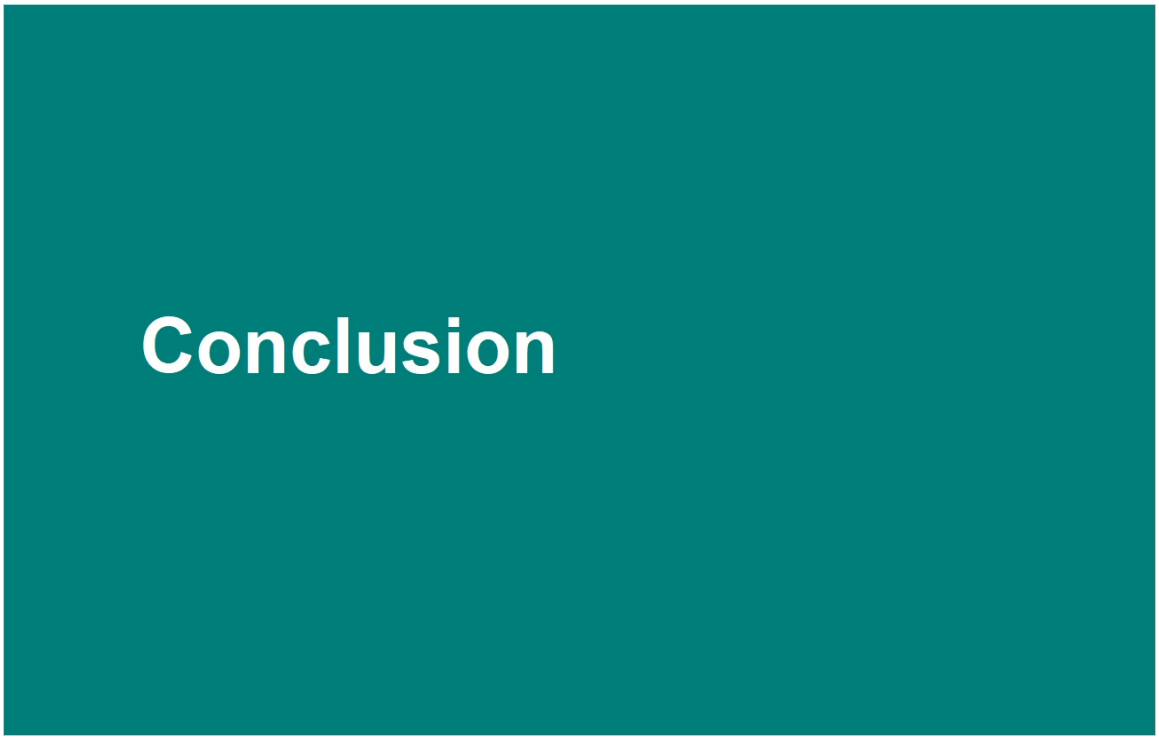
1.51 Conclusion



1.52 Conclusion

Conclusion

This concludes the material for the Divisional Shop / Flex Crew Orientation. You should now have a working knowledge and understanding of:

- Plant Entry
- Site Specific Hazards and Controls Divisional Shops
- Procedures in the event of:
  - Equipment Damage
  - Personal Injury
  - Process Upset (Emergency Preparedness)
- Plant Exit Procedure

This Orientation provided information to access Divisional Shops. In order to feel comfortable with the area, you may arrange a field visit with your Vale Contact Person to specifically identify procedures provided in this Orientation.

Additionally, depending on the site or work you're doing, you may require task-specific information through either the local Learning & Development Group or your Vale Contact Person.

1.53 Conclusion

Remember, At Vale we believe
Life Matters Most and that
no job is worth doing if it cannot be done safely.

Thank-you for your participation
and your commitment to safety at Vale.

HOME SAFE

1.54 Start The Module Quiz