



July 2014

**INTERNATIONAL CYANIDE MANAGEMENT  
CODE CYANIDE SUPPLY CHAIN  
CERTIFICATION AUDIT, SUMMARY AUDIT  
REPORT - ERENHOT (CHINA) TO ZAMIIN-  
UUD (MONGOLIA)**

**Anhui Anqing Shuguang  
Chemical Company Limited**

**Submitted to:**

International Cyanide Management Institute  
1400 I Street, NW, Suite 550  
Washington, DC 20006  
UNITED STATES OF AMERICA

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PEOPLES REPUBLIC OF CHINA

REPORT



**Report Number.** 137623062 004 R Rev2

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## 1.0 INTRODUCTION

### 1.1 Operational Information

<b>Name of Consignor Company:</b>	Anhui Anqing Shuguang Chemical Company Limited
<b>Name of Supply Chain:</b>	Erenhot (China) to Zamiin-Uud (Mongolia) Supply Chain
<b>Name of Responsible Manager:</b>	Mr Li Derong
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<b>State/Province:</b>	Anhui, 246005
<b>Country:</b>	PEOPLES REPUBLIC OF CHINA

### 1.2 Description of Operation

Anhui Anqing Shuguang Chemical Company Limited (Shuguang) is a manufacturer of cyanide and responsible for management of the cyanide Supply Chain the subject of this audit. Shuguang is a subsidiary of the Anhui Anqing Shuguang Chemical (Group) Co. Ltd.

#### 1.2.1 Origin of the Cyanide

Shuguang manufactures solid sodium cyanide at its facility located at Anqing in eastern China. This manufacturing facility is certified as being compliant with the ICMC, the most recent re-certification date being 12 September 2013.

Anqing Shuguang Supply, Sales and Transportation Co. Ltd (also a subsidiary of the Anhui Anqing Shuguang Chemical (Group) Co. Ltd.) is a contracted forwarding agent for Shuguang and undertakes road transportation of solid sodium cyanide from Anqing to Erenhot in China. This road transportation operation is certified as being compliant with the ICMC, the certification date being 16 May 2013. The road transportation is not included within the scope of this Supply Chain audit.

#### 1.2.2 Transport of Cyanide

Cyanide transportation along the Supply Chain comprises:

- Receipt and unloading of cyanide delivered by Shuguang packaged in 1,000 kg timber boxes at an interim storage warehouse operated by Erenhot Zhongsheng Economic & Trading Limited Liability Company and located approximately five kilometres north of the Erenhot town centre.
- Interim storage of the cyanide within a warehouse building for up to one week whilst transport arrangements are finalised.
- Loading of the cyanide by Erenhot Zhongsheng Economic & Trading Limited Liability Company onto trucks operated by Sinotrans Erenhot Co. for transport to Zamiin-Uud railway station. Shuguang contracts Erenhot Yuntong Trading Limited Liability Company (Yuntong, Freight Forwarder/Coordinator), which subcontracts Sinotrans Erenhot Co. for the transport services.

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Date



- Transport of the cyanide by Sinotrans Erenhot Co. on trucks a distance of four kilometres to the Chinese side of the border, clearance through customs, transport across the border (distance of one kilometre) to the Mongolia side of the border, clearance through customs and then transport a further seven kilometres to Zamiin-Uud railway station. The route is on an established highway passing through industrial and vacant areas.
- The arrival of the trucks at the railway station is the end of the Supply Chain.

Shuguang has been transporting cyanide along the Supply Chain since 2010. On average there has been one shipment of cyanide per year – in 2013 the shipment quantity comprised 684 tonnes of cyanide and in 2012 the quantity was 648 tonnes. Each shipment takes two to three days to complete, each day a single convoy of trucks takes approximately one hour to make the 12 km journey, including customs clearance.

### 1.2.3 Interim Storage

Interim storage is defined by the ICMC (Definitions section of ICMI website) as follows: *“Temporary storage of cyanide that occurs when changing carriers or transport modes. Interim storage facilities typically are integral to the transport of cyanide and involve holding individual shipments during the transport process. Under the Code, interim storage facilities are considered to be part of cyanide transport and are evaluated for certification using the Cyanide Transportation Verification Protocol. Facilities such as ports, rail yards and truck terminals are typical interim storage sites. Storage in a warehouse for subsequent distribution is not considered to be interim storage.”*

Cyanide is stored for a period of up to one week at a Chinese Customs Bonded Warehouse operated by Erenhot Zhongsheng Economic & Trading Company Limited Liability Company, located at Erenhot Industrial park, North of Dong Guihua Beihuan Road, Erenhot (Interim Storage Facility).

Shuguang contracts Yuntong (Freight Forwarder/Co-ordinator), which subcontracts Zhongsheng Economic and Trade Co. Ltd (interim store operator) to store the cyanide.

The cyanide is stored in a designated warehouse building which when it is used for storage of Shuguang's cyanide does not store any other goods.

At no stage along the Supply Chain is cyanide removed from the cyanide packaging containers (1,000 kg timber boxes).

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### 1.3 Auditor’s Findings and Attestation

Anhui Anqing Shuguang Chemical Company Limited’s Erenhot (China) to Zamiin-Uud (Mongolia) Supply Chain 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:** Tom Carmichael  
 (Exemplar Global, formerly RABQSA International, 14544)  
**Email:** tomcarmichael@golder.com.au

### 1.4 Name and Signature Auditor

Name	Position	Signature	Date
Tom Carmichael	Lead Auditor and Technical Specialist		17 July 2014

### 1.5 Dates of Audit

The Certification Audit was undertaken over three days (3 person-days) from 3 to 5 December 2013.

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.

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## 2.0 CONSIGNOR SUMMARY

### 2.1 Principle 1 – Transport

The Code requires the consignor to “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:

Shuguang is in FULL COMPLIANCE with Transport Practice 1.1 requiring cyanide transport routes to be selected to minimise the potential for accidents and releases.

Shuguang has developed and implemented a procedure to guide the selection of a transport route to minimise the potential for accidents and releases or the potential impacts of accidents and releases. Shuguang has implemented the procedure and conducted a route survey for the selected route. Due to the short distance of the route and the presence of the border crossing, there is no suitable alternative route for use in case of unacceptable conditions along the primary route.

Hazards identified during the route survey are risk assessed and ranked as low, medium or high. Once risk assessed, prevention and/or protective measures are identified and implemented to make the resulting risks more acceptable.

Shuguang re-evaluates the route periodically, however, uses the route only once per year.

Shuguang has documented measures taken to address risks identified with the selected route.

Due to the location of the route in well developed areas of China and Mongolia and the structure of the respective government’s emergency response system Shuguang has not been required to undertake direct consultations with governmental agencies in the selection of routes and development of cyanide management measures. It should be noted that each cyanide transport activity is subject to approval by the government in each country and the approval process involves consideration of the transport route and potential risks.

Security escorts are not required along the transport route due to its location in well developed areas and the low security risks. Nonetheless the transport is undertaken by convoy accompanied by representatives from Shuguang and Boroo Gold Company.

In the event of an incident, primary emergency response is coordinated by Shuguang and its transport subcontractors with assistance as required provided by each government’s emergency response services (police, ambulance, traffic authorities, hospitals and EPA).

In the event of an incident, the duties of primary responders include immediate notification to government authorities and medical facilities (as necessary). The roles of the government’s public responders (police, ambulance and fire brigades) are defined in legislation.

Shuguang uses subcontractors within the scope of this audit. Each subcontractor operates under their own and Shuguang’s procedures to address relevant elements of Transport Practice 1.1. Shuguang requires these subcontractors to comply with these procedures under the terms of the contracts with Shuguang.

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**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.**

**The operation is**  **in full compliance with** **Transport Practice 1.2**  
 in substantial compliance with  
 not in compliance with

**Summarise the basis for this Finding/Deficiencies Identified:**

Shuguang is in FULL COMPLIANCE with Transport Practice 1.2 requiring that personnel operating cyanide handling and transport equipment can perform their jobs with minimum risk to communities and the environment.

Shuguang uses a truck driving contractor with drivers that have appropriate training and vehicle licences to transport cyanide in accordance with Chinese and Mongolian legislative requirements.

All personnel operating cyanide handling and transport equipment have been trained to perform their jobs in a manner that minimises the potential for cyanide releases and exposures. The training of cyanide handling and transport equipment operators is provided by Shuguang’s freight forwarding contractor and transport escort Erenhot Yuntong Trading Limited Liability Company.

All drivers hold licences issued by the Chinese governments authorising them to drive trucks carrying hazardous chemicals such as cyanide.

**2.1.3 Transport Practice 1.3**

**Ensure that transport equipment is suitable for the cyanide shipment.**

**The operation is**  **in full compliance with** **Transport Practice 1.3**  
 in substantial compliance with  
 not in compliance with

**Summarise the basis for this Finding/Deficiencies Identified:**

Shuguang is in FULL COMPLIANCE with Transport Practice 1.3 requiring that transport equipment is suitable for cyanide shipment.

Shuguang uses subcontractors who only use equipment designed and maintained to handle one laden shipping container of cyanide. Equipment consists of cranes at the Interim Storage Facility and road vehicles (truck – semi-trailers) for transport of cyanide. The capacities of each item of equipment have been confirmed as adequate to handle one full shipping container of cyanide at a time.

Previously the trucks have been used to carry two 20-foot containers of cyanide, which exceeds the manufacturer’s stated capacity of the trucks and trailers. For compliance with the ICMC Shuguang advised that in future only one container will be carried per load, which will be within the limits specified for the trucks and trailers. This requirement is included in Shuguang’s contract documentation with Erenhot Yuntong Limited Liability Company, which subcontracts Sinotrans Erenhot Co. for the transport services. Shuguang personnel will check that each truck carries only one container when Shuguang undertakes its pre-departure inspections of the trucks during each shipment. This check is included in Shuguang’s pre-departure checklist.

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All trucks and trailers used by Shuguang for cyanide transport are subject to daily, monthly and annual maintenance inspections, including annual inspection and approval by government authorities. Inspection records are kept by Sinotrans Erenhot Co.

Evidence of daily, monthly and annual inspections was sighted but it is not clear that the three-monthly inspections are undertaken. Shuguang advised that they have spoken with Sinotrans Erenhot Co. and instructed Sinotrans Erenhot Co. to undertake three-monthly inspection and maintenance of vehicles and maintain records and provide these to Shuguang. This requirement has been written into Shuguang's contract with Erenhot Yuntong Limited Liability Company which subcontracts Sinotrans Erenhot Co. If Shuguang is not provided with evidence of these inspection and maintenance activities, Shuguang will use another transport company which is able to comply with the requirements.

Shuguang has committed to ensure its subcontractors comply with the procedures via contractual terms and pre-shipment inspections of documentation and pre-departure inspections of truck vehicles.

**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:**

Shuguang is in FULL COMPLIANCE with Transport Practice 1.4 requiring the operation develop and implement a safety program for transport of cyanide.

Shuguang has procedures to ensure that the cyanide is transported in a manner that maintains the integrity of the producer's packaging. These comprise checks prior to departure and at the customer hand-over point, prior to unloading and use of locking pins on the shipping containers to prevent movement during transport.

Shuguang manages the transportation of cyanide for a Code certified cyanide producer, which has systems in place to ensure its containers are labelled in accordance with the International Maritime Dangerous Goods (IMDG) Code and as required by local regulations or international standards. As a control measure, the cyanide is trucked by drivers who have received training in cyanide emergency response and dangerous goods training.

Shuguang has implemented a safety program for cyanide transport that includes:

- Vehicle inspections;
- Preventative maintenance;
- Procedures to prevent loads from shifting;
- Procedures to modify or suspend transport if conditions such as severe weather or civil unrest are encountered; and
- Drug abuse prevention.

Vehicle inspection and maintenance records are kept by Sinotrans Erenhot Co. Evidence of daily, monthly and annual vehicle inspections was sighted but it is not clear that the three-monthly inspections are undertaken. Shuguang advised that they have spoken with Sinotrans Erenhot Co. and instructed Sinotrans

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Erenhot Co. to undertake three-monthly inspection and maintenance of vehicles and maintain records and provide these to Shuguang. This requirement will be written into the contract with Sinotrans Erenhot Co. for future shipments of cyanide. If Shuguang is not provided with evidence of these inspection and maintenance activities, Shuguang will use another transport company which is able to comply with the requirements.

Sinotrans Erenhot Co. does not undertake any drug or alcohol testing of drivers. Annual training of drivers is provided to instruct them not to drive under the influence of drugs and alcohol. No drivers have been found to be under the influence of drugs or alcohol, suggesting that the program is not effective. Therefore, Shuguang has amended its procedures to instruct its personnel to use an alcohol test device and test each driver prior to each cyanide delivery and incorporate this requirement into its contracts for future cyanide shipments. This approach is considered to be effective.

Limitations on operator or drivers' hours have not been necessary due to the short duration (one hour) of the transport route.

**2.1.5 Transport Practice 1.5**

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

**in full compliance with**

**The operation is**

in substantial compliance with

**Transport Practice 1.5**

not in compliance with

**Summarise the basis for this Finding/Deficiencies Identified:**

Transport Practice 1.5 requiring the operation to follow international standards for transportation of cyanide by sea and air is NOT APPLICABLE to Shuguang.

Shuguang does not transport consignments of cyanide by sea or air within the scope of this audit.

**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:**

Shuguang is in FULL COMPLIANCE with Transport Practice 1.6 requiring the operation track cyanide shipments to prevent losses during transport.

All vehicles have communications systems that include cell phones and radios. One of the escort teams (Boroo Gold Company) also carries two satellite phones.

Communication equipment is tested as part of a pre-start check to ensure it functions properly. The mobile phones and radios are in constant use, verifying their function status.

Shuguang has not identified any cell phone communication blackout areas along transport routes.

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Shuguang and its transport subcontractors implement chain of custody procedures to prevent loss of cyanide during shipment. Shuguang and its transport contractors and the customer conduct inspections of the containers at the departure point. Once delivered, a customer representative signs a form acknowledging that the consignment was received in good condition and unopened. Seal numbers on the trucks are recorded upon departure and arrival and checked to ensure that the seal has not been disturbed during transport.

Shipping papers and Material Safety Data Sheets accompany each cyanide convoy.

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**2.2 Principle 2 – Interim Storage**

The Code requires that the consignor “**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:**

Shuguang 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.

Within the scope of this audit, there is one interim storage facility located at a Chinese Customs Bonded Warehouse owned and operated by Erenhot Zhongsheng Economic & Trading Company Limited Liability Company.

Warning signs are posted alerting workers:

- a) that cyanide is present;
- b) that smoking, open flames, eating and drinking are not allowed; and
- c) what personal protective equipment must be worn.

The signs are placed on the gate at the entrance of the storage facility, and on the door of the storage building used by Shuguang.

There are security measures in place to prevent unauthorised access to cyanide. The storage facility is accessible only via a permanently manned gateway. The building within which the cyanide is stored has locked doors. The facility has fixed security cameras which monitor each building doorway and the access yard. The video footage is monitored by the facility operator as well as Mongolian Police and Customs officials.

The cyanide is separated from incompatible materials such as acids, strong oxidizers and explosives with walls to prevent mixing. The only item stored in the building used by Shuguang is cyanide at times when cyanide is stored. The building is separated from other buildings which may store other hazardous materials.

The cyanide is stored in a manner deigned to minimise the potential for contact of solid cyanide with water. The building has a concrete floor, concrete walls and concrete roof. The floor of the building is slightly raised above the surrounding ground to prevent rainwater ingress.

The cyanide is stored with adequate ventilation to prevent build-up of hydrogen cyanide gas. The building walls have a number of permanently open vents and openable windows. The doorway entrance provides further ventilation when the doors are opened.

There are systems in place with the capacity to contain any spilled cyanide materials and minimise the extent of a release. The facility has an emergency response kit, including spill kit, supplied by Shuguang to respond to a spill. Additional spill kits are supplied by the customer when cyanide is being handled at the site.

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## 2.3 Principle 3 – Emergency Response

The Code requires that the consignor “**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:**

Shuguang is in FULL COMPLIANCE with Transport Practice 3.1 requiring the operation prepare detailed Emergency Response Plans for potential cyanide releases.

Shuguang and its transport subcontractors have developed detailed documents to cover emergency response for potential cyanide releases for cyanide transportation within China and Mongolia. The information is contained within Emergency Response Plans for Shuguang and each of its subcontractors.

The Emergency Response Plans are based on road transportation of sodium cyanide in 1,000 kg timber boxes.

The Emergency Response Plans are appropriate for the selected transportation route and they consider relevant aspects of the transport infrastructure. The route evaluation process, route hazard/risk assessment process, and operational experience was used by Shuguang to identify likely emergency scenarios. Mitigation measures have been identified for the key identified risks of snow storms and sand storms.

The Emergency Response Plans for transport consider the physical and chemical form of cyanide and design of the transport vehicle. The Interim Storage Facility’s Emergency Response Plan considers the design and open space layout of the storage facility.

The Emergency Response Plan and Emergency Response Programs include descriptions of response actions, as appropriate for the anticipated emergency situation. External responders identified in the documents are aware of their role in an emergency.

### 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:**

Shuguang is in FULL COMPLIANCE with Transport Practice 3.2 requiring it designates appropriate response personnel and commits necessary resources for emergency response.

Shuguang provides emergency response training of appropriate personnel including each of its subcontractors prior to each cyanide delivery.

Records of the completed training attendance registers were viewed for 2013.

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The Emergency Response Plans for Shuguang and each of its subcontractors identify the specific emergency response duties and responsibilities of personnel for the specific scenarios. The cyanide training provides additional detail of the responsibilities for each of the specific roles.

Shuguang and its subcontractors maintain lists of all of the emergency response equipment that should be available during the transport route. The equipment is checked prior to departure of each convoy.

**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:**

Shuguang is in FULL COMPLIANCE with Transport Practice 3.3 requiring that they develop procedures for internal and external emergency notification and reporting.

The Emergency Response Plan of Shuguang and its subcontractors contain procedures and current contact information for notifying the shipper, the receiver/consignee, outside response providers, and medical facilities of an emergency.

Copies of the Emergency Response Plans accompany each shipment of cyanide.

Shuguang and its subcontractors have procedures in place to ensure the contact numbers are kept current.

**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:**

Shuguang is in FULL COMPLIANCE with Transport Practice 3.4 requiring that it develops procedures for remediation of releases that recognise the additional hazards of cyanide treatment.

Shuguang has procedures for remediation, such as recovery or neutralisation of solutions or solids, decontamination of soils or other contaminated media and management and/or disposal of spill clean-up debris.

The Emergency Response Plans of Shuguang and its subcontractors include details on recovery and treatment of spills. A copy of these documents is kept in each of the convoy trucks and in the escort vehicle.

The training program which is delivered annually by Shuguang also contains requirements for remediation depending on the spill.

Shuguang's Emergency Response Plan prohibits the use of chemicals such as sodium hypochlorite, ferrous sulphate and hydrogen peroxide to treat cyanide that has been released into surface water. Shuguang's Emergency Response Plan provides oversight to the subcontractors' Emergency Response Plans.

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**2.3.4 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:**

Shuguang is in FULL COMPLIANCE with Transport Practice 3.5 requiring the operation periodically evaluate response procedures and capabilities and revise them as needed.

The Emergency Response Plans of Shuguang and its subcontractors contain provisions for periodically reviewing and evaluating the Plans' adequacy. The latest versions of the Plans were prepared between November 2012 and December 2013, indicating that the Plans are being kept up to date.

The Emergency Response Plan contains provisions for conducting mock drills and they are being implemented.

76 Shuguang employees attended a one hour Solid Cyanide Transportation Spill Accident Drill on 17 November 2012. Attendance records, a description of the drill plan and photographs were kept. The drill plan includes the details of emergency response processes. As part of the drill, the drill plan required the on-site Emergency Response Team to read the plan to all attendees.

The drill scenario comprised a spill on the roadway and involved the participation of the police and the ambulance authorities. Photographs showed police blocking off the roadway around a cyanide delivery truck and personnel in coveralls, gloves and gas masks shovelling up a spill of cyanide into plastic bags.

Mock drills, involving Shuguang and its subcontractors, are also undertaken prior to every cyanide delivery under supervision of Shuguang.

The Emergency Response Plans contain provisions for conducting a review after an incident. However, there have not been any cyanide incidents to date along the Supply Chain.

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## Report Signature Page

**GOLDER ASSOCIATES PTY LTD**

A handwritten signature in black ink, appearing to read 'T. Carmichael'.

Tom Carmichael  
ICMI Lead Auditor, Associate

TC/EWC/gf

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# **APPENDIX A**

## **Limitations**

## LIMITATIONS

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