



September 2012

## ICMI CERTIFICATION SUMMARY REPORT

**Hebei Chengxin Co Ltd,  
Yuanzhao Road, Yuanshi  
County, Shijiazhuang City,  
Hebei Province, 051130, China**

**Submitted to:**

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

Hebei Chengxin Co Ltd  
Yuanzhao Road  
Yuanshi County  
Shijiazhuang City  
Hebei Province 051130  
CHINA

REPORT



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## Table of Contents

<b>1.0 SUMMARY AUDIT REPORT FOR GOLD MINING OPERATIONS .....</b>	<b>1</b>
<b>2.0 LOCATION DETAIL AND DESCRIPTION OF OPERATION .....</b>	<b>1</b>
2.1 Mine Location .....	1
2.2 Background .....	1
<b>SUMMARY AUDIT REPORT .....</b>	<b>3</b>
Auditors Findings .....	3
Name of Other Auditors .....	3
Dates of Audit.....	3
<b>PRINCIPLE 1 – OPERATIONS .....</b>	<b>4</b>
<b>PRINCIPLE 2 – WORKER SAFETY .....</b>	<b>7</b>
<b>PRINCIPLE 3 – MONITORING .....</b>	<b>9</b>
<b>PRINCIPLE 4 – TRAINING .....</b>	<b>10</b>
<b>PRINCIPLE 5 – EMERGENCY RESPONSE .....</b>	<b>12</b>



## 1.0 SUMMARY AUDIT REPORT FOR CYANIDE PRODUCTION OPERATIONS

**Name of Cyanide Production Facility:** Hebei Chengxin Co Ltd  
**Name of Facility Owner:** Hebei Chengxin Co Ltd  
**Name of Facility Operator:** Hebei Chengxin Co Ltd  
**Name of Responsible Manager:** Zhi Qunshen, Hebei Chengxin Co Ltd  
**Address:** Hebei Chengxin Co Ltd  
Yuanzhao Road  
Yuanshi County  
Shijiazhuang City  
051130  
**State/Province:** Hebei Province  
**Country:** China  
**Telephone:** + 86 311 84635784  
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**E-Mail:** chengxin@hebeichengxin.com

## 2.0 LOCATION DETAIL AND DESCRIPTION OF OPERATION

### 2.1 Mine Location

Hebei Chengxin Co. Ltd is located at Yuan Zhao Road, to the east of Yuanshi County railway station, 2 kilometers east of Beijing/Guangzhou railway and No.107 Stated Road, 3.6 kilometers west of Beijing/Zhuhai speedway, 30 kilometers south of the province capital Shijiazhuang City. To the north is Yuan Zhao Road (400 metres), to the west is Jingyuan Road (400 metres), and to the east and south is farmland.


### 2.2 Background

Hebei Chengxin Co. Ltd. was established in 1990. It is a joint-stock enterprise with 4,000 employees. It is one of the largest production bases of cyanide and its derivatives in China. The company has been approved by the Quality Management System, Environmental Management System, Occupational Health and Safety Management System, and KOSHER. The company has the right for import and export. The products are sold to many countries and regions, including South America, North America, Europe, Asia, Australia, South Africa, etc.

The site is used to manufacture a large number of chemicals using liquid sodium cyanide as a basic feedstock. The part of the site used to manufacture liquid sodium cyanide and then convert the liquid sodium cyanide into solid sodium cyanide is referred to in this report as 'the cyanide facility'. The term 'the site' is used in this report to refer to the entire Hebei Chengxin Co. Ltd facility and includes a large number of manufacturing plants which use liquid sodium cyanide as feedstock; these manufacturing plants are not subject to this report.

The cyanide facility is connected to the site's utilities including stormwater drains and the site wastewater treatment plant. The cyanide facility does not have its own wastewater treatment plant.

Hebei Chengxin Co Ltd  
Name of Facility

  
Signature of Lead Auditor

27 September 2012  
Date



## ICMI CERTIFICATION SUMMARY REPORT

The cyanide facility was constructed in 2007 and replaced earlier cyanide production facilities. There have not been any major modifications to the cyanide facility since 2007.

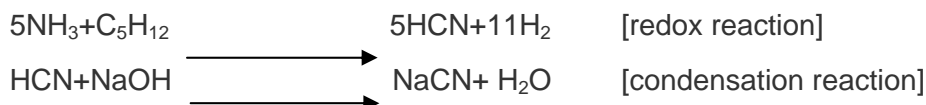
The feedstocks to the cyanide facility are light oil and ammonia (stored on site as liquid ammonia). These intermediate reactants react with the ammonia in an endothermic reversible partial reduction reaction producing a raw gas which is a mixture of hydrogen cyanide and hydrogen with small quantities of methane, oil fumes, coke particles and ammonia.

The coke particles in the product gas are removed in cyclones and recycled. The gas is then cooled in a heat recovery heat exchanger to less than 100°C and passed through a bag filter. This filtered hydrogen cyanide gas is passed through a sodium hydroxide absorber, which generates a 40% sodium cyanide liquor, which is transferred via overhead pipelines to bulk storage tanks.

The liquid sodium cyanide liquor then passes through overhead pipelines to the solid sodium cyanide plant where it is concentrated by evaporation in evaporation vessels under vacuum and then crystallised to produce sodium cyanide crystals. The sodium cyanide crystals are then passed through a centrifuge to remove moisture, then through a drier to remove more moisture and passed via a cyclone to the pelletising unit. The vapour from the evaporation unit is passed through a condenser to form condensate, which is stored in bulk above ground storage tanks at the liquid sodium cyanide tank farms prior to reuse in the absorption process.


The sodium cyanide crystals are pressed into pellets which are loaded into plastic bags in either 50 kg plastic drums or 1,000 kg timber boxes. The packaged cyanide is stored in the warehouse at the cyanide facility prior to despatch from site.

The main chemical reaction equation:



The facility is paved with concrete. The vessels and tanks containing liquid sodium cyanide, such as the absorption tanks, 40% liquid sodium cyanide tanks and condensate tanks are located within concrete bunded areas. The solid sodium cyanide production buildings are both self-bunded with concrete floors, concrete walls and bunds at each doorway. The cyanide facility does not generate any wastewater. The first flush stormwater is piped to a first flush system comprising two open concrete pits at the wastewater treatment plant which services the entire site (ie all the other chemical manufacturing plants of Hebei Chengxin Co. Ltd.)

Hebei Chengxin Co Ltd  
Name of Facility

  
Signature of Lead Auditor

27 September 2012  
Date



SUMMARY AUDIT REPORT

Auditors Findings

in full compliance with

The International Cyanide Management Code

Hebei Chengxin Co Ltd is:  in substantial compliance with

not in compliance with

Audit Company: Golder Associates
Audit Team Leader: Sophie Wheeler, Lead Auditor
Email: swheeler@golder.com

Name of Other Auditors

Table with 2 columns: Name, Position and Signature. Rows include Tom Carmichael, Kallan Deng, and Kate Qian.

Dates of Audit

The Certification Production Audit was undertaken within four days between 14 May 2012 and 17 May 2012.

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.

Hebei Chengxin Co Ltd
Signature of Lead Auditor: [Signature]
Date: 27 September 2012

Hebei Chengxin Co Ltd
Name of Facility
Signature of Lead Auditor: [Signature]
Date: 27 September 2012





## PRINCIPLE 1 – OPERATIONS

### Design, Construct and Operated Cyanide Production Facilities to Prevent Release of Cyanide

**Operations 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

**Operations Practice 1.1**

not in compliance with

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

The operation is in FULL COMPLIANCE with Production Practice 1.1 which requires that the design and construction of cyanide production facilities be consistent with sound, accepted engineering practices and quality control/quality assurance procedures.

The facility implemented quality control and quality assurance programs during construction of the cyanide production and storage facilities in 2007. Records have been retained of the quality control and quality assurance programs.

Materials used for the construction of plant and equipment containing or handling comprise stainless steel or carbon steel. Secondary containment is provided predominantly by concrete bunding and pavement. These materials are recognised as being compatible with cyanide.

The facility is designed to provide full containment within reaction vessels and pipelines in the event of a power outage or equipment failure. Hence, there is no need for inter-locks at the cyanide facility to provide containment in the event of a power outage or equipment failure.

The entire plant has been paved with concrete to minimise seepage to the subsurface.

Each cyanide process and storage vessel has been equipped with a level indicator and a high-level alarm.

Secondary containments for process and storage tanks and containers are constructed of concrete and concrete-rendered brickwork. The secondary containments of the 40% bulk cyanide storage tanks are sized to contain at least 110% of the volume of the largest tanks and are paved with concrete. The tanks are also lined with an outer layer of silica compound insulating material or metal sheeting to minimise the risk of projectile flow beyond the bund boundary in the event of a leak in the upper part of the tank.

The absorption area of the process comprises 16 steel vessels within two concrete paved areas. Both areas are surrounded by a concrete bund. At the time of the audit, the bunding of one area was of adequate volume and distance from the absorption tanks to ensure effective capture of any leakage. Following the audit Chengxin updated the bunding from the second area and photographs of the bunding was reviewed and the bund found to be of a suitable quality.

Spill prevention and containment measures are provided for all cyanide solution pipelines in the form of secondary metal casing or silica compound casing. The ground beneath the pipelines is paved with concrete and drains to the stormwater first-flush system which provides the final form of secondary containment.



## ICMI CERTIFICATION SUMMARY REPORT

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

in full compliance with

The operation is

in substantial compliance with

**Operations Practice 1.2**

not in compliance with

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

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

The 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 facility has procedures for contingencies during upsets in its activities that may result in cyanide exposures or releases. The facility's General Emergency Response Plan and Workshop Site Emergency Response Plan address responses to losses of HCN gas and spills of NaCN liquids.

The facility has a change management process to identify when site operating practices have or will be changed from those on which the initial design and operating practices were predicated.

Process parameters are monitored with necessary instrumentation, which is calibrated according to manufacturer's recommendations. The Calibration List for the Solids Production Plants (North and South) for 2012 lists over 330 instruments on the plant which require calibration during the year. The instruments include: high pressure gauges, vacuum pressure gauges, numerical temperature displays and flow meters. The calibrations are undertaken by an independent external qualified company.


Procedures have been implemented to prevent unauthorised/unregulated discharge to the environment of any cyanide solution or cyanide-contaminated water that is collected in a secondary containment area. Water collected in secondary containment areas is transferred to the site's first flush system for testing for total cyanide before being treated at the site's wastewater treatment plant.

The facility has environmentally sound procedures for disposal of cyanide or cyanide-contaminated solids. Solid cyanide is reprocessed through the production plant. Other contaminated items are decontaminated by washing, followed by incineration.

Cyanide is stored either in liquid form in the tank farms or in solid form in a secure, ventilated warehouse, where public access is prohibited and rainwater ingress is prevented.

Cyanide is packaged for transport in accordance with Chinese regulatory standards for packing of solid cyanide, which were prepared to meet the requirements of the United Nations Recommendation on the Transport of Dangerous Goods – Model Regulations, (2005) and thereby meet the requirements of the political jurisdictions through which the loads will pass.

Hebei Chengxin Co Ltd  
Name of Facility

  
Signature of Lead Auditor

27 September 2012  
Date



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

in full compliance with

The operation is

in substantial compliance with

**Operations Practice 1.3**

not in compliance with

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

The operation 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 containment bunds (addressing structural and corrosion concerns) are undertaken on a planned basis.

The inspection frequencies are considered to be sufficient to assure that equipment is functioning within design parameters.


12-hourly inspections are undertaken of the cyanide storage facility, including bunding, pipe work, flanges, pumps, high level alarms and tanks to identify deterioration and leaks.

The cyanide facility undertakes monitoring every 6 months of the wall thickness for pipes transferring cyanide solutions.

The cyanide facility undertakes monitoring of the thickness of vessels every 12 months.

Inspections are documented. The documentation identifies specific items to be observed and include the date of the inspection, the name of the inspector and any observed deficiencies. Corrective actions are identified, dated and records kept.

Hebei Chengxin Co Ltd  
Name of Facility

  
Signature of Lead Auditor

27 September 2012  
Date





PRINCIPLE 2 – WORKER SAFETY

Protect Workers’ Health and Safety from Exposure to Cyanide

Worker Safety

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 **Worker Safety Practice 2.1**

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

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

The site has developed operational procedures to minimize worker exposure during for their activities during normal plant operations from receipt of raw materials through finished product, and packaging. Shipping is undertaken by a sub contractor.

Maintenance related activities are covered by the ‘Maintenance Operating Procedure’ this discusses the use of safety permits and maintenance permits.

The change management procedure details what changes require implementation of the procedure. It details what type of work needs to be reviewed and by who, with process changes requiring review by both the cyanide department supervisor and the safety engineer. Safety equipment changes require review by the safety management department.

Employees have the opportunity to make suggestions regarding the procedures via ‘written suggestions’ which they can place in suggestion boxes.

All workers have a medical examination at the local hospital (Yuanshi County disease control centre) to assess their fitness to perform their specified tasks.

The PPE Management Procedure details the areas where the risk of hydrogen cyanide and cyanide dust is considered high and PPE including either a respirator with a filter (appropriate for cyanide) or with oxygen is worn.

Hydrogen cyanide monitoring equipment is maintained, tested and calibrated as directed by the manufacturer, and records are retained for at least one year.

The Departmental Level Management procedures detail that a buddy system must be used in the following areas or activities: cracking, the vacuum pump, pelletising and drying, carbon adding to the cracking furnace, centrifuge and maintenance of the vacuum pump.

The Clothes Exchange and Shower Procedure in the Departmental Level Management Procedures details that all employees and contractors must enter into the exchange room and exchange clothes before work, after the shift they must shower and exchange clothes again.

Warning signs for both sodium cyanide and hydrogen cyanide are placed in all process and storage areas. The signs include requirements for PPE

All personnel are prohibited from smoking, eating and drinking, and having open flames in areas where there is the potential for cyanide contamination. All process and storage areas have signs stating no smoking, no eating or drinking and no open flames.

Hebei Chengxin Co Ltd  
Name of Facility

*S. Wheeler*  
Signature of Lead Auditor

27 September 2012  
Date





### Worker Safety

**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 **Worker Safety Practice 2.2**

not in compliance with

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

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

The site has developed specific written emergency response plans and procedures for response to cyanide exposures. There are four main documents at a company and a department level and specific actions are included. There is also a document relating to environmental emergency response.

All storage and process tanks and piping are labelled to clearly identify the contents. The direction of flow for the pipes is clearly shown. Additional labelling was carried out during the audit after some improvements were suggested.

Showers and low pressure eye wash stations are placed in areas appropriate to hazards. A sample of showers and eye wash stations were tested during the site tour.

The facility has a decontamination policy or procedure for employees, contractors and visitors leaving the areas with the potential for skin exposure to cyanide.

The facility has water, oxygen, resuscitators, antidote and a means of communication or emergency notification readily available for use in the plant. These were inspected during the site tour.

Material safety datasheets are displayed adjacent to all storage areas and in all process control rooms in the cyanide department. The displays were of a very high quality adjacent to the tank farms. The displays are in Chinese, the language of the workforce.

The site has its own on-site capability to provide first aid or medical assistance to workers exposed to cyanide. The site has an on-site infirmary which is staffed 24 hours a day by three fully qualified doctors.


The facility has developed procedures to transport workers to locally available qualified off-site medical facilities.

The site have a cooperation contract with Yuanshi County Chinese traditional Hospital and Yuanshi County Red Cross Shuanghui Hospital the cooperation contracts were reviewed during the audit and they state that the hospitals are aware that they may have to treat cyanide exposure patients.

Four mock drills have been undertaken at the site since December 2011, the site plan to undertake at least two drills per year in the cyanide department.

The facility has a procedure to investigate and evaluate cyanide exposure incidents. It details an accident classification system which determines the type of investigation required. It details the accident report process and accident communication process. No cyanide exposure incidents have occurred in the last five years.

Hebei Chengxin Co Ltd  
Name of Facility

  
Signature of Lead Auditor

27 September 2012  
Date



PRINCIPLE 3 – MONITORING

Ensure that Process Controls are Protective of the Environment.

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

in full compliance with

The operation is

in substantial compliance with

Monitoring Practice 3.1

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

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

The facility does not have direct discharge to surface water. The facility has been designed, constructed and is operated as a zero discharge facility, with the exception of stormwater and rain water accumulating within secondary containment bunds. The plant facilities are located within curbed concrete containments to prevent cyanide spills and other releases from impacting upon the environment.

Stormwater is discharged indirectly to the environment via the site’s wastewater treatment plant and/or the municipal wastewater treatment plant in accordance with regulatory approvals.

Monitoring results indicate that the concentrations of total cyanide in releases from the site’s combined discharge of treated wastewater and stormwater have been less than 0.022 mg/L.

The facility monitors groundwater at four locations to the northwest, southwest and southeast as well as adjacent to the cyanide solution tank farm. The concentration of cyanide in the groundwater has been less than the regulatory limit of 0.05 mg/L and less than 0.022 mg/L.

No seepage or associated impacts upon groundwater has been detected from the facility.

The facility limits atmospheric emissions of hydrogen cyanide gas via an enclosed process and continuous monitoring, with alarm limits set to the regulatory standard of 5 ppm.

There are no surface water bodies in close proximity to the cyanide facility which require monitoring. The nearest river is approximately 9 km from the cyanide facility.

Monitoring is conducted at frequencies adequate to characterise the medium being monitored and to identify changes in a timely manner. Monitoring includes first flush stormwater (every rain event), groundwater (quarterly), air quality (quarterly on stacks, continuous ambient monitoring at the cracking furnaces) and wastewater (daily at the site’s wastewater treatment plant).





PRINCIPLE 4 – TRAINING

Train Workers and Emergency Response Personnel to Manage Cyanide in a Safe and Environmentally Protective Manner

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

[X] in full compliance with

The operation is

[ ] in substantial compliance with

Training Practice 4.1

[ ] not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

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

The facility trains workers to understand the hazards of cyanide through the three levels of training (company, departmental and operational). This training is provided before employees are allowed to work with cyanide.

On-going training is given in both monthly meeting and weekly meetings which includes use of the cyanide antidote, PPE training, emergency response, incident reports, maintenance work, maintenance permits, safety permit, toxicity mask training, SCBA training and hot work buddy requirements

The facility trains workers to perform their normal production tasks with minimum risk to worker health and safety in a manner that prevents unplanned cyanide releases through the three levels of training and weekly and monthly training.

The training elements that are necessary for each job are detailed in a booklet called 'Safety Training material'. The books are available after the course in the cyanide department control rooms. Training is provided by appropriately qualified people who undergo annual refresher courses at Shijiazhuang City Safety Department.

The effectiveness of emergency training is undertaken through three written tests associated with the three levels of training, as well as a selection of employees who are tested after each monthly training session.

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

[X] in full compliance with

The operation is

[ ] in substantial compliance with

Training Practice 4.2

[ ] not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in FULL COMPLIANCE with Production Practice 4.2; train employees to respond to cyanide exposures and releases.

Workers are trained in procedures to be followed if a cyanide release is discovered during company, departmental and operational training and well as monthly and weekly training

Workers are trained how to respond to exposure to cyanide through the induction three levels of training and on-going training. Mock drills are undertaken twice a year in the cyanide department. The local fire department has been involved in one of the mock drills. Training requirements are evaluated after these drills.

Hebei Chengxin Co Ltd
Name of Facility

Signature of Lead Auditor

27 September 2012
Date





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Training records are retained throughout an individual's employment. Each employee has a hard copy safety training record showing all the training they have received. It is signed by both the trainer and the employee. It lists the topics covered, and the exam results. The employees are required to demonstrate an understanding of the training material through three exams the results of which are kept with the training record. The training files for a number of employees both those who had joined recently and longer term workers, were reviewed during the audit. A summary of training is held electronically.

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Hebei Chengxin Co Ltd  
Name of Facility

  
Signature of Lead Auditor

27 September 2012  
Date



PRINCIPLE 5 – EMERGENCY RESPONSE

Protect Communities and the Environment through the Development of Emergency Response Strategies and Capabilities.

Emergency Response

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

[X] in full compliance with

The operation is [ ] in substantial compliance with Emergency Response Practice 5.1 [ ] not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

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

The Emergency Response Plan (ERP) has a section (IX) Sodium Cyanide Leakages which details the emergency response for potential releases of cyanide. Other sections of the plan deal with specific process areas at the site/ cyanide facility including the raw material storage areas, cracking furnace, finished product area, vacuum pump area and maintenance.

The ERP contains specific response actions including: control of any release at source; evacuation of workers and potentially affected communities; use of first aid measure and antidotes; and containment, assessment, mitigation and future prevention of releases.

Emergency Response

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

[X] in full compliance with

The operation is [ ] in substantial compliance with Emergency Response Practice 5.2 [ ] not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in FULL COMPLIANCE with Production Practice 5.2; involve site personnel and stakeholders in the planning process.

The facility has involved its workforce and stakeholders, including potentially affected communities, in the emergency response planning process.

The facility has involved local response agencies such as outside responders and medical facilities in the emergency planning and response process.

The ERP was issued to all departments and each department had specific training days where employees were disseminated information from the ERP and had the ability to comment on the ERP.

The Yuanshi County Fire Department visited the site in February 2012 to undertake training for fire prevention management. In addition the site have given the ERP to the Yuanshi County fire department and Yuanshi County Chinese traditional hospital and Yuanshi County Red Cross Shuanghui Hospital who passes it on to their own ambulance services.





Regular communications with stakeholders are undertaken to assure that the Plan addresses current conditions and risks.

The site communicates with the local communities through inviting a selection of people from the 20 surrounding villages within a 1 km radius of the site. The villagers have a tour of the facility and are able to discuss the production and storage of cyanide. The ERP is discussed during the visit.

A visit for emergency response planning took place in August 2011 when ten villagers were present and a second visit mainly for environmental information took place in May 2011 when 20 people were present.

**Emergency Response**

**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 **Emergency Response Practice 5.3**  
 not in compliance with

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

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

The ERP details the following emergency response teams: director, on-site director, departmental control team, medical team, security team and the support team. The cyanide department control team comprises of four control teams that cover every shift plus an additional day time team. Each control team has eight members.

The Emergency Response Plan details the call out procedures, emergency contact list, the duties and responsibilities of the emergency response teams, details of emergency response equipment and inspection procedures. The role of outside responders, medical facilities and communities is detailed in the ERP.

Outside entities included in the ERP have received a copy of the plan and the local fire department has taken part in one of the mock drills at the facility.

**Emergency Response**

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

in full compliance with

The operation is  in substantial compliance with **Emergency Response Practice 5.5**  
 not in compliance with

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

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

The ERP includes procedures and contact information for notifying management, regulatory agencies, outside responders and medical facilities and includes appropriate telephone numbers.

The ERP include procedures and contact information for notifying potentially affected communities of the incident and/or response measures and for communication with the media.

The System Document details that only the office manager is to communicate with the media.

Hebei Chengxin Co Ltd  
Name of Facility

S. Wheeler.  
Signature of Lead Auditor

27 September 2012  
Date





Emergency Response

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

[X] in full compliance with

The operation is [ ] in substantial compliance with Emergency Response Practice 5.2 [ ] not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

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

The ERP describes specific, appropriate remediation measures, such as recovery or neutralization of solutions or solids, 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.

The Environmental Accident and Emergency Response Plan details that remedial measures will include digging out contaminated soil, then decontaminating the soil using hydrogen peroxide in a concrete contained area.

It is not necessary for Hebei Chengxin to prohibit the use of cyanide treatment chemicals to neutralise releases into surface drainages as there are no surface waters within 9 km of the facility.

In the event of requirement for drinking water the site would purchase bottled water. They already have a contract with a supplier.

Emergency Response

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

[X] in full compliance with

The operation is [ ] in substantial compliance with Emergency Response Practice 5.6 [ ] not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

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

The ERP includes provisions for annually reviewing and evaluating its adequacy. The evaluation is undertaken by the vice president, managers, safety engineers, departmental managers and emergency response team members.

Four mock drills have been undertaken at the site in the since December 2011. The site plan to undertake at least two drill per year in the cyanide facility.

The facility has provision to evaluate the ERP after any emergency that required its implementation, and for revising it as necessary.

Chapter 11 of the ERP details that the ERP should be evaluated both after an emergency and is evaluated every year.

Hebei Chengxin Co Ltd
Name of Facility

Signature of Lead Auditor

27 September 2012
Date







## Report Signature Page

**GOLDER ASSOCIATES (UK) LTD**

*S. Wheeler*      *Dale Haigh*

Sophie Wheeler  
ICMI Lead Auditor/Project Manager

Dale Haigh  
Reviewer

Date: 27 September 2012

Author: Sophie Wheeler, Tom Carmichael/pr

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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.

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