

# Long Harbour: Environmental Awareness for Temporary Employees Orientation

## 1. Temporary Employees

### *1.1 Environmental General Awareness*



## 1.2 Environmental Awareness, Long Harbour Operations

# Environmental Awareness, Long Harbour Operations


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LHO Environment Department  
2021



## 1.3 Learning Objectives


### Environmental General Awareness



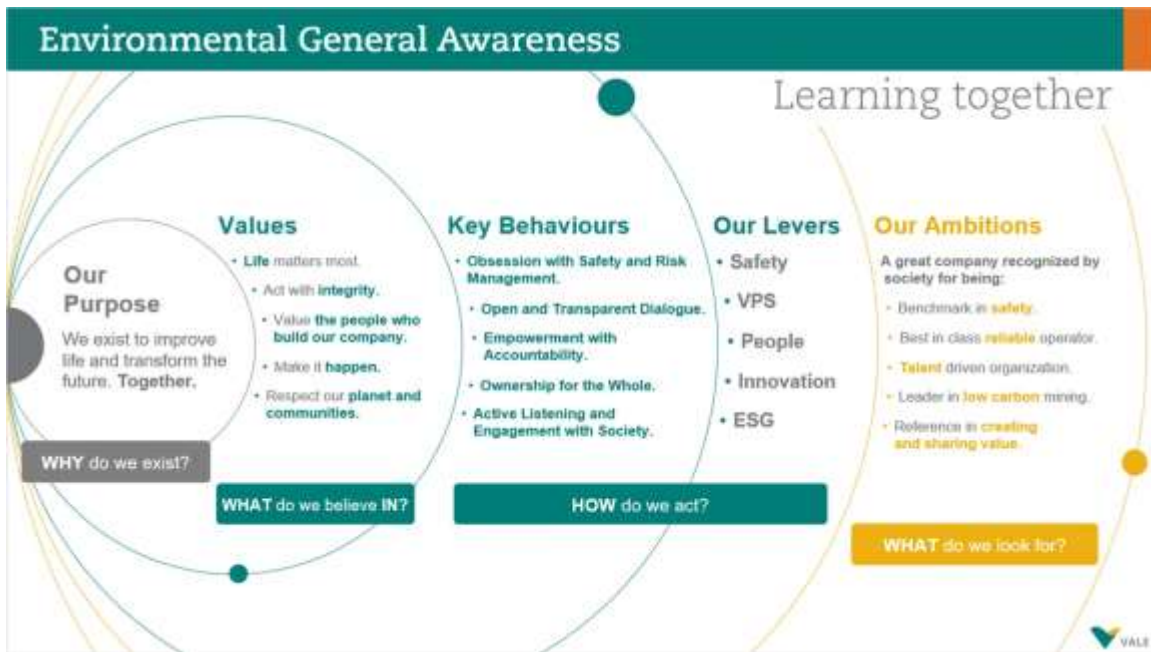
### Learning Objectives

This course will provide details on Long Harbour Operations (LHO) environmental management. It aims to provide information on some of our regulations and policies which are vital in maintaining environmental compliance during your time on site. At the end of this course, each worker will know what is required for site personnel to work on site while minimizing our impact on the environment.

Environment person started collecting a water sample from Pilling Brook.



## 1.4 Learning Together



## 1.5 Table of Contents

Table of Contents	
1. Environmental Risks	7. Spills
2. Environmental Protection Plans	8. Greenhouse Gas Emissions
3. Waste Management	9. Things to Note
4. Groundwater	
5. Wildlife	
6. Secondary Containment	

VALE

## 1.6 Environmental Risk

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# Environmental Risk



## 1.7 Certificate of Approval Non-Compliance

### Environmental General Awareness



#### Certificate of Approval Non-Compliance

One of our major risks on site is a CoFA non-compliance. Maintaining CoFA compliance is very important part of our operation.

How we remain within compliance is by completing all of prescribed monitoring/reporting and abiding by all detailed requirements in our approval.

When at LHO, it is expected that each worker will adhere to all applicable CoFA conditions. More details further in this course.



## 1.8 Metal and Diamond Mining Effluent Regulations Non-Compliance

Environmental General Awareness



### Metal and Diamond Mining Effluent Regulations Non-Compliance

The Metal and Diamond Mining Effluent Regulations (MDMER) is a very detailed set of regulations from the Federal Government and is part of the Fisheries Act. A non-compliance under MDMER could result in serious consequences such as large fines, jail time for individuals or both.

Three of the main ways we are able to maintain compliance is through 1) the use of our Effluent Treatment Plant, 2) completing a strict environmental monitoring program and 3) stringent environmental reporting requirement.



## 1.9 Bund Integrity

Environmental General Awareness



### Bund Integrity (Secondary Containment)


Bund integrity plays a vital part in maintaining environmental compliance. At LHO, in addition to exterior containment bunds, our buildings were also constructed to act as bunds, keeping process chemicals spilled from tanks or process lines inside the building and from being released to the environment.

A loss of containment from a bund could have major environmental and regulatory consequences.



## 1.10 Dam Failure

**Environmental General Awareness**




**Dam Failure**

Dam safety is a very important aspect of our operations at LHO and Vale. As there are a number of dams on site, dam failure poses one of our major site risks.


One of the critical controls which help us prevent major dam failure is an extensive inspection and monitoring program including both internal and external personnel.

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## 1.11 Groundwater Contamination

**Environmental General Awareness**




**Groundwater Contamination**

Due to our process our solutions contain highly dissolved metals, mainly nickel. As a result, any spill to the environment may impact site groundwater, and surrounding water bodies.

Reporting all spills and maintaining secondary containment are critical elements in controlling this risk.

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## 1.12 Chapter Introduction

### Environmental General Awareness

Now that you have a general understanding of our larger environmental risks at LHO, we would like to explain some of the environmental site plans and policies we have in place to control not only these major environmental risks, but all the environmental risks on site.



## 1.13 Environmental Protection Plan

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# Environmental Protection Plan

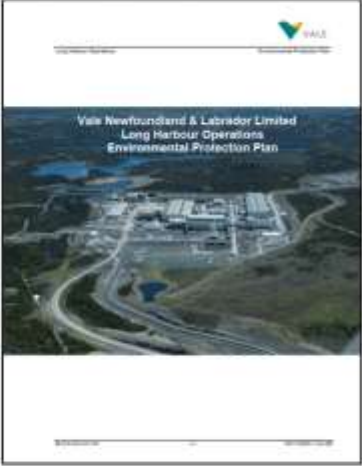


## 1.14 Environmental Protection Plan


### Environmental General Awareness

#### Environmental Protection Plan

- General document which provides detailed steps on how to avoid or minimize negative impacts to the environment.
- Reviewed annually and any changes approved by the Government of Newfoundland and Labrador.
- Located on the Environment webpage. If you don't have access to the Vale webpage contact your site representative for a copy if required.




Vale Newfoundland & Labrador Limited  
Long Harbour Operations  
Environmental Protection Plan



## 1.15 Important Points


### Environmental General Awareness

#### Important points



- **Storage and Handling of Fuel and Hazardous Materials**
  - Must be stored greater than 100m from a water body
  - Bunds must be able to hold the greater of:
    1. 110% capacity of the largest storage tank, or
    2. 100% of the largest tank and 10% of the capacity of the other tanks.
- **Fuel Product Transfer**
  - Drip pans must be used during fuel product transfer in the absence of a more permanent containment area. If a drip pan cannot be used a spill pad will be used to collect drips.
- **Work Around a Waterbody**
  - No refueling within 100m of a waterbody/stream
  - Any work within 15m of a waterbody/stream requires a regulatory permit

UN001 - 1 located in Long Harbour





## 1.16 Waste Management

03

# Waste Management



## 1.17 Office and Annex Waste Streams

### Environmental General Awareness

#### Office and Annex Waste Streams

- Mixed Recyclables
- General waste
- Paper and Cardboard
- Beverage Containers



## 1.18 Operational Waste Streams

Environmental General Awareness



### Operational Waste Streams


- Nickel Contaminated Waste
- Metals
- Waste Wood
- Aerosols
- Waste Oil
- Batteries
- Other Special Waste



## 1.19 Groundwater

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# Groundwater



## 1.20 Groundwater Monitoring

### Environmental General Awareness

#### Groundwater Monitoring

Groundwater is monitored very closely on site. Due to concerns of contamination, regular samples are collected from Port, Plant site and RSA.

Sample analysis and plume mapping are completed to ensure any contaminated groundwater does not make its way off site to the existing environment, and to provide a comparison which can be used for investigative purposes if there is a change in the results.



Photo of water level number being placed in a groundwater well on the lower bay.



## 1.21 Groundwater Collection System

### Environmental General Awareness

#### Groundwater Collection System



A groundwater collection system has been established to collect any contaminated groundwater before it enters the stream which is considered fish habitat. Any deposit of contaminated groundwater/water/material that impact fish habitat is a violation of the Fisheries Act and our Certificate of Approval.

In Spring/Summer of 2021, this system will be updated to provide a more permanent and robust system.

Photo - Groundwater collection system at LIRD



## 1.22 Wildlife

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# Wildlife



## 1.23 Wildlife at Long Harbour Operations

### Environmental General Awareness



### Wildlife at Long Harbour Operations

As our site is located among the boreal forest we regularly have wildlife sightings on site.

Some animals commonly found at LHO include Moose, fox, rabbit, coyote, beaver, and a variety of bird species. On a very rare occasion black bears have been spotted on site.

Photos: iStock

Photos: Google Images



## 1.24 What To Do If You Spot Wildlife

### Environmental General Awareness

#### What To Do If You Spot Wildlife

- Do not approach and give the animal plenty of space. **They have the right of way.**
- Do not follow or harass wildlife on site
- **Do not feed wildlife** – feeding of wildlife is strictly prohibited on site
- To report general wildlife sightings contact the Environment Department at [lhpp.environment@vale.com](mailto:lhpp.environment@vale.com)
- For wildlife emergencies contact Security or the Environment on call



Photo: Government of BC



## 1.25 Storm Petrels and Dovekies

### Environmental General Awareness



Photo: Instagram

Top: Dovekie aka Buller's  
Bottom: Storm Petrel

#### Storm Petrels and Dovekies

Both Storm Petrels and Dovekies are small marine birds that can occasionally be found on the plant site near buildings or structures when they are forced in by wind or are attracted to our building lights. As they require the use of water to take off, these birds often require assistance and will not survive if left on land.

If you see a storm petrel or dovekie please contact the Environment Department Immediately. Do not touch or attempt to move the bird, as they can be easily injured and require assessment before being released back to the marine environment.



## 1.26 Spills

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# Spills



## 1.27 *What is a Spill on Site?*

Environmental General Awareness

# What is a Spill on Site?



## 1.28 Any spill or leak of a process / regulated substance

Environmental General Awareness

# Any spill or leak of a process / regulated substance

Hint: So just report anything that reaches the environment



## 1.29 Reporting an Environmental Spill

Environmental General Awareness

### Reporting an Environmental Spill

1. Warn workers of danger;
2. Move to a safe distance;
3. Call in the event
4. If safe to do so, prevent further spread
5. Standby for area coach/supervisor, ERT or LHO Environment



Photo: Spill at LHO



### 1.30 Boot Prints

## Environmental General Awareness



Photo - Boot prints at LRII

### Boot Prints

A common environmental incident observed on site is the tracking of process materials outside buildings from footwear. Ensuring boots are clean before exiting the building is a very important in reducing environmental risk and in keeping our site and surrounding environment clean. Even a small spill has the potential to cause a major environmental impact.



### 1.31 Secondary Containment

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## Secondary Containment





## 1.32 Requirements

### Environmental General Awareness



Photo: Photo Credit

#### Requirements

- All storage of fuel, chemical and process materials must have adequate secondary containment.
- Must be able to hold the greater of:
  - 110% capacity of the largest storage tank, or
  - 100% of the largest tank and 10% of the capacity of the other tanks.
- Must be free and clear of debris and precipitation.

Photo: Purcell LTD



## 1.33 Permanent Containment

### Environmental General Awareness

#### Permanent Containment

There are numerous types of permanent containment on site. They include concrete bunds around storage tanks and building foundations. All buildings at LHO were designed to keep materials inside. Floors are sloped to ensure liquids are directed away from building exterior doors.





Photo: PCN tanks 223



## 1.34 Temporary Containment

### Environmental General Awareness



This is not adequate containment for this size of tank!

Photo: Google Maps

Photo: Tank in laboratory containment

## Temporary Containment

Temporary containment is often required on site. This type of containment must be constructed of an impermeable material and meet the containment capacity requirements.

- Must be able to hold the greater of:
  - 110% capacity of the largest storage tank; or
  - 100% of the largest tank and 10% of the capacity of the other tanks.

All temporary containment must be approved by the Environment Department before being put into service



## 1.35 Containment Pallets

### Environmental General Awareness



## Containment Pallets

Photo: Pallet containment system



Photo: Google Maps

Containment pallets are often used on site. This is acceptable. However, please ensure that pallets are kept free of material and precipitation, containers are placed in the correct position as to reduce the likelihood of leakage and ensure that you are using the correct containment pallet for the storage container capacity.

- 110% capacity of the largest container; or
- 100% of the largest container and 10% of the capacity of the other containers.



### 1.36 Sea-Cans Do Not Provide Adequate Secondary Containment

#### Environmental General Awareness



Sea-Cans Do Not Provide  
Adequate  
Secondary Containment

Photo: Staff at Long Harbour Operations



### 1.37 Greenhouse Gas Emissions


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## Greenhouse Gas Emissions



## 1.38 Greenhouse Gases (GHG) and Climate Change

**Environmental General Awareness**



**Greenhouse Gases (GHG) and Climate Change**

Greenhouse Gas (mainly CO<sub>2</sub>) is gas that traps heat in the atmosphere, resulting in the warming of the earth.

Climate Change is one of the biggest challenges facing NL and the world.

- Increasing air temperatures (Invasive species, forest fires, etc.)
- Increasing sea temperature (Destruction of marine ecosystems, vulnerable to extreme weather, etc.)
- Rising seas levels (Increased coastal erosion, loss of low lying areas, etc.)

Photo: TomBach/123456



## 1.39 Sources of GHG Emissions at LHO

**Environmental General Awareness**

**Sources of GHG Emissions at LHO**

- 70 % Stationary Emissions
  - Boilers
- 20% Fixed Process Emissions
  - Use of carbonates (Lime, Soda Ash, etc.)
- 10% Mobile Equipment
  - Light and medium duty vehicles



Photo: Aerial view of LHO



## 1.40 Ways you can help!

**Environmental General Awareness**

### Ways you can help!

No Idling Policy in Effect

- No idling of unoccupied vehicles

Following Equipment PM's

- Fuel Efficiency

Operational Efficiencies

- Heat Exchangers
- Building Ventilation


Identifying and escalating ideas and ways to improve



## 1.41 Things to Note

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# Things to Note



## 1.42 Important Points

### Environmental General Awareness

#### Important Points

- All incidents of spillage or leakage of a regulated substance must be reported to the government.
  - ANYTHING RELEASED to the Environment shall be reported.
- Work within 15m of a waterbody requires a permit from the Province. Including bridges, culverts, stream modifications, infilling and dredging.
- Used oil and used glycol shall be retained in approved and registered tanks or containers.
  - Disposal must be by a company licensed for handling and disposal of used oil and/or used glycol products.



Photo: (Image 1) modified at LUD



## 1.43 Discharging Water On-Site

### Environmental General Awareness

Photo: Environmental Discharge permit

#### Discharging Water On-Site

Discharging water on site to the environment, including the ground or waterway, requires prior approval from the Environment Department. This is obtained through completion of the discharge permit and submission of satisfactory water results. Water at a minimum must be tested for Nickel, Total Suspended Solids, and pH.

If discharging to the stormwater system additional operational approval is required.



## ***1.44 Environmental Awareness, Long Harbour Operations***

 **Thank you**

**You have now completed this course on  
Environmental Awareness.**

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LHO Environment Department  
2021

