

# 1. Introduction

An overview of Glencore’s Townsville Copper Refinery operations and potential hazards has been provided in the visitor’s site induction; this Fact Sheet contains supplementary information on our Major Hazard Facility (MHF) hazards.

The Refinery has been classified as a MHF under the Work Health and Safety Regulation 2011 due to the volume of arsenic trioxide and arsenic pentoxide in solutions used and in waste products generated. The Refinery has successfully held a MHF licence since 2015. During this time no major incidents have occurred, and the Refinery has been proactive in the continuous improvement of operations and the control of risk.

Comprehensive measures are in place to control hazards, however as a visitor to site it is important that you understand what MHF hazards exist, in what locations and if your visit is taking you to those locations, our expectations of you as a visitor to minimise the potential for harm and what to do in the unlikely event of an emergency occurring while you are on site.

# 2. Major incident hazards

In accordance with statutory requirements, we have assessed the potential for Major Incident Hazards (MIH), including their possible causes and consequences and the adequacy, suitability and effectiveness of existing control measures giving consideration to how these could be appropriately improved.

Our assessment identified two (2) types of MIH events, which have the potential to occur on our site:

Generation of arsine gas from operational processes or reactive metals	Fire or explosion of natural gas
<p>Arsine is a colourless, flammable and highly toxic gas that can cause severe health effects if encountered.</p> <p>Arsine gas is not used, stored, or handled on site, but it can be generated in abnormal operating conditions.</p> <p>If the copper concentration in the electrolyte solution is lowered, or if a reactive metal (i.e., zinc, aluminium, galvanised metals, and iron) comes into contact with electrolyte, arsine gas may be generated.</p>	<p>Natural gas is a colourless, odourless, and highly flammable gas that can cause fires or explosions if heated when confined.</p> <p>Although it is used in our processes, natural gas is supplied via a pipeline and is not technically stored on site.</p>

The following table identifies the list of identified MIH events, their locations, controls, and precautions required if entering those areas. Please confirm with your host if you will be entering these locations during your visit.

MIH events	Summary of controls	Precautions for visitors
MIH 1: Arsine Gas Generation Low Copper Concentration at the EPP	<ul style="list-style-type: none"> <li>• Copper concentration monitors</li> <li>• Stop-flow monitoring and alarms</li> <li>• EPP restricted access</li> <li>• Competent personnel</li> <li>• Interlocks</li> <li>• Personal arsine monitor</li> </ul>	<ul style="list-style-type: none"> <li>• Do not enter the EPP area without authorisation, sign on to register, carry arsine monitor and be escorted</li> <li>• Follow all signage and CRL host instructions</li> </ul>
MIH 2: Arsine Gas Generation Low Copper Concentration at the Tank house Liberator Cells		
MIH 3: Arsine Gas Generation Low Copper Concentration at the Plating Shop		
MIH 4: Arsine Gas Generation Reactive Metals (Electrolyte Area) (Includes Tank house and EPP)	<ul style="list-style-type: none"> <li>• Restricted use of aluminium and galvanised metals at electrolyte area</li> <li>• Reactive metals permit</li> <li>• Site wide ban aluminium drink cans</li> </ul>	<ul style="list-style-type: none"> <li>• Do not bring aluminium cans onto site</li> <li>• Do not bring other reactive metals into electrolyte areas</li> <li>• Follow all signage and CRL host instructions</li> </ul>

MIH events	Summary of controls	Precautions for visitors
MIH 5: Uncontrolled Release of Natural Gas Boiler House	<ul style="list-style-type: none"> <li>• Interlocks</li> <li>• Pressure control systems</li> <li>• Gas detection</li> <li>• Restricted access</li> <li>• Mercaptan to odourise gas</li> <li>• Regular boiler inspections</li> <li>• Competent personnel</li> </ul>	<ul style="list-style-type: none"> <li>• Do not enter boiler house without authority</li> <li>• Follow all signage and CRL host instructions</li> </ul>
MIH 6: Uncontrolled Release of Natural Gas inside Anode Air Heater	<ul style="list-style-type: none"> <li>• Interlocks</li> <li>• Explosion door</li> <li>• Gas ventilation</li> <li>• Restricted access during casting days</li> <li>• Competent personnel</li> </ul>	<ul style="list-style-type: none"> <li>• Do not enter anode area during casting days without authority</li> <li>• Follow all signage and CRL host instructions</li> </ul>
MIH 7: Uncontrolled Release of Natural Gas Anode Furnace, Holding Furnace, Launder and Anode Casting House	<ul style="list-style-type: none"> <li>• Interlocks</li> <li>• Emergency damper</li> <li>• Pressure control systems</li> <li>• Gas detector</li> <li>• Mercaptan to odourise gas</li> <li>• Competent personnel</li> </ul>	
MIH 8: Release of Odourised Natural Gas from Pipeline	<ul style="list-style-type: none"> <li>• Leak and flame detection with alarms</li> <li>• Mercaptan to odourise gas</li> <li>• Pipeline design to standards</li> <li>• Protective barriers</li> <li>• Speed limit</li> </ul>	<ul style="list-style-type: none"> <li>• Follow all signage and CRL host instructions</li> </ul>
MIH 9: Release of Unodourised Natural Gas	<ul style="list-style-type: none"> <li>• Leak and flame detection with alarms</li> <li>• Hazardous area management - use of intrinsically safe equipment</li> <li>• Pipeline design to standards</li> <li>• Protective barriers</li> </ul>	<ul style="list-style-type: none"> <li>• Do not bring items into the area that could create a spark e.g., phones or watches</li> <li>• Follow all signage and CRL host instructions</li> </ul>

Example of Danger Warning signs on site that must be followed:



### 3. Emergency management

As communicated in the visitor's induction, Emergency Management is managed through a variety of plans, procedures and tools that are applied in the event of an emergency to effectively manage an incident, including if a MIH event occurs. It includes how to respond in the event of on-site and off-site emergencies. These plans have been developed in conjunction with local emergency response agencies.

Our employees are trained in how to respond if an emergency occurs, including notification, evacuation and response. Emergency exercises are used to test the site's emergency response capabilities and, where appropriate, we also collaborate with external Emergency Services in conducting these exercises.

The process for any emergency is the same, no matter the situation. Generally, the alarm will be raised by CRL personnel but if required visitors can also:

- dial 99 for a primary on-scene emergency response, including activating evacuation processes
- if there is a need for an immediate escalation, call 000 for Emergency Services, who will attend the scene on site
- evacuate to the Marshall Point.

As per your visitor's induction if an emergency occurs and the alarm to evacuate activates you will follow your host to the evacuation marshal point and be accounted for by the appropriate warden. You will remain at the marshal point until advised it is safe to leave. If the emergency is prolonged a Marshall Area Coordinator will be appointed to provide updates and answer any questions you may have.

### 4. General responsibilities of visitors

To avoid interactions with hazards, visitors are required to adhere to the information below:

- always remain with your CRL host and follow their instructions
- wear the required PPE as instructed
- remain within the designated walkways and stay clear of restricted areas
- follow area-specific rules
- during an emergency, follow CRL host instructions and evacuate to nearest marshal point.