November 2009

INTERNATIONAL CYANIDE MANAGEMENT CODE
CYANIDE PRODUCTION RE-CERTIFICATION AUDIT

Orica Australia Pty Ltd Yarwun Sodium Cyanide Production Facility Gladstone, Australia Summary Audit Report

Submitted to:
International Cyanide Management Institute (ICMI)
888 16th Street, NW - Suite 303
Washington, DC 20006
UNITED STATES OF AMERICA

Orica Australia Pty Ltd
Reid Road via Gladstone,
GLADSTONE QLD 6433
AUSTRALIA

REPORT

A world of capabilities delivered locally

Report Number: 097641247 002 Rev0 Summary Audit Report

Distribution:

1 Copy – International Cyanide Management Institute
1 Copy – Orica Australia Pty Ltd
1 Copy – Golder Associates

Golder Associates

Record of Issue

Company	Client Contact	Version	Date Issued	Method of Delivery
ICMI	N Greenwald	097641247 002 R Rev0	12 November 2009	Electronic and Hard Copies
Orica Australia Limited	M Hawkins	097641247 002 R Rev0	12 November 2009	Electronic and Hard Copies

SUMMARY AUDIT REPORT FOR SODIUM CYANIDE PRODUCTION FACILITY

Name of Facility:	Orica Australia Pty Ltd Sodium Cyanide Production Facility
Name of Facility Owner:	Orica Australia Pty Ltd
Name of Facility Operator:	Orica Australia Pty Ltd
Name of Responsible Manager:	Carl Morton, Chemicals Complex Operations Manager
Address:	Reid Road via Gladstone, Gladstone
State/Province:	Queensland
Country:	AUSTRALIA
Telephone:	+61 7 49763500
Fax:	+61 7 49763510
E-Mail:	carl.morton@orica.com

LOCATION DETAIL AND DESCRIPTION OF OPERATION:

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. This unit's main product is sodium cyanide (cyanide), which is manufactured at Orica's Yarwun cyanide production facility (Yarwun facility) in Queensland (QLD), Australia. Orica Mining Chemicals is the world's second largest producer of cyanide.

Orica's Yarwun facility, which is located at Yarwun approximately 10 km by road from Gladstone, QLD, commenced operations in 1989 and is engaged in the manufacture of cyanide (both solid and liquid forms), ammonium nitrate, ammonium nitrate emulsion, nitric acid, chlorine, sodium hydroxide, sodium hypochlorite, hydrochloric acid and expanded polystyrene beads.

Cyanide is manufactured at the Yarwun facility using the Andrussow process. In this process, natural gas (methane), ammonia and oxygen are reacted over a platinum catalyst to form hydrogen cyanide gas (HCN). The HCN gas is then absorbed into caustic soda to form a solution of sodium cyanide. This cyanide liquor can then be concentrated, crystallised, dried and compacted into solid sodium cyanide.

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

SUMMARY AUDIT REPORT
AUDITORS FINDINGS

The Yarwun facility is:

☒ **in full compliance with**

☐ in substantial compliance with

☐ not in compliance with

The International Cyanide Management Code

Audit Company:	Golder Associates
Audit Team Leader:	Edward Clerk, CEnvP (112), RABQSA (020778)
Email:	eclerk@golder.com.au

Name and Signatures of Other Auditors:

Name	Position	Signature	Date
Edward Clerk	Lead Auditor and Technical Specialist		12 November 2009
Mark Latham	Auditor		12 November 2009

Dates of Audit:

The Certification Audit was undertaken over three days (6 man-days) between 24 and 26 August 2009.

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's *Gold Mining Operations Verification Protocol* and using standard and accepted practices for health, safety and environmental audits.

Orica Yarwun facility		13 November 2009 .
Name of Facility	Signature of Lead Auditor	Date

Table of Contents

PRINCIPLE 1 – OPERATIONS:

Design, construct and operate cyanide production facilities to prevent release of cyanide

Production Practice 1.1: **Design and construct cyanide production facilities consistent with sound, accepted engineering practices and quality control/quality assurance procedures.**

☒ **in full compliance with**

The operation is ☐ in substantial compliance with **Production Practice 1.1**

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Yarwun facility is in FULL COMPLIANCE with Production Practice 1.1 requiring that an operation design and construct cyanide production facilities consistent with sound, accepted engineering practices and quality control/quality assurance procedures.

The quality assurance and quality control practices identified during the initial certification audit have continued to be applied to plant modifications implemented since 2006, including the so-called 80K Upgrade project. The new works undertaken have adopted the established standards for materials of construction using materials such as carbon steel, stainless steels and high-density polyethylene (HDPE) recognised for their compatibility with cyanide.

Following testing to prove its performance, a new polyurea elastomer coating has been introduced as a coating to concrete surfaces within the processing area to enhance impermeability whilst also providing improved visual contrast to support the detection of any spills (due to its vibrant blue colour).

The plant is extensively instrumented with indicators, alarms and interlocks that are designed to help manage processing risks including releases and exposures, including level indicators, alarms and interlocks on tanks and pits where these are required limit the risk of overfilling.

Secondary containments are sized to contain at least 110% of the volume of the largest tanks and the concrete structures are lined with chemical resistant liners (HDPE and polymer as appropriate to the service) to ensure impermeability is maintained.

The risks of releases from cyanide process pipelines are managed by a combination of measures including minimising the number of joints and flanges, surface sealing, flange guards and preventive maintenance.

Orica Yarwun facility		13 November 2009
Name of Facility	Signature of Lead Auditor	Date

Production Practice 1.2: **Develop and implement plans and procedures to operate cyanide production facilities in a manner that prevents accidental releases.**

The operation is

☒ **in full compliance with**

☐ in substantial compliance with **Production Practice 1.2**

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Yarwun facility is in FULL COMPLIANCE with Production Practice 1.2 requiring an operation develop and implement plans and procedures to operate cyanide production facilities in a manner that prevents accidental releases.

The Yarwun facility has an extensive system of procedures, instructions and checklists which support management of the integrity of processing equipment and its operation in a manner intended to avoid cyanide releases and exposures. The instructions deal comprehensively with usual and abnormal operating requirements and are structured systematically to make the information easily accessible through an on-line Document Management System. The procedures recognise the likelihood of abnormal operating conditions such as those that result in the need for plant washouts to clear blockages, providing instructions and checklists to guide the safe conduct of this type of activity.

The Yarwun facility applies strong procedures to control the modification of physical plant and operating instructions, with around 200 modifications involving cyanide risks processed since the initial Certification Audit. Physical plant modifications and preventive maintenance of plant integrity are administered through a comprehensive on-line system; this system has been upgraded since the initial Certification Audit. Preventive maintenance includes the periodic calibration of key instruments, particularly those required to initiate trips and to detect cyanide releases. The process is extensively instrumented and is managed from a central control room.

Under normal circumstances there is no discharge of cyanide-contaminated water to the environment. Procedures are in place to ensure the avoidance of cyanide-contaminated waste where possible and to provide for the environmentally sound disposal of wastes such as used packaging, used personal protective equipment (PPE) and cyanide-contaminated grease. The cyanide warehouse is designed to provide good ventilation whilst also protecting the packaged product from moisture (annual rainfall 880 mm).

The Yarwun facility is subject to high integrity security arrangements as ammonium nitrate is also manufactured on site. Practices are in place to ensure cyanide is packaged as required by the political jurisdictions through which the load will pass.

Orica Yarwun facility		13 November 2009
Name of Facility	Signature of Lead Auditor	Date

Production Practice 1.3: **Inspect cyanide production facilities to ensure their integrity and prevent accidental releases.**

The operation is

☒ **in full compliance with**

☐ in substantial compliance with **Production Practice 1.3**

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Yarwun facility is in FULL COMPLIANCE with Production Practice 1.3 requiring inspection of cyanide production facilities to ensure their integrity and prevent accidental releases.

Inspections of the integrity of pressure vessels, tanks, pumps, pipes, valves and bunds (addressing structural and corrosion concerns) are undertaken as part of the operation's preventive maintenance program. Inspections for leaks and housekeeping are undertaken as part of operational monitoring of the plant. Operational monitoring is also undertaken using the Cyanide Plant's extensive instrumentation.

The Cyanide Plant displayed a high standard of housekeeping during the audit and provided information on its ongoing continual improvement program that is reducing the incidence of leaks and spills from difficult areas. Records are maintained of the various inspections, with operational inspections recorded on hardcopy check sheets, and integrity inspections recorded in a combination of the asset management system and in equipment files as well when the information is not amenable to on-line storage or is required in hard copy to meet statutory requirements.

Orica Yarwun facility		13 November 2009
Name of Facility	Signature of Lead Auditor	Date

Principle 2 – Worker Safety:

Protect workers' health and safety from exposure to cyanide

Production Practice 2.1: **Develop and implement procedures to protect plant personnel from exposure to cyanide.**

☒ **in full compliance with**

The operation is ☐ in substantial compliance with **Production Practice 2.1**

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Yarwun facility is in FULL COMPLIANCE with Production Practice 2.1 requiring an operation develop and implement procedures to protect plant personnel from exposure to cyanide.

Orica has developed procedures for the Yarwun facility that cover worker safety during normal plant operations through finished product packaging and shipping, maintenance, non-routine and emergency situations.

The Yarwun facility has implemented procedures to review proposed process and operational changes and modifications for their potential impacts on worker health and safety, and incorporate the necessary worker protection measures.

Orica solicits worker input in developing and evaluating health and safety procedures at the Yarwun facility using five main processes which are: procedure amendments within the Document Management System (DMS), procedure review, chemicals plant operations log, critical issues meetings and formal Safety, and Health & Environment committee meetings.

The Yarwun facility uses hydrogen cyanide (HCN) gas monitors to confirm that worker exposure to hydrogen cyanide is below the adopted limits. Fixed HCN gas monitors are located in areas with the greatest potential for HCN exposure within the Cyanide Plant. Personnel HCN monitors are also used at the Yarwun facility and these are managed by the Laboratory Manager to monitor worker exposures to HCN in the course of the Cyanide Plant operation. The HCN monitoring equipment is maintained, tested and calibrated in a manner consistent with the directions of the manufacturer.

Orica has identified areas and activities where workers may be exposed to HCN gas or cyanide dust at the Yarwun facility and requires the use of Personal Protective Equipment (PPE) as necessary in these areas when these activities are being performed.

The Yarwun facility has provisions to ensure that a buddy system is used, or workers can otherwise notify or communicate with other personnel for assistance, help or aid where deemed necessary. This includes a radio channel dedicated to the Chemical Complex (containing the Cyanide and Chlorine Plant) and a public announcement system.

The Yarwun facility does assess the health of employees to determine their fitness to perform their specified tasks. The following health assessments are conducted at the Yarwun facility: pre-placement health assessments, contractor health assessments, job transfer health assessments, periodic (annual) health assessments, return to work health assessments and health assessments by request.

Areas and activities with specific PPE requirements have been identified. The Cyanide Plant has a formal clothing change policy for employees, contractors and visitors to all areas with the potential for cyanide

contamination of clothing. The Cyanide Plant is demarcated by a blue line. All personnel crossing the blue line to enter the Cyanide Plant must use the designated change room to change into blue overalls (buttoned at the wrist and neck) which are placed over their existing layer of clothing, black work boots, safety glasses, safety helmet and hearing protection. Gloves are also required for persons undertaking work within the Cyanide Plant. Upon leaving the facility the external layer of clothing, boots and PPE are removed within the change room and placed in a dissolvable red bag that is collected by an approved external laundry.

Warning signs advising workers that cyanide is present and that, if necessary, suitable PPE must be worn, are located around the Yarwun facility.

The Yarwun facility prohibits personnel from smoking, eating and drinking, and having an open flame in areas with the potential for cyanide exposure. The site induction video clearly describes the Cyanide Plant as a "nil by mouth area" where eating, drinking and smoking are prohibited. Smoking is not permitted within the fenced perimeter of the entire site. The induction also details the prohibition of naked flames within the Cyanide Plant.

Production Practice 2.2: **Develop and implement plans and procedures for rapid and effective response to cyanide exposure.**

☒ **in full compliance with**

The operation is ☐ in substantial compliance with **Production Practice 2.2**

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Yarwun facility is in FULL COMPLIANCE with Production Practice 2.2 requiring an operation develop and implement plans and procedures for rapid and effective response to cyanide exposure.

Orica has developed the following specific written emergency response plans or procedures to respond to cyanide exposures at the Yarwun facility: Model Procedure – Emergency Plans, Yarwun Site Emergency Plan, Guidelines for recognition and medical treatment of cyanide poisoning and Emergency Response Guide Sodium Cyanide.

Showers, low-pressure eye wash stations and non-acidic fire extinguishers are located strategically throughout the Yarwun facility. The showers are walk-in multiple spray showers providing complete simultaneous coverage of the entire body from all angles by individual spray heads. The showers are activated by stepping onto the platform. A cabinet containing an eyewash bottle and sealed bottled water is located at each shower to aid in the rinsing of eyes or the mouth if cyanide has been accidentally ingested.

The Yarwun facility Cyanide Plant has C-cylinders of oxygen (Oxysox), manual resuscitators, cyanide antidote kits and radios to communicate in emergency situations. Emergency Medical Kits are located in all toxic refuges, large field kits are located in both control rooms (Cyanide/Chlorine and Ammonia Plant) and the Occupational Health Centre. The Yarwun facility has an emergency response vehicle for potential cyanide events that is permanently stationed near the cyanide production area and is only used to transport personnel to the local hospital which is 11 Km from the site. Bottled water is readily available in the Occupational Health Centre and all emergency shower/eyewash stations for rinsing mouths.

Procedures are in place to regularly test and maintain first aid and emergency response equipment.

Orica Yarwun facility		13 November 2009
Name of Facility	Signature of Lead Auditor	Date

Material Safety Data Sheets (MSDS) and first aid procedures on cyanide safety are in the language of the workforce (English) and are available to workers in the Cyanide Plant.

Storage tanks, containers and piping containing cyanide are clearly identified to alert workers of their contents and direction of flow.

The Yarwun facility has a decontamination procedure for employees, contractors and visitors leaving areas with the potential for skin exposure to cyanide. The decontamination procedure is discussed in the NaCN Plant Normal Operating Instructions and Guidelines for Recognition and Medical Treatment of Cyanide Poisoning.

All visitors and Yarwun facility workers receive an induction detailing information about the danger of cyanide, risks and safety information in general including cyanide exposure procedures.

The Yarwun facility has an on-site Occupational Health Centre which is staffed by a Registered Nurse (RN) during day shift with an on call system during evenings. The RN provides first aid or medical assistance to workers exposed to cyanide. In addition to the RN, all Plant Operators are required to have Advanced First Aid Certification and Advanced Resuscitation which is to be renewed annually. In the event an antidote is required, it is administered by the trained medical staff at the Local Hospital. No antidote is administered on-site and as such, training in this is not required.

The Yarwun Site Emergency Plan covers those actions to be carried out by all site personnel during an internal emergency, to transport exposed workers to locally qualified, off-site medical facilities.

The Yarwun facility has alerted local hospitals of the potential need to treat patients for cyanide exposure and is confident that the medical facility has adequate, qualified staff, equipment and expertise to respond to cyanide exposures.

Mock emergency drills are conducted periodically to test response procedures for various exposure scenarios.

Orica Yarwun facility		13 November 2009
Name of Facility	Signature of Lead Auditor	Date

PRINCIPLE 3 – MONITORING:

Conduct environmental monitoring to confirm that planned or unplanned releases of cyanide do not result in adverse impacts

Production Practice 3.1: **Conduct environmental monitoring to confirm that planned or unplanned releases of cyanide do not result in adverse impacts.**

The operation is

☒ **in full compliance with**

☐ in substantial compliance with **Production Practice 3.1**

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Yarwun facility is in FULL COMPLIANCE with Production Practice 3.1 requiring an operation conduct environmental monitoring to confirm that planned or unplanned releases of cyanide do not result in adverse impacts.

There is no direct discharge to surface water under normal operating conditions, nor is there any indirect discharge of contaminated groundwater to surface water. Groundwater contamination is confined to within the Yarwun facility boundary and the contaminant concentrations in groundwater have not resulted in measurable adverse effects in the receiving environment. Current remedial activity is focused on the containment of contamination on-site and the management of contaminated groundwater pumped to the surface. Atmospheric emissions are limited by controls on the dryer scrubber stacks and a tail gas burner and backup elevated flare on the converter vent gas stream. The plant design also limits fugitive emissions. Groundwater monitoring is conducted twice annually for a comprehensive set of monitoring bores whilst selected bores are monitored more frequently. Whilst this monitoring has met requirements to date, the extent and frequency is currently under review.

Orica Yarwun facility		13 November 2009
Name of Facility	Signature of Lead Auditor	Date

PRINCIPLE 4 – TRAINING:

Train workers and emergency response personnel to manage cyanide in a safe and environmentally protective manner

Production Practice 4.1: **Train employees to operate the plant in a manner that minimises the potential for cyanide exposures and releases.**

☒ **in full compliance with**

The operation is ☐ in substantial compliance with **Production Practice 4.1**

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Yarwun facility is in FULL COMPLIANCE with Production Practice 4.1 requiring an operation train employees to operate the plant in a manner that minimises the potential for cyanide exposures and releases.

The Yarwun facility has a strong safety culture which fosters personal responsibility in each individual for their own safety and the safety of colleagues. Only individuals who are expected to fit in with this culture are employed, and corrective action is taken if necessary. The training program places a strong initial focus on ensuring that the individual understands the hazards and the basic principles of working safely with cyanide. Refresher training in cyanide awareness is provided annually to contractors and every two years to permanent employees. As part of task training, trainees learn about the PPE requirements of specific locations and operational tasks. They also learn how they are required to work under normal, abnormal and emergency operating conditions to manage the risks of cyanide release and exposure as well as the important characteristics of the process equipment used. The required learning outcomes are documented for each job role. Training is mostly delivered to trainees by an assigned mentor; mentors are technically experienced workers who have well developed communication skills. Competency is assessed by trained assessors; technically experienced personnel who have advanced skill in competency assessment. Other specialists get involved to support the core training and assessment process. Training is carried out progressively with defined milestones to be achieved before trainees can work in cyanide areas at all or ultimately work independently. The competency of trainees is assessed through a combination of written examinations, skill demonstrations and opportunities to demonstrate understanding through discussion with the assessor. Once an employee is deemed competent, work performance continues to be monitored by the shift crew and the other crews that give and receive handovers at shift changes; a system that works under the facility's safety culture.

Production Practice 4.2: **Train employees to respond to cyanide exposures and releases.**

☒ **in full compliance with**

The operation is ☐ in substantial compliance with **Production Practice 4.2**

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Yarwun facility is in FULL COMPLIANCE with Production Practice 4.2 requiring the operation train employees to respond to cyanide exposures and releases.

Orica Yarwun facility		13 November 2009
Name of Facility	Signature of Lead Auditor	Date

During induction, employees are trained in the procedures for notifying the control room and the plant facilitator when a cyanide or any chemical release is discovered. The response to personal exposure is also covered during induction training, but this is also the subject of practical training provided as a priority once each trainee starts working on the plant. Refresher training also occurs frequently on a random basis. Emergency drills are conducted twice each year for each shift crew. Those drills are evaluated by independent observers, including an external expert in emergency management who draws together the learnings identified by the drill participants and the observers. Training records are maintained on employees' individual training files and (in summary) on the Training Management System database.

Orica Yarwun facility		13 November 2009
Name of Facility	Signature of Lead Auditor	Date

PRINCIPLE 5 – EMERGENCY RESPONSE:

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

Production Practice 5.1: **Prepare detailed emergency response plans for potential cyanide releases.**

The operation is

- ☒ **in full compliance with**
- ☐ in substantial compliance with **Production Practice 5.1**
- ☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Yarwun facility is in FULL COMPLIANCE with Production Practice 5.1 requiring the operation prepare detailed emergency response plans for potential cyanide releases.

The Yarwun facility has developed emergency response plan documentation to address potential releases of cyanide that may occur on-site or may otherwise require response. The Yarwun Site Emergency Plan is the key document describing the response actions for site personnel during an internal emergency. The Yarwun Site Emergency Plan was developed in accordance with the Orica corporate emergency response requirements detailed in Model Procedure Emergency Plans (MP-SG-020C). The Emergency Response Guide Sodium Cyanide is the key document which would provide guidance for emergencies at sites not within Orica's direct control.

The Yarwun Site Emergency Plan documents consider the potential failure scenarios appropriate for its site-specific environmental and operating circumstances. The emergency documentation has been prepared for all of the Yarwun facility (including the Reid Road, Fisherman's Landing and Auckland Point Facilities) and references response actions specific to the Ammonium Nitrate Plant, Chemical Complex (cyanide and chlorine).

The Yarwun Site Emergency Plan contains sufficient procedural information to allow responsible site personnel to respond to the scenarios identified in this question. In addition to this procedural information, the Yarwun Site Emergency Plan outlines detailed response guidelines for various failure scenarios (cyanide related) including gas release on site, cyanide poisoning, fire, internal chemical spills, special cases (e.g. ammonium nitrate/emulsion phase decomposition and bomb threats). In addition to the emergency plan it should be noted that there are inherent design features in the facility that limit the consequences of the potential failure scenarios detailed in this question reducing the need to include some scenarios or limit the detail within the Yarwun Site Emergency Plan.

The Yarwun Site Emergency Plan documentation describes specific and detailed response actions to the points listed. Information relating to the evacuation of site personnel is detailed within the site specific induction training material and is reinforced during evacuation drills. No communities are located within the vicinity of the plant.

Orica Yarwun facility		13 November 2009
Name of Facility	Signature of Lead Auditor	Date

Production Practice 5.2: **Involve site personnel and stakeholders in the planning process.**

The operation is
- ☒ **in full compliance with** **Production Practice 5.2**
- ☐ in substantial compliance with **Production Practice 5.2**
- ☐ not in compliance with **Production Practice 5.2**

Summarise the basis for this Finding/Deficiencies Identified:

The Yarwun facility is in FULL COMPLIANCE with Production Practice 5.2 requiring an operation involve site personnel and stakeholders in the planning process.

Orica has involved its workforce and stakeholders in the emergency response planning process for the Yarwun facility. The Yarwun Site Emergency Plan describes the response actions for site personnel during an internal emergency. The Yarwun Site Emergency Plan was developed in accordance with the Model Procedure Emergency Plans (MP-SG-020C). Section 2 (Key requirements) notes that employees and the relevant external community emergency service organisations shall be consulted during the development of the emergency plan.

Consultation is carried out with stakeholders when necessary and includes local response agencies in the emergency planning and response process. Local hospitals and hospitals located along all transport routes were advised of Orica's new cyanide treatment.

During the audit period, relevant employees have been involved in the emergency response planning process through initial training and simulation exercises. Employees are also involved in the planning through the document review process.

The Yarwun facility considers that there are no potentially affected communities that need to be made aware of the nature of the risks associated with accidental cyanide releases, due to the low risk identified with a cyanide release at the Yarwun facility. However, the Yarwun facility does consult with communities potentially exposed to the risks of accidental chlorine and ammonia releases from the Yarwun facility.

Orica communicate emergency response plans and potential assistance required with neighbouring stakeholders through the Mutual Aid Group of Gladstone.

The recently completed site risk assessment updated the Yarwun facility hazard profile, which increased the potential area of impact following an emergency event. As a result the consultation program has being updated and will be delivered throughout 2009 and 2010. The consultation process will utilise different mediums (site discussion, mail out, public meetings off-site and reports made available at pubic areas (i.e. library) to cover the various potential effected communities.

Orica Yarwun facility		13 November 2009
Name of Facility	Signature of Lead Auditor	Date

Production Practice 5.3: **Designate appropriate personnel and commit necessary equipment and resources for emergency response.**

☒ **in full compliance with**

The operation is ☐ in substantial compliance with **Production Practice 5.3**

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Yarwun facility is in FULL COMPLIANCE with Production Practice 5.3 requiring the operation designate appropriate personnel and commit necessary equipment and resources for emergency response.

The Yarwun Site Emergency Plan designates primary and alternate emergency response coordinators with explicit authority to commit the resources necessary to implement the Contingency Plan.

The Yarwun Site Emergency Plan identifies the Emergency Response Teams and responsibilities of each role. Training requirements are listed in the Emergency Plans Document.

The Yarwun Site Emergency Plan includes call-out procedures and 24-hour contact information for the coordinators and response team members and clearly specifies the duties for all Emergency Response Team positions.

Lists of all emergency response equipment are available in the Yarwun Site Emergency Plan and on-site within the Occupational Health Centre and Emergency Response Shed. All lists are readily available and were viewed during the audit.

The Yarwun Site Emergency Plan clearly describes the role of outside responders. In the event that the Shift Facilitator considers the emergency level is high then local Emergency Services (fire, police and ambulance) are activated and control is passed to the Emergency Services upon their arrival. The communities do not have a designated role within the emergency response procedures.

All outside entities listed within the Yarwun Site Emergency Plan have been provided with a copy of the Yarwun Site Emergency Plan. Outside entities are included within both table top and field exercises.

It is the role of the Company Doctor and the Site Occupational Health Nurse to visit the Local Hospital every two years to inform and educate hospital staff on the issues associated with cyanide and confirm arrangements between the Yarwun facility and the Local Hospital including emergency response requirements. The QLD Fire & Rescue is involved in the site emergency response and fire training scenarios.

Orica Yarwun facility		13 November 2009
Name of Facility	Signature of Lead Auditor	Date

Production Practice 5.4: **Develop procedures for internal and external emergency notification and reporting.**

☒ **in full compliance with**

The operation is ☐ in substantial compliance with **Production Practice 5.4**

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Yarwun facility is in FULL COMPLIANCE with Production Practice 5.4 requiring an operation develop procedures for internal and external emergency notification and reporting.

The Yarwun Site Emergency Plan identifies the procedure and contact information for notifying management, regulatory agencies, outside response providers and medical facilities as appropriate. The contact names, numbers and contact instructions for all key contacts appeared appropriate during a review of the Plan.

As determined through the risk assessment, an incident involving cyanide is unlikely to impact on the surrounding community. Despite this the Yarwun Site Emergency Plan identifies the procedure and contact information for notifying potentially affected communities. The Plan lists the neighbours and their contact information. The Plan notes that it is the responsibility of the Communications Assistant in the event of the emergency being "serious" to notify any neighbourhood sites or dwellings that an emergency is in progress and request that everyone at their location stays indoors near a telephone, that all doors and windows be closed, air conditioners turned off and that they stand by for further information.

The Plan specifies that media releases are undertaken at the discretion of the Site Manager.

Production Practice 5.5: **Incorporate into response plans and remediation measures monitoring elements that account for the additional hazards of using cyanide treatment chemicals.**

☒ **in full compliance with**

The operation is ☐ in substantial compliance with **Production Practice 5.5**

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Yarwun facility is in FULL COMPLIANCE with Production Practice 5.5 requiring an operation incorporate into response plans and remediation measures monitoring elements that account for the additional hazards of using cyanide treatment chemicals.

Procedures have been developed to describe specific, appropriate remediation measures, decontamination of soils or other contaminated media and management and/or disposal of spill clean-up debris, and provision of an alternate drinking water supply, as appropriate.

No natural surface waters are located within the Yarwun facility and consequently the Yarwun Site Emergency Plan does not contain a reference prohibiting the use of chemicals such as sodium hypochlorite, ferrous sulfate and hydrogen peroxide to treat cyanide that has been released into surface water.

Orica Yarwun facility		13 November 2009
Name of Facility	Signature of Lead Auditor	Date

The Yarwun facility addresses the potential need for environmental monitoring to identify the extent and effects of a release, and includes sampling methodologies, parameters and, where practical, possible locations.

Production Practice 5.6: **Periodically evaluate response procedures and capabilities and revise them as needed.**

☒ **in full compliance with**

The operation is ☐ in substantial compliance with **Production Practice 5.6**

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Yarwun facility is in FULL COMPLIANCE with Production Practice 5.6 requiring an operation periodically evaluate response procedures and capabilities and revise them as needed.

The Yarwun Site Emergency Plan was developed in accordance with the Orica corporate emergency response requirements detailed in Model Procedure Emergency Plans (MP-SG-020C). During the audit it was observed that the Yarwun Site Emergency Plan was a controlled document that underwent periodic review as evidenced by the fact that Revision 15 was the current Plan printed out for the audit (Revision 9 was referenced during the 2006 ICMI Certification Audit).

Mock emergency drills are conducted periodically to test response procedures for various exposure scenarios.

Section 4.6 (Testing and Auditing of the Emergency Response Plan) of Model Procedure Emergency Plans (MP-SG-020C) requires the Emergency Plan to be tested to enable deficiencies to be identified and corrected. It is a requirement that at least one of the tests should involve relevant emergency service organisations. The Site Manager then ensures appropriate corrective actions are taken to rectify any deficiencies, including updating the appropriate elements of the Emergency Response System and Plan as necessary.

Evidence obtained during interviews of the Cyanide Plant Shift Team and the SHEQA Statutory Compliance Manager revealed that emergency response training is an integral part of their job function and training program. The exercises are not conducted just to evaluate the Emergency Reponses Plan although the exercises do form a valuable part of the review process.

Orica Yarwun facility		13 November 2009
Name of Facility	Signature of Lead Auditor	Date

Report Signature Page

GOLDER ASSOCIATES PTY LTD

Edward Clerk
ICMI Lead Auditor/Technical Specialist
Manager Mining Environmental Services Group

EC,CJP/ML/djl

A.B.N. 64 006 107 857

m:\jobs409\mining\097641247 - orica yarwun production audit\reports\final documents\097641247 002 r rev0 production summary audit.doc

APPENDIX A

Limitations

LIMITATIONS

This Document has been provided by Golder Associates Pty Ltd ("Golder") subject to the following limitations:

This Document has been prepared for the particular purpose outlined in Golder's proposal and no responsibility is accepted for the use of this Document, in whole or in part, in other contexts or for any other purpose.

The scope and the period of Golder's Services are as described in Golder's proposal, and are subject to restrictions and limitations. Golder did not perform a complete assessment of all possible conditions or circumstances that may exist at the site referenced in the Document. If a service is not expressly indicated, do not assume it has been provided. If a matter is not addressed, do not assume that any determination has been made by Golder in regards to it.

Conditions may exist which were undetectable given the limited nature of the enquiry Golder was retained to undertake with respect to the site. Variations in conditions may occur between investigatory locations, and there may be special conditions pertaining to the site which have not been revealed by the investigation and which have not therefore been taken into account in the Document. Accordingly, additional studies and actions may be required.

In addition, it is recognised that the passage of time affects the information and assessment provided in this Document. Golder's opinions are based upon information that existed at the time of the production of the Document. It is understood that the Services provided allowed Golder to form no more than an opinion of the actual conditions of the site at the time the site was visited and cannot be used to assess the effect of any subsequent changes in the quality of the site, or its surroundings, or any laws or regulations.

Any assessments made in this Document are based on the conditions indicated from published sources and the investigation described. No warranty is included, either express or implied, that the actual conditions will conform exactly to the assessments contained in this Document.

Where data supplied by the client or other external sources, including previous site investigation data, have been used, it has been assumed that the information is correct unless otherwise stated. No responsibility is accepted by Golder for incomplete or inaccurate data supplied by others.

Golder may have retained subconsultants affiliated with Golder to provide Services for the benefit of Golder. To the maximum extent allowed by law, the Client acknowledges and agrees it will not have any direct legal recourse to, and waives any claim, demand, or cause of action against, Golder's affiliated companies, and their employees, officers and directors.

This Document is provided for sole use by the Client and is confidential to it and its professional advisers. No responsibility whatsoever for the contents of this Document will be accepted to any person other than the Client. Any use which a third party makes of this Document, or any reliance on or decisions to be made based on it, is the responsibility of such third parties. Golder accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this Document.

At Golder Associates we strive to be the most respected global group of companies specialising in ground engineering and environmental services. Employee owned since our formation in 1960, we have created a unique culture with pride in ownership, resulting in long-term organisational stability. Golder professionals take the time to build an understanding of client needs and of the specific environments in which they operate. We continue to expand our technical capabilities and have experienced steady growth with employees now operating from offices located throughout Africa, Asia, Australasia, Europe, North America and South America.

Africa	+ 27 11 254 4800
Asia	+ 852 2562 3658
Australasia	+ 61 3 8862 3500
Europe	+ 356 21 42 30 20
North America	+ 1 800 275 3281
South America	+ 55 21 3095 9500

solutions@golder.com
www.golder.com

Golder Associates Pty Ltd
Level 2, 1 Havelock Street
West Perth Western Australia 6005
Australia
T: +61 8 9213 7600

Golder Associates