



April 2013

INTERNATIONAL CYANIDE MANAGEMENT CODE

Orica Australia Limited Papua New Guinea Supply Chain Recertification Audit, Summary Audit Report

Submitted to:

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UNITED STATES OF AMERICA

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REPORT



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Table of Contents

1.0 INTRODUCTION.....	1
1.1 Operational Information	1
1.2 Description of Operation	1
1.2.1 Orica Australia Limited	1
1.2.1.1 Yarwun	1
1.2.2 Road Transportation	1
1.2.2.1 East West Transport.....	2
1.2.3 Marine Transportation.....	2
1.2.3.1 ANL Shipping.....	2
1.2.3.2 Swire Shipping.....	2
1.2.4 Ports.....	2
1.2.4.1 Port of Lae, Papua New Guinea	2
1.3 Transit Storage	3
1.4 Auditors Findings and Attestation	4
1.5 Name and Signatures of Other Auditors:.....	4
1.6 Dates of Audit	4
2.0 CONSIGNOR SUMMARY.....	6
2.1 Principle 1 – Transport.....	6
2.1.1 Transport Practice 1.1	6
2.1.2 Transport Practice 1.2.....	9
2.1.3 Transport Practice 1.3.....	10
2.1.4 Transport Practice 1.4.....	11
2.1.5 Transport Practice 1.5.....	13
2.1.6 Transport Practice 1.6.....	14
2.2 Principle 2 – Interim Storage.....	17
2.2.1 Transport Practice 2.1	17
2.3 Principle 3 – Emergency Response.....	19
2.3.1 Transport Practice 3.1	19
2.3.2 Transport Practice 3.2.....	22
2.3.3 Transport Practice 3.3.....	24
2.3.4 Transport Practice 3.4.....	25



PAPUA NEW GUINEA SUPPLY CHAIN, SUMMARY AUDIT REPORT

2.3.5	Transport Practice 3.5.....	26
3.0	DUE DILIGENCE	27
3.1	Shipping.....	27
3.1.1	ANL Shipping	27
3.1.2	Swire Shipping	28
3.2	Ports	29
3.2.1	Port of Lae	29
3.3	Auditor Review of Due Diligence	30
4.0	LIMITATIONS	31

APPENDICES

APPENDIX A

Limitations



1.0 INTRODUCTION

1.1 Operational Information

Name of Transportation Facility: Orica Papua New Guinea Supply Chain
Name of Facility Owner: Not Applicable
Name of Facility Operator: Orica Australia Ltd (Orica)
Name of Responsible Manager: Dave Ellison, ICMC Compliance Officer
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Gladstone, 4680
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1.2 Description of Operation

1.2.1 Orica Australia Limited

Orica is an Australian-owned, publicly listed company with global operations. Orica is managed as discrete business units that produce a wide variety of products and services. The Mining Chemicals unit is based in Australia and exports products to Asia, Africa and the Americas, as well as supplying the local Australian industry. The unit's main product is sodium cyanide (cyanide), which is manufactured at Orica's Yarwun cyanide production facility (Yarwun Facility) in Queensland, Australia. Orica Mining Chemicals is the world's second largest producer of cyanide.

1.2.1.1 Yarwun

Orica's Yarwun Facility, which is located approximately eight kilometres (km) by road from Gladstone, Queensland, commenced operations in 1989 and is engaged in the manufacture of cyanide (both solid and liquid forms), ammonium nitrate, nitric acid, chlorine, sodium hydroxide, sodium hypochlorite, hydrochloric acid and expanded polystyrene balls.

Solid sodium cyanide is packaged in either sparge isocontainers, which have a maximum gross weight of 26 tonnes, or intermediate bulk containers (IBCs), which is turn are packed into a container. A maximum of 20 IBCs can be packed into a freight container with a maximum gross weight of 28 tonnes. Liquid cyanide is packaged into isotainers with a maximum gross weight of 26 tonnes.

Cyanide manufactured at the Yarwun Facility is used in gold mining operations within Australia, Asia, Africa, Papua New Guinea, New Zealand, Solomon Islands and South America.

Orica's Yarwun Facility was re-certified and being in full compliance with the Code on 17 March 2010.

1.2.2 Road Transportation

Orica contracts all road transportation within the Papua New Guinea Supply Chain to East West Transport (EWT).

Orica Papua New Guinea Supply Chain

Name of Facility

Signature of Lead Auditor

5 April 2013

Date



1.2.2.1 East West Transport

EWT is an operating division of Steamship Trading Company Limited, part of the Swire Group of Companies. EWT operates 150 trucks from eight depots across PNG.

1.2.3 Marine Transportation

Orica contracts all marine transportation of solid sodium cyanide within the Papua New Guinea Supply Chain to ANL Shipping (SNL) and Swire Shipping (Swire).

1.2.3.1 ANL Shipping

ANL ships cargo internationally from Australia and New Zealand. ANL was formed on 1 October 1956 as the Australian Coastal Shipping Commission with the passing of the *Australia Coastal Shipping Commission Act 1956*. In 1989 ANL was established as a wholly owned government company. In 1998, a French company, CMA CGM bought the naming rights of Limited from the Australian Federal Government.

CMA CGM operates over 350 vessels on all of the world's major shipping lanes and is currently the world's third largest container shipping group. ANL employs over 450 staff globally and moves approximately 900 000 cargo containers per year.

1.2.3.2 Swire Shipping

Swire is the brand name for liner shipping services operated by The China Navigation Company Pty Ltd. Swire has provided niche, regional, multipurpose shipping services since 1883 when the China Navigation Company established liner services in Australasia.

The fleet of multipurpose vessels carries a wide range of general/unitised cargoes (including heavy and bulky project lifts), bulk parcels and containerised cargoes (general and refrigerated).

1.2.4 Ports

1.2.4.1 Port of Lae, Papua New Guinea

The Port of Lae is located in the south-west Pacific Ocean on the mouth of the Markham River as it enters the Huon Gulf in north-east PNG. Lae is the capital of PNG's Morobe Province and the Port of Lae is PNG's main cargo port and the marketing centre for agricultural produce from the region.

The PNG Ports Corporation Limited is the port authority for the Port of Lae. It succeeded PNG Harbours Limited with the passage of the amended Act of 2002. PNG Ports Corporation is responsible for controlling and managing all state-owned seaports in PNG, but the regulatory functions once performed by the PNG Harbours Limited are now carried out by the Department of Transportation.

The Port of Lae Harbour Master oversees all port operations. This includes:

- Management of port protocols for vessel docking.
- Entry to port by Port Pilots.
- Vessel approaches.
- Shipping activities to port activities changeover.

Stevedoring operations include:

- Handling of full/empty containers on and off vessels, container storage areas for general cargo, port security, etc.

Orica Papua New Guinea Supply Chain

Name of Facility

Signature of Lead Auditor

5 April 2013

Date



- Management programmes for container placement and movement including identification of hazardous cargoes.

1.3 Transit Storage

Storage in transit does occur at the Port of Lae, PNG, while formalities such as customs clearance, quarantine checks and carrier releases are performed. Once formalities are complete, the cyanide containers are collected by the respective road transporters.

Orica Papua New Guinea Supply Chain

Name of Facility

Signature of Lead Auditor

5 April 2013

Date



1.4 Auditors Findings and Attestation

Orica Papua New Guinea Supply Chain is: in full compliance with **The International Cyanide Management Code**

in substantial compliance with

not in compliance with

Audit Company: Golder Associates

Audit Team Leader: Edward Clerk, CEnvP (112), RABQSA (020778)

Email: eclerk@golder.com.au

No significant cyanide incidents or cyanide exposures and releases were noted as occurring during the audit period.

1.5 Name and Signatures of Other Auditors:

Name	Position	Signature	Date
Edward Clerk	Lead Auditor and Technical Specialist		5 April 2013

1.6 Dates of Audit

The initial Papua New Guinea Supply Chain Certification Audit was undertaken on 28 April 2011 and included:

- Oversight of the Orica Papua New Guinea Supply Chain by Orica.
- Marine transportation of solid cyanide from the Port of Brisbane to the Port Lae using Swire Shipping (Swire).
- The Port of Lae.

An audit was undertaken in October 2012 to expand the scope of the supply chain to include:

- Marine transportation of solid cyanide from the Port of Brisbane to the Port Lae using Swire and ANL.
- Road transportation from the Port of Lae to Hidden Valley Gold Mine using EWT (Lae Depot).

An audit of EWT's transportation activities was undertaken between 9 and 11 October 2012. In addition, review of the following due diligence reports occurred:

- ANL Shipping Due Diligence Review. Orica Mining Chemicals. 14 June 2012.
- Swire Shipping Due Diligence Review, Orica Mining Chemicals, 23 July 2012.

<u>Orica Papua New Guinea Supply Chain</u>		<u>5 April 2013</u>
Name of Facility	Signature of Lead Auditor	Date



PAPUA NEW GUINEA SUPPLY CHAIN, SUMMARY AUDIT REPORT

I attest that I meet the criteria for knowledge, experience and conflict of interest for Code Verification Audit Team Leader, established by the International Cyanide Management Institute and that all members of the audit team meet the applicable criteria established by the International Cyanide Management Institute for Code Verification Auditors.

I attest that this Summary Audit Report accurately describes the findings of the verification audit. I further attest that the verification audit was conducted in a professional manner in accordance with the *International Cyanide Management Code Verification Protocol for Cyanide Transportation Operations* and using standard and accepted practices for health, safety and environmental audits.

Orica Papua New Guinea Supply Chain

Name of Facility

Signature of Lead Auditor

5 April 2013

Date



2.0 CONSIGNOR SUMMARY

2.1 Principle 1 – Transport

Transport Cyanide in a manner that minimises the potential for accidents and releases.

2.1.1 Transport Practice 1.1

Select cyanide transport routes to minimise the potential for accidents and releases.

in full compliance with

The operation is

in substantial compliance with

Transport Practice 1.1

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Orica Papua New Guinea Supply Chain is in FULL COMPLIANCE with Transport Practice 1.1 requiring the transport of cyanide in a manner that minimises the potential for accidents and releases.

Orica

The evaluation and selection of the route(s) is undertaken through a risk assessment process conducted in accordance with Australian Standard AS 4360: 2004 Risk Management. Risk assessments are undertaken for all route alternatives selected for assessment. Additionally, route risk assessments are also undertaken for product loading and departure, product storage, and product unloading and delivery. The risk assessment process is undertaken in accordance with procedures that conform to Orica's *Model Procedure MP-SF-014E Selection and Management of Transport and Storage Contractors*.

Orica has implemented a procedure to periodically re-evaluate routes used for cyanide deliveries.

The SH&E Distribution Risk Manager advised that the re-evaluation of routes used for cyanide deliveries is undertaken by Orica staff approximately every 18 to 24 months. This was not observed to be formalised in a procedure but supported by the route assessments reviewed during the audit.

SOP TMP 02 Transport Routes – Route Conditions and Transportation Agency Feedback procedure was developed by Orica to ensure that relevant feedback from transportation agencies relating to routes utilised for the movement of cyanide is provided to Orica for assessment and follow up on actions, as appropriate. This procedure is referred to in the *Sodium Cyanide Transport Management Plan*.

Orica has documented the measures taken to address risks identified with the selected routes. The evaluation and selection of the route(s) is undertaken through a risk assessment process, in conjunction with transport contractors and in accordance with Australian Standard AS 4360: 2004 Risk Management. Mitigation measures are then detailed in the risk assessment documentation of the transport contractor.

Orica, in conjunction with its road transport contractor, seeks input from stakeholders and applicable governmental agencies as necessary in the selection of routes and development of risk management measures.

Where routes present special safety or security concerns, Orica ensures the transport contractor uses convoys, escorts or other additional safety or security measures to address the concern. Section 32 of Orica's *Sodium Cyanide Transport Management Plan* states that agents, distributors and transportation agencies are responsible for ensuring that a safe workplace is provided for its personnel and that of the contractors utilised.

Orica Papua New Guinea Supply Chain

5 April 2013

Name of Facility

Signature of Lead Auditor

Date



Orica, through its transport contractors, has advised external responders, medical facilities and communities as necessary of their roles during an emergency response.

Orica's *Sodium Cyanide Transport Management Plan* notes that emergency response responsibility will extend only to aspects of supply to which Orica is contractually responsible; however, Orica will work with all customers and assist where possible in maintaining an emergency response plan and provide specialist advice in the event of any emergency.

Orica's *Sodium Cyanide Transport Management Plan* states that agents, distributors, transport companies and other parties contracted to Orica shall be responsible for implementing the *International Cyanide Management Code* and contracts between Orica Mining Chemicals and these parties shall incorporate the obligations of each party in meeting the Code's requirements.

Where subcontractors are utilised by contracted carriers, the Orica *Sodium Cyanide Transport Management Plan* notes no subcontractors are to be engaged by any prime contractor without the prior approval of Orica and an appropriate assessment of the proposed subcontractor's capabilities having been performed. The assessment of transportation agencies is via the Orica *Mining Chemicals – Carrier Assessment Questionnaire (SOP TMP 16)*, which enables a self-assessment and external assessment.

East West Transport

EWT has developed a Route Assessments procedure that outlines the process for the development and subsequent maintenance of route assessments for routes utilised for the transportation of Sodium Cyanide. The route was chosen because it is the only viable route from the Port of Lae to the EWT Depot and Hidden Valley Gold Mine. The *Route Assessments* procedure requires a risk assessment to be undertaken for the route, with revision to occur bi-annually. The latest route assessment was conducted on 20 August 2012 and considers the following:

- Load security, both:
 - en route to the facility
 - in an emergency situation (including break down).
- Potential for vehicular accidents.
- Residential areas.
- Waterways.
- Possible impact of road blockages/diversions, etc.
- Quality and general condition of roads.

The route risk assessment details control and additional control measures for the transport of sodium cyanide along the route. The route assessment also contains mitigation measures to take at particular points along the route that require it. In addition to a procedure to periodically re-evaluate routes, EWT also Obtains feedback on the route via convoy personnel after each deliver, weekly route briefing meetings and liaison with their clients. Real time information to convoys is also provided by a front escort vehicle that travels 400 m ahead of the rest of the convoy to provide timely reports on changed or hazardous conditions.

EWT has developed a *Transport Management Plan* that details the specific procedures to safely and securely store and transport cyanide.

Orica Papua New Guinea Supply Chain

Name of Facility

Signature of Lead Auditor

5 April 2013

Date



EWT and its clients have conducted extensive community, regulatory and medical provider consultation for the transport of cyanide along the route. Identified stakeholders have been provided with copies of the *Transport Management Plan* and the *Emergency Response Plan*.

EWT transports cyanide in convoys. A typical convoy is comprised of set of three Prime Movers towing single cyanide containers on drop deck trailers. The convoy is led by an escort vehicle containing a driver and Escort Supervisor. A member of the Hidden Valley Gold Mine Asset Protection Division is present in the middle truck and a mechanic is present in the rear truck. A rear escort vehicle is occasionally used to carry the Convoy Coordinator and driver.

EWT do not subcontract the transportation of cyanide within the scope of this audit.

Swire and ANL Shipping

The international sales and exports of sodium cyanide by Orica takes into consideration the shipping services available to service the intended target area. Orica only operates in export markets that are serviced by major international shipping companies with the ability to offer scheduled container services from the Port of Brisbane to the destination country or continent. Orica uses ANL and Swire for its international shipping to PNG. Orica does not have control of the routes taken by the shipping lines contracted to transport sodium cyanide. In selecting a route, shipping lines must take into account factors such as tides, currents, winds, storms and load compatibilities. To account for this variability, Orica has undertaken due diligence reviews of ANL and Swire to satisfy itself that the shipments are in accordance with the IMO D Code. The due diligences found that there were no concerns regarding the management and shipping of the solid sodium cyanide product by ANL or Swire.

Port of Lae

Orica conducted a Due Diligence Review of the Port of Lae on 23 October 2010, with a review on 17 July 2012. The due diligence assessment was compiled through physical visits, interviews and discussions with appropriate personnel and review of applicable documentation. The due diligence assessment noted that cyanide on arrival at Lae is placed in a segregated area awaiting relevant governmental clearances. This area, when cyanide is present, is clearly signed providing appropriate warning to port personnel that cyanide is present. Additionally, signage is provided prohibiting smoking, consumption of foodstuffs and liquids in the specific area and the prohibition of open sources of ignition.

The Port of Lae is accredited under the International Ship and Port Security (ISPS) Code and is classed as a secure area. The port has a full time security presence. Access to and from the container terminal is well controlled.

All solid sodium cyanide remains at all times within its sealed containers. Containers are in a segregated area which is open to the air to prevent the build-up of hydrogen cyanide gas. The area in which the containers are located is suitable to effectively contain any spillage that may occur.

The due diligence determined that the port is operating in a safe and responsible manner and is suitable for the transit of sodium cyanide.

Orica Papua New Guinea Supply Chain

Name of Facility

Signature of Lead Auditor

5 April 2013

Date



2.1.2 Transport Practice 1.2

Ensure that personnel operating cyanide handling and transport equipment can perform their jobs with minimum risk to communities and the environment.

in full compliance with

The operation is

in substantial compliance with

Transport Practice 1.2

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Orica Papua New Guinea Supply Chain is in FULL COMPLIANCE with Transport Practice 1.2 requiring personnel operating cyanide handling and transport equipment can perform their jobs with minimum risk to communities and the environment.

Orica

Orica does not employ transport drivers or directly operate transport vehicles in its Papua New Guinea Supply Chain; this is undertaken by its contractors East West Transport. Despite this, Orica does ensure its transport contractors and subcontractors use only trained, qualified and licensed operators to operate its transport vehicles.

Orica's *Sodium Cyanide Transport Management Plan* states that agents, distributors, transport companies and other parties contracted to Orica shall be responsible for implementing the Code and contracts between Orica Mining Chemicals and these parties shall incorporate the obligations of each party in meeting the Code's requirements.

Section 21 to 23 of Orica's *Sodium Cyanide Transport Management Plan* clearly describes the minimum training standards expected by Orica in the transportation of cyanide. The document notes that training is an invaluable tool in assisting in the safe transportation and delivery of product to customer sites.

Where subcontractors are utilised by contracted carriers, the Orica *Sodium Cyanide Transport Management Plan* notes no subcontractors are to be engaged by any prime contractor without the prior approval of Orica and an appropriate assessment of the proposed subcontractor's capabilities having been performed. The assessment of transportation agencies is via the Orica *Mining Chemicals – Carrier Assessment Questionnaire (SOP TMP 16)*, which enables a self-assessment and external assessment.

East West Transport

EWT has a *Chemicals Training Needs – Analysis* that identifies the mandatory and optional training for each employee. The *Chemicals Training Needs – Analysis* includes the training date and the date that refresher training is due. Courses include Sodium Cyanide Awareness, Emergency Response, Hazardous Material Awareness Training, Convoy Operations and Responsibilities and Sparge Unloading.

A review of the training records indicated that EWT personnel had received the appropriate training.

EWT does not subcontract the transportation of cyanide within the scope of this audit.

Orica Papua New Guinea Supply Chain

Name of Facility

Signature of Lead Auditor

5 April 2013

Date



2.1.3 Transport Practice 1.3

Ensure that transport equipment is suitable for the cyanide shipment.

in full compliance with

The operation is in substantial compliance with **Transport Practice 1.3**

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Orica Papua New Guinea Supply Chain is in FULL COMPLIANCE with Transport Practice 1.3 requiring that transport equipment is suitable for the cyanide shipment.

Orica

Orica does not directly operate transport vehicles in its Papua New Guinea Supply Chain; this is undertaken by its contractors East West Transport. Orica has developed a *Transport of Sodium Cyanide – Carrier Safety Program (SOP TMP 05)* that details the minimum safety requirements and programmes that Orica requires its prime contractor and associated subcontractors to implement.

East West Transport

EWT only uses equipment designed and maintained to operate the loads EWT handles. The *Chemical Division Vehicle Specification Requirements* lists the vehicles that are to be used to transport sodium cyanide and details the specifications of the vehicles that are to undertake cyanide delivery. Only those that have been approved access to Hidden Valley can be used to transport cyanide.

EWT has a preventative maintenance program, as described in the procedure *Chemical Division Vehicle Mechanical Maintenance Procedure*. Mechanical servicing on the prime movers and trailers consist of three types of service. EWT undertakes inspections that verify the adequacy of the equipment for the load it must bear with certificates of inspections. A *Convoy Report* must be completed for each convoy, which includes the requirement for completion of ‘check services’ for each vehicle before departure.

The *Chemical Division Vehicle Specification Requirements* procedure details the technical specifications that all prime movers, reach stackers and drop deck trailers must adhere too. The procedure states that the truck and trailer combination used to carry isotainers have a combined tare weight of 21 260 kg, which is under the PNG legal requirement of a maximum gross weight of 48 500 kg when loaded with a full isotainer weighing 26 000 kg.

Only single container loads are possible on the dedicated vehicle configurations. Vehicle power, axle loadings and other parameters are set by the manufacturer and the single container loads are within the capacities of the vehicles.

Swire and ANL Shipping

Swire and ANL do not handle any sodium cyanide during transport. This is undertaken by stevedoring companies at the departure and destination ports. Due diligences were conducted by Orica for ANL on 14 June 2012 and Swire on 23 July 2012. Orica’s due diligences concluded that:

“...through its dealings with Swire Shipping [and ANL] has found them to be a highly professional shipping organisation.

The ongoing review as a service provider and this due diligence review has found no issues of concern in regards to Swire Shipping [and ANL] management and shipping of the solid sodium product. The review is not a final acceptance of Swire Shipping for future work and as with all service providers to Orica, Orica will continue to review and monitor their performance.”

Orica Papua New Guinea Supply Chain 
 Name of Facility Signature of Lead Auditor

5 April 2013
 Date



2.1.4 Transport Practice 1.4

Develop and implement a safety program for transport of cyanide.

in full compliance with

The operation is

in substantial compliance with

Transport Practice 1.4

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Orica Papua New Guinea Supply Chain is in FULL COMPLIANCE with Transport Practice 1.4 requiring the operation develop and implement a safety program for transport of cyanide.

Orica

Orica does not directly operate transport vehicles in its Papua New Guinea Supply Chain; this is undertaken by its contractors East West Transport. Despite this, Orica does ensure its transport contractors and subcontractor implement a safety programme for the transport of cyanide that ensures that cyanide is transported in a manner that maintains the integrity of the producer’s packaging.

The Orica’s Australia Supply Chain Audit (certified as compliant with the Code on 5 October 2010) addressed items such as cyanide packaging, labelling, container loading and security. The Papua New Guinea Supply Chain is a continuation of the Australia Supply Chain and containers are not opened until they arrive at the final destination. As a Code certified cyanide producer, Orica has systems in place to ensure their containers are labelled in accordance with the IMO DG code.

Section 32 of Orica’s *Sodium Cyanide Transport Management Policy* states that agents, distributors and transportation agencies have a responsibility to ensure that a safe workplace is provided for its personnel and that of the contractors utilised. The policy provides guidance on fatigue management, securing of loads, preventative maintenance, vehicle inspections, drug abuse prevention programmes and procedures to suspend transportation due to changed conditions.

Where subcontractors are utilised by contracted carriers, the Orica *Sodium Cyanide Transport Management Plan* notes no subcontractors are to be engaged by any prime contractor without the prior approval of Orica and an appropriate assessment of the proposed subcontractor’s capabilities having been performed. The assessment of transportation agencies is via the Orica *Mining Chemicals – Carrier Assessment Questionnaire (SOP TMP 16)*, which enables a self-assessment and external assessment.

East West Transport

EWT completes *Isotainer Inspection Check Sheets* which include checking for the integrity of producer’s packaging. The *Convoy Procedure* details that the drivers to responsible for checking the seal is intact. EWT’s *Delivery Docket* also shows the seal number of the container.

Lead escort vehicles have warning signs indicating how many vehicles are following as part of the convoy operation. Isotainers or containers are placarded on departure from their point of origin and these placards remain in place for all transportation within PNG. These placards are utilised as a warning for all personnel of the isotainer contents. The isotainer is also placarded with the environmentally hazardous label as required under the IMDG Code. Vehicles also are labelled with the Class 6 label.

EWT’s *Convoy Procedure* includes the activities that should be undertaken for a convoy. Before the convoy leaves, pre-start vehicle and equipment checks should be undertaken.

Orica Papua New Guinea Supply Chain



5 April 2013

Name of Facility

Signature of Lead Auditor

Date



PAPUA NEW GUINEA SUPPLY CHAIN, SUMMARY AUDIT REPORT

EWT undertakes a *Chemical Division Truck Checklist* and *Chemical Division Trailer Checklist*, which confirms the vehicles are suitable for cyanide transport. Through these checklists, EWT confirms cyanide loads are secure.

EWT implements a preventative maintenance programme. The *Chemical Division Vehicle Mechanical Maintenance Procedure* provides for the maintenance and repair of vehicles involved in the transporting Class 6 and 8 Dangerous Goods. Different levels of service are required at different time intervals or distances the trucks have travelled.

EWT's *Fatigue Management Policy* which includes the requirement for a *Fatigue Management Procedure*. The *Fatigue Management Procedure* requires that drivers do not drive between the hours of 10 pm and 5 am and a 30 minute rest break should be taken after five hours of continuous work. The procedure also notes that drivers should be fit for duty.

EWT has a *Betel Nut, Drug & Alcohol Policy* that maintains zero tolerance to drug and alcohol use and requires that all employees are free from the influence of Betel Nut, illicit drugs and alcohol. Before starting a journey, EWT employees are breathalysed.

EWT does not subcontract the transportation of cyanide within the scope of this audit.

Orica Papua New Guinea Supply Chain

Name of Facility

Signature of Lead Auditor

5 April 2013

Date



2.1.5 Transport Practice 1.5

Follow international standards for transportation of cyanide by sea and air.

The operation is **in full compliance with** **Transport Practice 1.5**
 in substantial compliance with
 not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Orica Papua New Guinea Supply Chain is in FULL COMPLIANCE with Transport Practice 1.5 requiring the operation follow international standards for transportation of cyanide by sea and air.

Orica

Orica does transport consignments of cyanide by sea within the scope of this audit. As identified during the Orica Australia Supply Chain certification audit, all containers (i.e. freight containers of IBCs, sparge isotainers or liquid isotainers) are placarded at the Yarwun Facility in accordance with the requirements of the IMO DG Code with UN numbers, the Class 6 dangerous goods class label and the environmentally hazardous substance label (i.e. fish with St Andrews Cross). This level of placarding is consistent with the requirements of the Australian Dangerous Goods (ADG) Code.

A container intended for sea transport has documentation prepared in accordance with the IMDG code, which is faxed to the shipping agent. The normal road documentation prepared in accordance with the ADG Code accompanies the load on its road/rail voyage to either the Port of Brisbane.

Orica does not transport consignments of cyanide by air within the scope of this audit.

East West Transport

EWT do not transport cyanide by sea within the scope of this audit.

Swire and ANL Shipping

Due diligences of Swire and ANL reviewed by Orica on 23 July 2012 and 14 June 2012, respectively, indicated that the shipping companies transported cyanide in compliance with the Dangerous Goods Code of the International Maritime Organisation. The due diligences specifically referenced provisions of the Dangerous Goods Code that are required to be addressed under this question.

Port of Lae

Orica conducted a Due Diligence Review of the Port of Lae on 23 October 2010, with a review on 17 July 2012. The due diligence assessment was compiled through physical visits, interviews and discussions with appropriate personnel and review of applicable documentation. The due diligence determined that the port is operating in a safe and responsible manner and is suitable for the transit of sodium cyanide.

Orica Papua New Guinea Supply Chain

Name of Facility

Signature of Lead Auditor

5 April 2013

Date



2.1.6 Transport Practice 1.6

Track cyanide shipments to prevent losses during transport.

in full compliance with

The operation is

in substantial compliance with

Transport Practice 1.6

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Orica Papua New Guinea Supply Chain is in FULL COMPLIANCE with Transport Practice 1.6 requiring the tracking of cyanide shipments to prevent losses during transport.

Orica

Orica does not employ transport drivers or directly operate transport vehicles; this is undertaken by its contractors EWT. Despite this, Orica does require its transport contractor vehicles have means to communicate with the transport company, the mining operation, the cyanide producer or distributor and/or emergency responders.

Orica has installed a GPS unit to each of its sparge isotainers to allow them to be tracked worldwide from Orica’s Yarwun facility. The GPS unit is designed to last seven years, with a battery life of five years. The units and batteries are maintained and replaced as part of the sparge isotainer maintenance programme conducted by Orica.

Orica does require its transport contractors’ communication equipment (GPS, mobile phone, radio, pager, etc) is periodically tested to ensure it functions properly. Orica’s GPS unit is tested through utilisation.

Orica does require its transport contractors’ communication blackout areas to have been identified and ensure special procedures are implemented for the blackout areas. This process is undertaken during the route assessment process.

Orica’s *Remote Area Communications* procedure details the requirements for communication when transporting cyanide in areas that are recognised as a communications risk, including the communication process that shall be followed to maintain the required level of security and assistance.

Orica does require its transport contractor implements systems or procedures to track the progress of cyanide shipments.

Orica does require its transport contractors to implement inventory controls and/or chain of custody documentation to prevent loss of cyanide during shipment. As an integral facet of security during transport, tracking methodologies should be employed. *Tracking of Shipments SOP TMP 10* refers to these methodologies.

Orica does require its contractors carry records indicating the amount of cyanide in transit and *Material Safety Data Sheets* (MSDSs) are available during transport.

Where subcontractors are utilised by contracted carriers, the Orica *Sodium Cyanide Transport Management Plan* notes no subcontractors are to be engaged by any prime contractor without the prior approval of Orica and an appropriate assessment of the proposed subcontractor’s capabilities having been performed. The assessment of transportation agencies is via the Orica *Mining Chemicals – Carrier Assessment Questionnaire* (SOP TMP 16), which enables a self-assessment and external assessment.

Orica Papua New Guinea Supply Chain

Name of Facility

Signature of Lead Auditor

5 April 2013

Date



East West Transport

EWT's *Transport Management Plan* details communications that must be undertaken before convoys leave EWT's transit storage facility. EWT must contact Hidden Valley Gold Mine Logistics personnel on the proposed convoy departures. This allows information on any known infrastructure issues, shutdowns, weather conditions or security threats to be communicated to EWT. The *Transport Management Plan* details the numbers and email addresses of those on the communication list.

The *Convoy Procedure* lists the communication equipment and communications to be undertaken in a convoy on a journey.

EWT's *Convoy Report* includes a requirement that mobile phones contain enough credit before beginning a journey and checks are conducted on all radios. Both radios and phones are also checked through constant use.

Radio coverage extends across the entire route. The *Convoy Report* includes a list of radio call in points along the route, in which the driver writes down the time that the call in occurred. The *Convoy Standard Operating Procedures* states that in areas of poor or lack of radio contact, the Escort Supervisor must advise and strictly maintain visual sight of all trucks within the convoy in order to communicate with the convoy by means of using hand signal.

EWT tracks cyanide shipments using delivery dockets that contain the container and seal numbers, and weight and volume of the shipment.

For the *Convoy Report*, the convoy checks in at identified points along the route, thereby allowing EWT management to keep track of the cyanide shipment.

EWT vehicles carry MSDSs for solid and liquid sodium cyanide and hydrogen cyanide gas.

EWT do not subcontract the transportation of cyanide within the scope of this audit.

Swire and ANL Shipping

Swire and ANL do not handle any sodium cyanide during transport. This is undertaken by stevedoring companies at the departure and destination ports. Swire and ANL were assessed for code compliance by Orica through a due diligence review. Due diligences were conducted by Orica for ANL on 14 June 2012 and Swire on 23 July 2012. The due diligences note that:

The Australian Government department "Australian Maritime Safety Authority" (AMSA) represents Australia at the International Maritime Organisation (IMO) and other international forums in the development, implementation and enforcement of international standards governing ship safety, navigation, marine environment protection, ship operations, maritime security, crew competency, training and fatigue management.

Australia's maritime regulatory framework is based on policies and guidelines relating to ship construction standards, ship survey and safety, crewing, seafarer's qualifications and welfare, carriage and handling of cargoes, passengers and marine pollution prevention.

All shipping to and from Australia is subject to this regulatory framework.

Inventories are tracked through a Bill of Lading and an electronic inventory tracking system operated by each shipping line.

Orica Papua New Guinea Supply Chain

Name of Facility

Signature of Lead Auditor

5 April 2013

Date



PAPUA NEW GUINEA SUPPLY CHAIN, SUMMARY AUDIT REPORT

A copy of the MO 41 is provided to ANL and Swire for assigning the container reference numbers and sending the HAZCHEM bookings for finalisation. Based on the information contained within the MO 41, the PIL tracking and monitoring system now records the UN classification (UN 1689), Dangerous Goods Class 6 and that the product is a marine pollutant.

The MSDS is included with the MO 41.

Orica Papua New Guinea Supply Chain

Name of Facility

Signature of Lead Auditor

5 April 2013

Date



2.2 Principle 2 – Interim Storage

Design, construct and operate cyanide trans-shipping depots and interim storage sites to prevent release and exposures.

2.2.1 Transport Practice 2.1

Store cyanide in a manner that minimises the potential for accidental releases.

in full compliance with

The operation is

in substantial compliance with

Transport Practice 2.1

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Orica Papua New Guinea Supply Chain is in FULL COMPLIANCE with Transport Practice 2.1 requiring transporters design, construct and operate cyanide trans-shipping depots and interim storage sites to prevent release and exposures.

Orica

Storage along the supply chain does occur at the Port of Lae and the EWT depot. It is not directly managed by Orica.

Depending on weather, cargo types and other operational matters, shipping lines may tranship their cargo from one vessel to another. This involves unloading the cargo at a terminal facility, temporary set down and loading onto another vessel for the continuation of the delivery. Such trans-shipping does occur with Orica's sodium cyanide. Orica has no control over when and where this happens, but through its due diligence investigations has satisfied itself that the shipping lines used (ANL and Swire) undertake the shipping of the product in accordance with the *International Maritime Dangerous Goods Code* (IMO DG Code) and in a professional manner. This extends to the selection of terminals for trans-shipping.

East West Transport

Storage in transit does occur at the EWT Lae Depot in a dedicated storage facility for up to three days while convoy logistics are finalised. Additional storage time is required for up to 14 days to provide product for Morobe Mining Joint Venture's (MMJV) Hidden Valley Mine in the event of supply chain disruptions, end user usage spikes and to cater for shipping line scheduling availability.

EWT has placed signage at the Lae Depot cyanide storage area alerting that there should be no eating, drinking, smoking or open flames. Signs indicated PPE requirements are also posted.

Orica's isotainers contain lockouts on valves. Containers are also stored within a locked, bunded compound to prevent access. The compound is located within the EWT depot which is surrounded by a security fence and 24 hour guard.

EWT has a *Bund Management Procedure* which states bunds should be used for which material. Cyanide is kept separate from Sulfuric Acid.

Cyanide is stored and transported in isotainers that are specially designed to prevent access by water.

Cyanide is stored and transported in isotainers that prevent build-up of hydrogen cyanide gas. The isotainers are stored in the open within the dedicated containment area.

Orica Papua New Guinea Supply Chain

Name of Facility

Signature of Lead Auditor

5 April 2013

Date



The containment at the EWT depot drains to a dedicated sump that can be retained or discharged via pump into a 'sump overflow' holding tank. EWT documents noted that when the sump overflow holding tank is three quarters full, the liquid will be tested for cyanide.

Swire and ANL Shipping

Depending on weather, cargo types and other operational matters, shipping lines may tranship their cargo from one vessel to another. This involves unloading the cargo at a terminal facility, temporary set down and loading onto another vessel for the continuation of the delivery. Such trans-shipping does occur with Orica's sodium cyanide. Orica has no control over when and where this happens, but through its due diligence investigations has satisfied itself that the shipping lines used (ANL and Swire) undertake the shipping of the product in accordance with the *International Maritime Dangerous Goods Code* (IMO DG Code) and in a professional manner. This extends to the selection of terminals for trans-shipping.

Port of Lae

A due diligence of the Port of Lae was conducted by Orica in October 2010 and reviewed in July 2012. The due diligence found that:

Cyanide on arrival at Lae is placed in a segregated area awaiting relevant governmental clearances. This area, when cyanide is present, is clearly signed providing appropriate warning to port personnel that cyanide is present. Additionally, signage is provided prohibiting smoking, consumption of foodstuffs and liquids in the specific area and the prohibition of open sources of ignition.

The port has a minimum standard of personnel protective equipment requirement which includes the wearing of relevant safety footwear, clearly visible clothing and protective headwear in specific areas. This personal protective equipment requirement is suitable for cyanide that remains contained within sealed containers at all times.

Orica Papua New Guinea Supply Chain

Name of Facility

Signature of Lead Auditor

5 April 2013

Date



2.3 Principle 3 – Emergency Response

Protect communities and the environment through the development of emergency response strategies and capabilities.

2.3.1 Transport Practice 3.1

Prepare detailed Emergency Response Plans for potential cyanide releases.

in full compliance with

The operation is

in substantial compliance with

Transport Practice 3.1

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Orica Papua New Guinea Supply Chain is in FULL COMPLIANCE with Transport Practice 3.1 requiring the operation prepare detailed Emergency Response Plans for potential cyanide releases.

Orica

Orica has developed detailed emergency response document (*Emergency Response Guide Sodium Cyanide*) to provide emergency response guidance for specific mine site, storage facilities and transport incidents involving spillage of Orica Product.

The transport companies involved in the shipment of cyanide are required to have plans that cover spill response outside of the Yarwun gate to the end user. Orica provide assistance and support in this role through the *Emergency Response Guide Sodium Cyanide*, a 24 hour call centre (Emergency Response Service) and product specialists based at the Yarwun Facility.

The objective of the *Emergency Response Guide Sodium Cyanide* is to provide information in a suitable format, which can be used to minimise the adverse effects of a cyanide emergency on people, property and the environment. It is applicable to the management of an emergency involving Orica-supplied sodium cyanide solid or liquid product. It is considered applicable for product spillages at any location along the product supply chain from the Yarwun Facility gate to the mine site end user.

Orica has clearly assigned responsibilities for emergency response. The role of Orica is largely limited to one of product stewardship through notification and provision of technical advice rather than physical containment and management of any release. This is particularly relevant where rail and port authorities are involved.

The emergency documentation is appropriate for the transportation routes selected by EWT.

The *Emergency Response Guide Sodium Cyanide* details the hazards and controls of both solid and liquid sodium cyanide.

The *Emergency Response Guide Sodium Cyanide* is applicable to the management of an emergency involving Orica supplied sodium cyanide solid or liquid product along the supply chain. Although the plan does not specifically consider all aspects of the transport infrastructure, the emergency response approach outlined in the *Emergency Response Guide Sodium Cyanide* is flexible enough to accommodate variations in transportation infrastructure. The guide also contains procedures for different types of transport containers, freight containers with IBCs and isotainers.

Orica Papua New Guinea Supply Chain

Name of Facility

Signature of Lead Auditor

5 April 2013

Date



The *Emergency Response Guide Sodium Cyanide* does include descriptions of response actions for anticipated emergency situations.

The critical component of the emergency response process is the dedicated Orica Emergency Response Service (ERS) based in Melbourne, Australia. Orica ERS operates 24 hours a day, seven days a week providing telephone advice and assistance to the public, emergency services and others on incidents relating to the transport, storage and use of chemical products and raw materials in emergency situations. Advice and assistance will include the contact and mobilisation of specialist Orica personnel or contractors who have access to relevant information and understand the specific issues presented by a particular transport route, transport practices and/or interim storage facility.

The *Emergency Response Guide Sodium Cyanide* details the initial actions to be undertaken, including the interactions with emergency service providers such as police and fire brigade, determining if the leak is cyanide and preventing the spread of contamination.

East West Transport

In conformance with Orica's *Emergency Response Guide Sodium Cyanide*, EWT has developed a *Cyanide Emergency Transport Response Plan*.

EWT's *Cyanide Emergency Transport Response Plan* appears to be appropriate for the selected transport route and interim storage facility. The plan applies to transport from the Port of Lae to the EWT transit facility and from there to the Hidden Valley Gold Mine. The plan also covers all activities within the EWT transit facility in Lae.

The *Cyanide Emergency Transport Response Plan* includes the response procedure for a dry sodium cyanide spill and a sodium cyanide spill to water.

EWT's *Cyanide Emergency Transport Response Plan* is only applicable to road transport and storage at the EWT depot.

EWT's *Cyanide Emergency Transport Response Plan* does consider all transport infrastructure and provides emergency response procedures for the cyanide transportation route. The *Cyanide Emergency Transport Response Plan* does note that the transport vehicles are under escort to control the interaction with other road users and to assist in first response should an incident occur along the entire route.

Cyanide is only transported by truck by EWT. The *Cyanide Emergency Transport Response Plan* is specific to transport by truck and storage at the EWT depot.

EWT's *Cyanide Emergency Transport Response Plan* does include descriptions of response actions for anticipated emergency situations, including the requirement to seek advice from Orica's technical specialists.

The *Cyanide Emergency Transport Response Plan* for EWT does identify the roles of outside responders and has consulted with them on its emergency management measures. Evidence has been provided to demonstrate that outside responders and other stakeholders have been provided with a copy of the plan.

Swire and ANL Shipping

Whilst Orica's product is transported on Swire and ANL vessels, all emergency response is governed by the vessel's captain. Orica undertook a due diligence reviews of Swire and ANL in 2012. This due diligence stated that:

"Swire and ANL Shipping operations staff provide copies of the Emergency Information together with the Dangerous Goods manifest (stowage plan) and Packing Certificates for each hazardous cargo unit to be loaded at that port to the ship's Master."

Orica Papua New Guinea Supply Chain

Name of Facility

Signature of Lead Auditor

5 April 2013

Date



PAPUA NEW GUINEA SUPPLY CHAIN, SUMMARY AUDIT REPORT

Orica concluded in its due diligence that:

...through its dealings with Swire Shipping and ANL has found them to be a highly professional shipping organisation.

The ongoing review as a service provider and this due diligence review has found no issues of concern in regards to Swire Shipping management and shipping of the solid sodium product. The review is not a final acceptance of Swire Shipping for future work and as with all service providers to Orica, Orica will continue to review and monitor their performance.

Port of Lae

A due diligence of the Port of Lae was conducted by Orica in October 2010 and reviewed in July 2012. The due diligence found that:

Cyanide on arrival at Lae is placed in a segregated area awaiting relevant governmental clearances. This area, when cyanide is present, is clearly signed providing appropriate warning to port personnel that cyanide is present. Additionally, signage is provided prohibiting smoking, consumption of foodstuffs and liquids in the specific area and the prohibition of open sources of ignition.

The port has a minimum standard of personnel protective equipment requirement which includes the wearing of relevant safety footwear, clearly visible clothing and protective headwear in specific areas.

The Port of Lae is accredited under the ISPS Code and is classed as a secure area. The port has a full time security presence. Access to and from the container terminal is well controlled.

All solid sodium cyanide remains at all times within its sealed containers. Containers are in a segregated area which is open to the air to prevent the build-up of hydrogen cyanide gas.

The area in which the containers are located is suitable to effectively contain any spillage that may occur. MMJV provides technical advice as to the nature of the product and spill procedures to the ports on site emergency response capability.

Orica Papua New Guinea Supply Chain

Name of Facility

Signature of Lead Auditor

5 April 2013

Date



2.3.2 Transport Practice 3.2

Designate appropriate response personnel and commit necessary resources for emergency response.

in full compliance with

The operation is

in substantial compliance with

Transport Practice 3.2

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Orica Papua New Guinea Supply Chain is in FULL COMPLIANCE with Transport Practice 3.2 requiring the operation designate appropriate response personnel and commit necessary resources for emergency response.

Orica

The ICMC Compliance Officer advised that Orica retains a technical and advisory role in an emergency and can provide physical resources and personnel to assist emergency services in the response to an incident involving cyanide. To maintain this capacity, Senior Orica ERS personnel or their delegates conduct training of new Orica ERS coordinators, with input from other Orica ERS coordinators and other Orica personnel as required.

The Orica Transport Management Plan also notes that the prime contractor is responsible for ensuring that all personnel meet the above training requirements.

The Emergency Response Guide Sodium Cyanide clearly identifies the key Orica roles and responsibilities in the event of an off-site emergency.

The Emergency Response Guide Sodium Cyanide does not detail emergency response equipment that may be required during an emergency, but does provide guidance on what should be carried. The Guide is intended to be used by contractors and provides a point of reference for Orica’s contractors to develop and align their emergency management plans.

Orica has implemented processes to check that contractors transporting the material have necessary equipment including during transport. This includes a Carrier Assessment questionnaire, which addresses PPE selection, maintenance and supply and emergency response procedures and capabilities.

Orica has developed and provided initial and periodic refresher training covering cyanide awareness and emergency response to its transport contractors.

Where subcontractors are utilised by contracted carriers, the Orica Sodium Cyanide Transport Management Plan notes no subcontractors are to be engaged by any prime contractor without the prior approval of Orica and an appropriate assessment of the proposed subcontractor’s capabilities having been performed. The assessment of transportation agencies is via the Orica Mining Chemicals – Carrier Assessment Questionnaire (SOP TMP 16), which enables a self-assessment and external assessment.

Orica Papua New Guinea Supply Chain

5 April 2013

Name of Facility

Signature of Lead Auditor

Date



East West Transport

EWT has a *Chemicals Training Needs – Analysis* that identifies the mandatory and optional training for each employee. Such training includes sodium cyanide awareness, emergency response and hazardous materials awareness. A review of the training records indicated that this training was being delivered to appropriate personnel.

EWT's *Cyanide Emergency Transport Response Plan* details emergency response duties for members of the convoy, outside responders and the local community. EWT has reference cards that provide steps that each role must take in an emergency. These cards are carried on the convoys.

EWT's *Cyanide Emergency Transport Response Plan* lists equipment for the emergency response trailer, PPE per person and the escort vehicle.

EWT does have available the necessary emergency response and health and safety equipment. Prior to the certification audit, EWT undertook a review of its emergency response equipment and purchased additional equipment suitable for the emergency scenarios identified.

EWT personnel undergo annual refresher training on sodium cyanide awareness, emergency response and hazardous materials awareness. Additionally, they undergo biannual refresher training on Orica cyanide awareness and emergency response training modules.

EWT's *Cyanide Emergency Transport Response Plan* requires that all emergency response equipment is inspected against the required quantities once per week to confirm its availability. Additionally, a checklist on stores and equipment is completed prior to convoy departures. A review of available checklists indicates that this is occurring.

EWT do not subcontract the transportation of cyanide within the scope of this audit.

Orica Papua New Guinea Supply Chain

Name of Facility

Signature of Lead Auditor

5 April 2013

Date



2.3.3 Transport Practice 3.3

Develop procedures for internal and external emergency notification and reporting.

in full compliance with

The operation is

in substantial compliance with

Transport Practice 3.3

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Orica Papua New Guinea Supply Chain is in FULL COMPLIANCE with Transport Practice 3.3 requiring the operating develop procedures for internal and external emergency notification and reporting.

Orica

There are procedures and current contact information for notifying the shipper, the receiver/consignee, regulatory agencies, outside response providers, medical facilities and potentially affected communities of an emergency. The *Emergency Response Guide Sodium Cyanide* includes procedures and contact information for notifying management, regulatory agencies, outside response providers and medical facilities of the emergency, as appropriate. Receivers/consignees are advised via the Customer Service Centre.

Orica has systems in place to keep internal and external emergency notification and reporting procedures current. Lists of emergency contact information for Orica chemical specialist and relevant subcontractors, including transport subcontractors, are detailed in Orica's *Emergency Contact list*, which is managed within and updated through Orica's document control system.

East West Transport

EWT's *Cyanide Emergency Transport Response Plan* contains a contact list that includes the Hidden Valley Gold Mine, EWT personnel, Disaster and Emergency Service, Police, hospitals and clinics, fire service and Orica.

EWT's *Cyanide Emergency Transport Response Plan* states that the Assets and Protection Manager is responsible for updating the plan including contact numbers and informing all plan holders of any changes. The plan notes that is updated as changes take effect, or, as a minimum, annually. The *Cyanide Emergency Transport Response Plan* is less than one year old but has already undergone multiple revisions.

Orica Papua New Guinea Supply Chain

Name of Facility

Signature of Lead Auditor

5 April 2013

Date



2.3.4 Transport Practice 3.4

Develop procedures for remediation of releases that recognise the additional hazards of cyanide treatment.

in full compliance with

The operation is

in substantial compliance with

Transport Practice 3.4

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

Transport Practice 3.4, requiring the operation to develop procedures for remediation of releases that recognise the additional hazards of cyanide treatment is FULL COMPLIANCE to the Orica Papua New Guinea Supply Chain.

Orica

The *Emergency Response Guide Sodium Cyanide* includes procedures for remediation, such as recovery or neutralisation of solutions or solids, decontamination of soils or other contaminated media and management of spill clean-up debris. These procedures are for a variety of scenarios involving:

- Dry sodium cyanide spill – inside building/storage facility.
- Dry sodium cyanide spill – outside building/storage facility.
- Dry sodium cyanide spill – inside shipping container.
- Shipping container decontamination.
- Handling wet sodium cyanide.
- Sodium cyanide spill to waterway.
- Response to a fire in the vicinity of stored cyanide.
- Roll-Over of Shipping Container.

The Guide states that:

Orica Mining Chemicals subscribes to the recommendations of the International Cyanide Management Code in that no chemicals are to be added to a flowing waterway in the event of a cyanide spill as these may only exacerbate the situation with their own toxicity characteristics.

East West Transport

EWT's *Cyanide Emergency Transport Response Plan* includes response actions for clean-up and decontamination. The plan also states that no response to decontamination should be commenced without first seeking concurrence from Orica technical specialists.

EWT's *Cyanide Emergency Transport Response Plan* includes a section from the ICMC's Guidance documents under the section "Sodium Cyanide Spill to Water", which prohibits the use of these substances for spills to surface water.

Orica Papua New Guinea Supply Chain

Name of Facility

Signature of Lead Auditor

5 April 2013

Date



2.3.5 Transport Practice 3.5

Periodically evaluate response procedures and capabilities and revise them as needed.

in full compliance with

The operation is

in substantial compliance with

Transport Practice 3.5

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Orica Papua New Guinea Supply Chain is in FULL COMPLIANCE with Transport Practice 3.5 requiring the operation periodically evaluate response procedures and capabilities and revise them as needed.

Orica

There are provisions for periodically reviewing and evaluating Orica’s emergency documentation and they are being implemented. The *Emergency Response Guide Sodium Cyanide* is a controlled document that shall be reviewed as a minimum on an annual basis and following incidents where the Guide is utilised. The last review was in December 2012.

The *Mining Chemicals Systems Incident Management Plan* includes a provision to conduct a review of procedures post-incident.

Orica has adopted a consultative approach and work with their transport contractors to undertake exercises and review the emergency plans. The emergency response plan and guide are controlled documents under Orica’s document management system and subject to periodic review.

The *Mining Chemicals Systems Incident Management Plan* provides the provision for conducting mock emergency drills at a divisional level within Orica.

Orica has conducted a Table Top mock emergency drill with EWT.

East West Transport

EWT’s *Cyanide Emergency Transport Response Plan* has been reviewed six times since April 2010. The plan must also be updated as changes take effect, or as a minimum, annually.

EWT’s *Cyanide Emergency Transport Response Plan* includes a provision for emergency response drills to be completed periodically and in stages whereby one specific aspect of the plan is evaluated at a time. EWT conducted a table top exercise on 4 and 5 October 2012 for a sodium cyanide transporting convoy. The scenario involved the lead vehicle stalling during a river crossing.

EWT’s *Cyanide Emergency Transport Response Plan* states that:

After a real time incident, the overall response is evaluated to determine the effectiveness of the plan. The plan is then updated and modified as necessary.

EWT has not had an incident involving cyanide since the *Cyanide Emergency Transport Response Plan* was developed.

Orica Papua New Guinea Supply Chain

Name of Facility

Signature of Lead Auditor

5 April 2013

Date



3.0 DUE DILIGENCE

3.1 Shipping

Orica conducted the following due diligence assessments of shipping operations utilised as part of their Papua New Guinea Supply Chain:

- ANL Shipping Due Diligence Review, Orica Mining Chemicals, 14 June 2012.
- Swire Shipping Due Diligence Review, Orica Mining Chemicals, 23 July 2012.

The reviews were conducted by David Ellison, SH&E Distribution Risk Manager at Orica Australia Pty Ltd. David Ellison meets the ICMI requirements for a Transport Expert.

The following items were addressed within the due diligences:

- Compliance with ICMC
 - Transport Practice 1.1
 - Transport Practice 1.5
 - Transport Practice 1.6.
- Australian Shipping Regulatory Framework
 - Australian Maritime Safety Authority (AMSA)
 - Cargoes
 - Port State Control
 - Power of Inspection and Detention.
- Australian Department of Defence
- Conclusion.

The due diligence assessments were compiled through physical visits, interviews and discussions with appropriate personnel and review of applicable documentation.

The due diligence assessments were found to sufficiently evaluate the shipping operations (discussed below), and additional management measures by the consigner were not considered necessary.

3.1.1 ANL Shipping

Orica conducted a due diligence review of ANL on 14 June 2012.

ANL is a carrier service providing international shipping of containers. Containers of solid sodium cyanide are placed and secured on the vessels at the loading port (Port of Brisbane) by a stevedoring company and removed at the port of destination by the stevedoring company at that port.

Orica Papua New Guinea Supply Chain

Name of Facility

Signature of Lead Auditor

5 April 2013

Date



The due diligence review concluded:

Orica through its dealings with ANL has found them to be a professional organisation.

The ongoing review as a service provider and this due diligence review has found no issues of concern in regards to ANL management and shipping of the solid sodium product. The review is not a final acceptance of ANL for future work and as with all service providers to Orica, Orica will continue to review and monitor their performance.

Any changes in state, national or international regulations, standards or laws can result in a total review of the international shipping requirements.

The due diligence also noted that:

Orica is not able to conduct inspections and checks on shipping vessels readily due to port safety and security issues. The Australian Government through the Australian Maritime Safety Authority (AMSA) and State Government through the Port State Control do however inspect and monitor cargo vessels that frequent Australian ports. These inspections ensure vessels are seaworthy, do not pose a pollution risk, provide healthy and safe work environments and comply with relevant international regulations. These inspections are not only carried out at Australian ports but internationally and set the operating standards for the international shipping companies.

3.1.2 Swire Shipping

Swire Shipping is a carrier service providing international shipping containers on a fleet of their container vessels. Containers containing solid sodium cyanide are placed and secured on their vessels at the loading port (Port of Brisbane) by the stevedoring company and removed at the port of destination by the stevedoring company at that port.

The international sales and export of solid sodium cyanide takes into consideration the shipping services available to service the intended target area. Orica only operates in export markets that are serviced by major international shipping companies with the ability to offer scheduled container services from the Port of Brisbane to the destination country or continent.

Orica's product is packaged into purpose designed and built and product dedicated bulk sparge isotainers or into IBCs contained with 20 foot general purpose shipping containers. Bulk sparge isotainers are rated for sea transportation and inspected by Bureau Veritas under the 2.5 and 5 year inspection regime in accordance with IMDG Code requirements. IBCs consist of a 1300 kg bulk bag contained within a hermetically sealed plastic liner, placed in a wooden outer with an integral pallet base. As per the IMDG Code this packaging is referenced as UN/11HD2/X/05-06/AUS/Orica-30596/7020/1300 under the approval of the Competent Authority.

Bulk sparge isotainers and shipping containers containing IBCs are placarded with an EIP detailing the proper shipping name, dangerous goods class number, UN number, HAZCHEM Code and emergency contact information. Containers are also placarded with the environmentally hazardous markings.

Each shipment has appropriate documentation, including shipping manifest, load/stowage plan and emergency response information.

Procedures are in place that requires compliance with the stowage and separation requirements of Chapter 7 of the IMDG Code.

Swire vessels have continuous means of tracking and communication during their voyages. They also have their own in-house tracking systems for tracking freight, which is linked by the container number and Bill of Lading (BOL) number.

Orica Papua New Guinea Supply Chain

Name of Facility

Signature of Lead Auditor

5 April 2013

Date



The Australian Maritime Safety Authority (AMSA) is responsible for implementing IMO regulations for all safety related aspects of marine carriage of all types including bulk liquid and solid cargoes, dangerous goods, general cargoes, containers, as well as standards and operations concerning cargo lifting gear. AMSA personnel may board a ship at any time to inspect and detain un-seaworthy or substandard ships.

Through its due diligence assessment, Orica has found no issues of concern in regards to Swire management and shipping of the solid sodium product. It notes that the due diligence is not a final acceptance of Swire for future work and, as with all service providers to Orica, Orica will continue to review and monitor their performance.

3.2 Ports

Orica conducted due diligence reviews of the Port of Lae operations utilised as part of their Papua New Guinea Supply Chain in October 2010 (Port of Lae, PNG, Due Diligence Review, Orica Mining Chemicals, 23 October 2010). This due diligence was reviewed in July 2012.

The reviews were conducted by David Ellison, SH&E Distribution Risk Manager of Orica Australia Pty Ltd. David Ellison meets the ICMI requirements for a Transport Expert.

The following items were addressed within the due diligences:

- Compliance with ICMC
 - Transport Practice 1.1
 - Transport Practice 1.5 (1.5.1)
 - Transport Practice 1.6
 - Transport Practice 2.1.
- Summary of Port Operations.
- Arrivals.
- Stevedoring.
- Dangerous Goods Logistics centre.
- Port information.
- Conclusion.

The due diligence review was compiled through physical visits, interviews and discussions with appropriate personnel and review of applicable documentation.

The due diligence review was found by the auditor to sufficiently evaluate the port operations (discussed below), and additional management measures by the consigner were not considered necessary.

3.2.1 Port of Lae

Orica uses two major shipping lines (ANL and Swire) to transport its shipments to the Port of Lae in PNG.

The Port of Lae is part of the overall route as follows:

- Orica's production, packaging and despatch.

Orica Papua New Guinea Supply Chain

Name of Facility

Signature of Lead Auditor

5 April 2013

Date



- Road/rail transportation to the Port of Brisbane covered under the Orica Australia Supply Chain.
- International shipping to the Port of Lae and the handling of the containers from the vessel onto the wharf and into the designated transit areas for customs clearance.

Road Transportation from the Port of Lae is covered under code certified transportation in PNG.

Orica's product is packaged into composite IBCs consisting of a 1 300 kg bulk bag contained within a hermetically sealed plastic liner, placed in a wooden outer with an integral pallet base with a wooden lid and strapped. These IBCs are loaded into shipping containers. Both the IBCs and shipping containers are labelled as per the IMO DG Code.

Port stevedores receive the vessels manifest on arrival which includes the containers for unloading and handling by them. This information is then captured in the stevedores management systems which assists with the location where each container from the vessel is to be placed after unloading. Transport from the unloading berth to the interim storage facility is controlled by documentary checks detailing the container details and the containers contents.

Cyanide on arrival at Lae is placed in a segregated area awaiting relevant governmental clearances. This area, when cyanide is present, is clearly signed providing appropriate warning to port personnel that cyanide is present. Additionally, signage is provided prohibiting smoking, consumption of foodstuffs and liquids in the specific area and the prohibition of open sources of ignition.

The port has a minimum standard of personnel protective equipment requirement which includes the wearing of relevant safety footwear, clearly visible clothing and protective headwear in specific areas. This personal protective equipment requirement is suitable for cyanide that remains contained within sealed containers at all times.

On collection from the port, after completion of the appropriate governmental clearances, containers are collected by transportation assets operated by EWT.

The Port of Lae is accredited under the International Ship and Port Security (ISPS) Code and is classed as a secure area. The port has a full time security presence. Access to and from the container terminal is well controlled.

All solid sodium cyanide remains at all times within its sealed containers. Containers are in a segregated area which is open to the air to prevent the build-up of hydrogen cyanide gas. The area in which the containers are located is suitable to effectively contain any spillage that may occur.

The due diligence concluded that the port is operating in a safe and responsible manner and is suitable for the transit of sodium cyanide.

3.3 Auditor Review of Due Diligence

Orica has concluded from the due diligence assessments that no major issues of concern were identified with respect to the transportation of sodium cyanide throughout the domestic supply chain by the shipping operators, road transportation operators and port utilised. Based on a review of the due diligence reports, the auditor accepts this conclusion.

Orica Papua New Guinea Supply Chain

Name of Facility

Signature of Lead Auditor

5 April 2013

Date



4.0 LIMITATIONS

Your attention is drawn to the document - "Limitations", which is included as Appendix A to this report. This document is intended to assist you in ensuring that your expectations of this report are realistic, and that you understand the inherent limitations of a report of this nature. If you are uncertain as to whether this report is appropriate for any particular purpose please discuss this issue with us.

Orica Papua New Guinea Supply Chain

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5 April 2013

Date



Report Signature Page

GOLDER ASSOCIATES PTY LTD

A handwritten signature in black ink, appearing to read 'Ed Clerk'.

Ed Clerk
Associate

RB/EWC/eh

A.B.N. 64 006 107 857

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APPENDIX A

Limitations



LIMITATIONS

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