

*CYANCO'S SUPPLY CHAIN IN MEXICO*

# *Cyanide Code Certification Audit*

*Hermosillo Distribution Center*

*Summary Audit Report*

*PROJECT NO. 0348831*

*AUGUST 2016*

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# SUMMARY AUDIT REPORT

## 1 GENERAL SUMMARY

### 1.1 INFORMATION ON THE AUDITED OPERATION

Name of Cyanide Transportation Facility: Cyanco Supply Chain in Mexico  
Name of Facility Owner: Winnemucca Chemicals, S.A. de C.V.  
Name of Facility Operator: Cyanco Supply Chain in Mexico  
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E-Mail: ben.cano@cyanco.com

Location detail and description of operation:

Cyanco operates a cyanide distribution center located in Hermosillo Sonora. Cyanide is handled in solution and briquettes in Mexico. Currently, Cyanco supplies several mines in Mexico. Cyanco operates under the commercial name of Winnemucca Chemicals, S.A. de C.V. in Mexico.

Cyanide is packaged by the manufacturer (Cyanco in the US) in the following ways:

- A 28-32% weight cyanide solution is prepared at the Winnemucca facility. The solution is loaded into rail-tanks.
- Cyanide solution is loaded in an ISO-tank mounted on a flatbed rail car
- Solid briquettes packaged in double bag within a wooden box containing 1-metric ton of cyanide and loaded in a sea container. Each sea container carries 20 boxes to prevent lateral movement. The sea container is mounted on a flatbed rail car.
- Solid briquettes loaded in an ISO-tank mounted on a flatbed rail car.

The sea containers and ISO-tanks are transferred from the flat bed rail cars to either a truck's chassis or to a designated storage area at the distribution center. Liquid cyanide is trans-loaded from the tank car to ISO-tanks mounted on a truck's chassis.

**This audit comprises the transport operations from the moment that cyanide is received at the Distribution Center, and the trans-loading, transfer and storage operations conducted at the Site.**

Liquid trans-loading operations are conducted at the facility by a team of five workers, being four the minimum required to perform these operations. Trans-loading operations consist of transferring liquid cyanide from a rail-tank car parked at the railway to an ISO-tank, hauled by a truck. The site is equipped with two Mobile Trans-loading Units (MTU) which are used to purge the rail-tank and the ISO-tank and then to trans-load liquid cyanide from the rail-tank to the ISO-tanks. The MTUs are equipped with chemical resistant hoses and stainless-steel pipes to

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prevent cyanide from being spilled. These operations are carried out within a secondary containment area equipped with a 25-m<sup>3</sup> plastic tank used to receive the contents of the secondary containment, including stormwater. Once the trans-loading operations are finished, the ISO-tanks are shipped to the client's facility through Cyanco's certified supply chain in Mexico.

Transfer operations consist in moving sea containers and ISO-tanks from flatbed railcars to awaiting chassis' or to the storage area using a reach stacker. These operations are performed by a team of three workers. Once the transfer operation is completed the sea containers and ISO-tanks are shipped to the client's facility through Cyanco's certified supply chain in Mexico.

Other operations performed at the facility include:

- Occasional opening of sea containers for Customs inspection and to repair intermediate bulk containers (IBC) that have been inspected by Customs. The facility has developed procedures to safely conduct this operation. In case of custom inspection, lack of sea container tag, or container failure, then cyanide boxes would be moved using a forklift to the concrete secondary containment to review the integrity of the packaging material and repair it if required; the boxes would then be moved back to the sea container.
- Empty sea containers and ISO-tanks are transferred from chassis to flatbed rail cars for transport back to the US.
- Sea containers and ISO-tanks are also received in trucks through Cyanco's certified supply chain in Mexico for their storage and latter shipment to the client.

### 1.2 OVERALL AUDITOR'S FINDING

This operation is

- in full compliance
- in substantial compliance \*(see below)
- not in compliance

with the International Cyanide Management Code.


\* For cyanide transportation operations seeking Code certification, the Corrective Action Plan to bring an operation in substantial compliance into full compliance must be enclosed with this Summary Audit Report. The plan must be fully implemented within one year of the date of this audit.

Audit Company: ERM Mexico, S. A. de C. V.

Audit Team Leader: Juan Carlos Rangel Lopez E-mail: [juancarlos.rangel@erm.com](mailto:juancarlos.rangel@erm.com)

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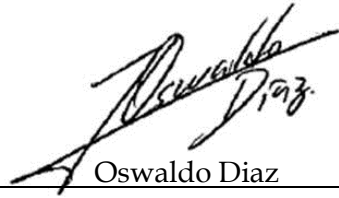
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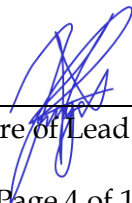


Names and Signatures of Other Auditors: Metzli Katsurada Oswaldo Diaz  
Date(s) of Audit: 29 June 2016

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 CYANCO DISTRIBUTION CENTER (CYANCO HERMOSILLO) REPORT

This operation is

- in full compliance
- in substantial compliance
- not in compliance

with the International Cyanide Management Code.

#### **2.1 OPERATIONS:** *DESIGN, CONSTRUCT AND OPERATE CYANIDE PRODUCTION FACILITIES TO PREVENT RELEASE OF CYANIDE*

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

The operation is

- in full compliance with
- in substantial compliance with Operations Practice 1.1
- not in compliance with

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

No records regarding the quality control and quality assurance performed during the initial construction were available; however, there are certification records that the facility was constructed according to specifications. These certifications were issued by the Tecnovias in 2014 for both the civil works and the trans-loading units.

According to the as built drawings and specifications the trans-loading area was built with a geo-liner on top of the ground and then concrete slab. The area where the rail-tank is park also has secondary containment and a fiberglass coating. The secondary containment includes a below-grade sump of 0.42 m<sup>3</sup> and connected to a pump that discharges to a 25-m<sup>3</sup> plastic tank.

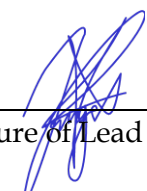
According to the documents reviewed, the design of the trans-loading system was done considering the materials (cyanide) to be handled (i.e. chemical resistant hoses, stainless-steel pipes and connections, etc.). Specifications of the materials and equipment are kept on record.

The ISO-tanks and container handling areas were completed in June 2016 and consist of the following sections:

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- 1: Transfer area,
2. Maneuvering area
- 3: Storage area

According to the soil mechanics survey conducted by the company Geotecnia del Noreste on 19 May 2016, the soil at the new area was built following the guidelines established in the ASTM D1557:

- A layer of 15 cm of silty lime mixed with 5% of Portland concrete compacted at least 95%.
- A layer of at least 25 cm, highly concreted, compacted at least 95%.

As quality control, three core samples of the improved soil were collected by Geotecnia del Noreste on 14 June 2016, the results were still pending at the time of the audit.

Although there are no overfilling alarms, the system is designed to return any excess flow to the rail-tank as there are connections that would take any excess flow back to the rail-tank. In the event of a power outage the liquids would remain in the piping, the ISO-tank or the rail-tank.

All pipelines are located within the secondary containment of the trans-loading area; this is considered to be sufficient containment measure for the pipelines.

As previously noted the trans-loading operation is performed on a concrete slab constructed on top of a high density polyethylene (HDPE) liner. The slab was constructed with 10-cm high walls and slope that would lead any liquid to a 0.4 m<sup>3</sup> below-grade sump. The sump is equipped with an automatic submersible pump that would discharge any liquid to a 25-m<sup>3</sup> HDPE aboveground tank.

The HDPE tank is periodically cleaned to ensure its containing capacity in case of a spill occurs. During clean-ups, the content of the tank is shipped and disposed of by an authorized third party in order to ensure that no more of 5m<sup>3</sup> of the tank's capacity is used.

No solid cyanide handling is conducted on-site as part of normal operations. If solid cyanide handling is needed, the operation is conducted within the secondary containment area.

### **2.1.2 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 Operations Practice 1.2
- not in compliance with

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

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Cyanco has developed 18 operational procedures including the following, among other:

- Rail-tank to ISO-tank trans-loading (trans-loading procedure)
- Management of Change
- Pollution prevention
- Personal protective equipment use
- Medical attention
- Incident investigation
- New Exchange process using reach stacker
- Reach stacker verification list
- Daily inspection
- Conditions verification prior to the beginning of operations.

The trans-loading procedure includes very detailed instructions for the operators and drawings to allow easy understanding. It also establishes the minimum number of operators required and the activities to be performed by each one. The operation was observed during the audit; the operators were confident and had a great communication among them and with the supervisor. The trans-loading procedure also includes the prohibition of doing trans-loading operation during extreme weather conditions.

Cyanco has an emergency generator at the trans-loading area to prevent that power outage would interrupt their operation.

Additionally, Cyanco has an emergency response program that includes specific instructions to respond to different scenarios, including soil and liquid releases.

Cyanco has a management of change procedure (MoC procedure). This procedure is applied by Cyanco before implementing new projects or installing new equipment on site. The procedure is also applied when changes are suggested by the operators or when original spare-parts are not available. The MoC is implemented using a form/checklist that requires completing a risk assessment (based on 12 criteria).

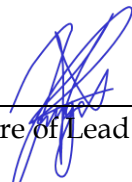
Additionally, prior to performing a new activity, (i.e. solid cyanide handling), the Cyanco's personnel involved in the new activities perform a Job Hazards Analysis, in which all the steps of each activity are evaluated with their respective potential risks and/or unsafe conditions and new controls are suggested in order to reduce or control the potential risk. All of these inputs are managed into the MoC procedure.

There are a limited number of equipment units that are used in the trans-loading operations and that are subject to preventive maintenance including an air compressor. These are performed by external contractors based on operation hours. All the parts and the facility are inspected on a daily basis to identify any corrective maintenance needs.

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Cyanco leases the reach stacker unit from a third party company, its maintenance is performed by the owner company based on operation hours, which are established in the lease agreement. Additionally, before starting operations Cyanco performs a check list in order to ensure that the equipment is in good conditions. In case that any failure is detected the operations will be immediately stopped.

No instrumentation is used in the trans-loading operation. All the operators have personal cyanide detector calibrated with the low (4.7 ppm) and high (10 ppm) alarms. The detectors are under a preventive maintenance program provided by the detectors supplier. The program includes monthly inspection and 90 day calibration. According to the records reviewed, the detectors were last calibrated in March 2016; calibration and functionality was also confirmed during the audit.

All liquids collected in the trans-loading area's secondary containment are stored in a HDPE tank. These liquids could include water from eye wash and emergency shower testing, storm water, etc. The accumulated liquids are sent to a mine or disposed of by an authorized third party when the tank reaches 5m<sup>3</sup> of its capacity to ensure that secondary containment is sufficient at all times.

In case that cyanide dust is generated during container inspections and resealing activities, it is collected and handled as hazardous waste.

Cyanco has a pollution prevention procedure that indicates that any solid contaminated with cyanide must be disposed of as hazardous waste according to Mexican regulations. The personnel protective equipment used during the trans-loading operation is rinsed within the trans-loading area and stored for reuse; the rinse water is collected in the HDPE tank. No solids contaminated with cyanide are generated as part of the normal operations of the facility.

All operations are performed outdoors. The rail-tanks, sea containers, and ISO-tanks are also parked outdoors, so there is no potential for build-up of hydrogen cyanide gas. Additionally, the tanks, and the containers protect the product from contact with water.

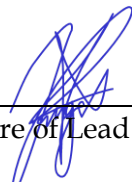
The facility is completely fenced with wire mesh; it has CCTV surveillance and security personnel to prevent unauthorized access. Cyanco keeps a record of all site personnel and subcontractors that access the facility.

As previously mentioned, cyanide is received in sea containers and ISO-tanks. Sea containers are not opened at the distribution center (unless required by Customs). The production site is responsible for labelling the wooden boxes. Containers and ISO-tanks are inspected to ensure they are accurately identified with placards identifying the material transported in accordance with the Mexican Transportation Regulations.

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### 2.1.3 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

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

Daily facility inspections are performed by a designated operator. The inspection is documented through the daily operations report. The inspection includes reviewing parked trucks, trailers, ISO-tanks and tank-cars, operational areas, trans-loading equipment. The facility is inspected on a daily basis even if no trans-loading operations are scheduled for that day.

As part of the operation procedures, the valves, pipes and hoses are reviewed while making the connections to identify any deterioration or leakage.

The 25-m<sup>3</sup> HDPE tank is also inspected to verify that no more than 5m<sup>3</sup> of its capacity are used. This is done to ensure the availability of the tank's capacity in case that a spill occurs. In case that the tank is filled up to more than 5m<sup>3</sup>, the content is sent to a mine or disposed of by an authorized third party company.

As previously noted, the trans-loading operation was designed so that any product in excess is automatically returned from the ISO-tank to the tank-cars. Any deficiency and corrective actions are recorded in the daily operations report. The deficiencies and progress are tracked through the daily report; the deficiency is kept in the subsequent reports mentioning progress in the correction and it is last mentioned in the report for the day when the deficiency was closed.

The sea containers do not have volumetric capacity to transport more than 20 tons of cyanide. ISO-tanks do not have volumetric capacity to exceed 18 ton. Truck chassis can only transport one container or ISO-tank.

### 2.2 WORK SAFETY: PROTECT WORKER'S HEALTH AND SAFETY FROM EXPOSURE TO CYANIDE.

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

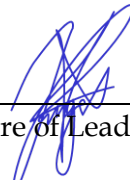
The operation is

- in full compliance with

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- in substantial compliance with Production Practice 2.1
- not in compliance with

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

As previously noted, Cyanco has developed 24 operational procedures including the following, among others:

- Tank-car to ISO-tank trans-loading (trans-loading procedure).
- Container transfer
- Management of Change
- Pollution prevention
- Personal protective equipment use
- Medical attention
- Incident investigation

Documents mentioned above include a description of the safety measures that personnel should adopt in order to conduct routine and non-routine activities. As well as the EPP required according to the activity developed.

During site maintenance activities, the subcontractors should adopt the measures included in the procedures developed by Cyanco. The interviewed Cyanco's employees were familiar with these procedures.

Cyanco has a management of change procedure (MoC procedure). Procedure is applied by Cyanco before implementing new projects or installing new equipment on site. The procedure is also applied when changes are suggested by the operators or when original spare-parts are not available. The MoC is implemented using a form/checklist that requires completing a risk assessment (based on 12 criteria).

Safety procedures are reviewed and updated as result of the potential impacts identified, if required. To date, one change has been implemented following the MoC procedure.

Cyanco has a written procedure that establishes that all employees can propose improvements in the operations; also, the management of change procedure identifies the operators as the main actors that can trigger a change. Furthermore, as previously noted, to date one change has been implemented following the MoC procedure and it was started by one of the operators.

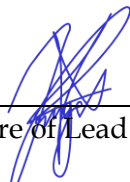
Additionally, Cyanco's personnel conducts Job Hazards Analysis prior to performing any new activity, the analysis includes the risk identification, assessment and control measures.

According the activities currently conducted in the site, there are not areas where workers could be exposed to hydrogen cyanide gas and sodium cyanide dust at more than 4.7 parts per million (5 mg/m<sup>3</sup>). However, Cyanco terminal has three hydrogen cyanide portable gas detectors.

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Detectors are used by the workers in charge to operate the trans-loading operations. Portable gas detectors are calibrated according to the manufacturer recommendation through a certified third party company. The detectors' low alarm is set at 4.7 ppm and the high alarm at 10 ppm. The portable gas detectors calibration certificates are retained by the site at least one year. In the event that a 4.7 ppm or higher concentration is detected, the workers have a half mask respirator that should use to evacuate the site.

Cyanco policies determine that any activity in the trans-loading area should be performed using a buddy system. Additionally, all employees carry radios to make sure they can promptly communicate any situation. If radio communication fails, the activity is stopped.

Employees' health is assessed at hiring and then every six months. The assessment is performed by a physician who issues a health certificates. Records are kept on file. The medical examination includes blood and urine test, visual capacity, reflexes, electrocardiogram, and medical history.

The access to areas where there is the potential for cyanide contamination is restricted. Only employees wearing the splash protective suite are allowed to access this area. Prior to leaving the area, the suite is rinsed with fresh water and left in the access to the area for later use.

Warning signs advising workers that cyanide is present and the required personal protective equipment are placed in the facility including cyanide trans-loading area and in the containers and ISO-tanks parking areas. There are warning signs placed in the site, indicating that smoking, eating, and drinking are prohibited in areas where cyanide is stored and handled. Eating and drinking is allowed only in office areas. There is an area designated to smoke, which is away from cyanide handling and storage areas.

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

The operation is

- in full compliance with
- in substantial compliance with Production Practice 2.2
- not in compliance with

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

The facility has the procedure CDO-Expo-013 to attend personnel that has been exposed to cyanide. Procedure is applied by the Emergency Response Brigade members.

The members of the site emergency response brigade are trained to provide first aids to workers exposed. However, if external assistance is required, exposed workers are transported to the CIMA or San José hospitals. Availability of antidote kits was confirmed during the audit.

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Additionally, the facility has the procedure MEX-UNI-EHSS-PLN-005(AT MD) V2.0, which includes typical symptoms of cyanide exposure as well as first aid measures to be taken. Furthermore, the procedure includes the route to the nearest hospital CIMA Hospital, which has an agreement with Cyanco to attend personnel potentially exposed to cyanide releases.

There are showers and eye wash stations in the trans-loading area. These are inspected on a daily bases and tested prior to every trans-loading operation. The inspection is recorded on a Safety Checks Pre-Operation Form.

Fire extinguishers are available through the facility and are inspected on a daily basis as part of the general site inspection. Additionally, extinguishers are maintained by a contractor on a monthly basis and this is recorded.

Site emergency response equipment includes: oxygen tank, antidote, four autonomous breathing equipment, spills kits, first aid kit, hydrogen cyanide gas detectors, gases masks and communication radios. The availability and operability of this equipment was confirmed during the audit. Site inspects first aids equipment, cyanide antidote kits and emergency response equipment monthly. The emergency response equipment is stored in a locked area with air conditioning. Additionally, records of the latest inspections were reviewed. The inspection checklist includes expiration dates of the first aid items.

Cyanide Material Safety Data Sheets (MSDS) are available in the trans-loading area and offices. MSDS are in Spanish language and site personnel is aware the information they contain.

Workers that handled cyanide are members of the Emergency Response Brigade; and, they are trained to provide first aids if required.

Pipes in the trans-loading area are properly identified with their content and flow direction. Tank-cars, ISO-tanks and sea containers are labeled with their content.

As previously noted, access to areas where there is the potential for contact with cyanide (trans-loading area) is restricted to employees only. To enter the area the employees must wear the required personnel protection equipment, which includes splash protection suite, chemical resist plastic boots and globes, face shield, hardhat, and safety glasses. Prior to leaving the area the personal protection equipment must be rinsed with fresh water; the equipment is left at the access to the area for its later use.

The site has first aid kits, cyanide antidote and trained personnel as part of their capabilities to provide first aid to workers exposed to cyanide. Furthermore, if external assistance is required, site has an agreement with the San José Hospital where workers exposed could be assisted; the procedure includes the route to this hospital. The interviewed personnel were knowledgeable with the use of the antidote kit.

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The site has the exposure response procedure MEX-UNI-EHSS-PLN-005(AT MD) V2.0 that includes the address and route to the nearest hospital. Cyanco has provided training to personnel from two hospitals on medical attention to exposed workers. Cyanco also provided an antidote kit to the nearest hospital.

The site has an annual mock emergency drills program, which include scenarios with exposed employees. Lessons learned are used to update emergency response procedures, if required.

The site has a procedure to investigate incidents. Investigation and evaluation of incidents have not been required; the site has no incidents reports.

**2.3 MONITORING:** *PROTECT COMMUNITIES AND THE ENVIRONMENT THROUGH THE DEVELOPMENT OF EMERGENCY RESPONSE STRATEGIES AND CAPABILITIES*

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

The operation is

**THIS PRACTICE DOES NOT APPLY TO THE OPERATION**

- in full compliance with
- in substantial compliance with Production Practice 3.1
- not in compliance with

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

Cyanco site does not have direct or indirect discharges to surface water bodies Wastewater potentially contaminated with cyanide is sent to mine sites to be integrated in the mines cyanide circuit. Additionally, routine operations at the site do not generate hydrogen cyanide gas emissions. Therefore, this practice is not applicable to the operation.

**2.4 TRAINING:** *TRAIN WORKERS AND EMERGENCY RESPONSE PERSONNEL TO MANAGE CYANIDE IN A SAFE AND ENVIRONMENTALLY PROTECTIVE MANNER*

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

The operation is

- in full compliance with
- in substantial compliance with Production Practice 4.1

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not in compliance with

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

Cyanco has a training program delivered by Cyanco's senior personnel which includes cyanide management. Workers and contractors are trained when they are hired; this training includes instructional videos with testing sections. Cyanco training program includes the following topics:

- Product safety information
- Management procedures
- Emergency response
- First aid procedures
- Antidote use.

The training material and work procedures developed by the site includes, in general, the necessary elements for the jobs related to the site activities. The training program includes a written test. Cyanco issues a diploma to the workers who approve the course. Prior to beginning the operations, a worker must conduct cyanide trans-loading operation drills; no cyanide is managed during these drills. A worker is required to obtain a score of 100% prior to actually handle cyanide. Trans-loading drill evaluations are kept by the Site. . The operation drills that must be conducted by the operators as part of their training are completed with senior operators and directed by the supervisor or by senior staff from the US. Cyanco has a training procedure to ensure training for each activity is provided by supervisors. Site management and supervisors were trained directly by Technical Services Manager (from Cyanco's facility in Winnemucca).

Additionally, workers receive training related to the following topics:

- Evacuation, search and rescue
- Fire control
- Introduction to civil protection
- HCN monitoring
- First aid
- Forklift use
- Reach stacker use
- Emergency response brigade information
- Operation of surveillance circuit (CCTV)

Refresher training is provided on a yearly basis. Additionally, other training programs related to civil protection, waste management, and emergency brigades are included. Workers' training records are kept on-site by Cyanco.

According to documentation reviewed, all site personnel have received the above mentioned training.

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General evaluation of the training provided to the site employees is done after induction/training sessions or drills. Evaluation records are kept by the site. The site personnel received specific training regarding the use, storage and cleaning of the personal protective equipment from Cyanco HSE staff. Moreover, Cyanco has developed procedures for each activity conducted on-site; these procedures include specific personal protective equipment to be used.

Additionally, refresher training regarding personal protective equipment is provided during safety meetings prior to the beginning of the activities. Attendance records are collected during these meetings.

Contractors must receive training on cyanide management and operations depending on the tasks to be performed. Cyanco issues training diplomas prior to the start of operations by the contractors.

### **2.4.2 Transport Practice 4.2: Train employees to respond to cyanide exposures and releases.**

The operation is

- in full compliance with
- in substantial compliance with Production Practice 4.2
- not in compliance with

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

Workers receive training regarding response to cyanide exposure and releases during induction training, the operational drills and the emergency drills. Training evaluation records are kept by the Site.

Additionally, the Site keeps an Emergency Response Brigade, which has been trained in the following topics by instructors authorized by the Federal Labor Agency:

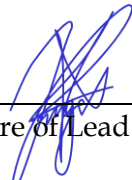
- Evacuation, search and rescue
- Fire control
- Introduction to civil protection
- Emergency response brigade information
- First Aid

Emergency Response Brigade has been trained to provide assistance to workers exposed to cyanide. Training includes the use of the cyanide antidote kit owned by the site and transportation to the hospital. Besides, the site has a commercial agreement with the CIMA

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hospital and San José to assist workers exposed if required. The training includes practice in the use of the antidote kit.

The site has an annual emergency drills program including worker exposure scenarios. Lessons learned during drills are used to update emergency response procedures if required. Modifications to emergency response procedures are notified to the site employees.

The site keeps training records and evaluation results of all trained workers and contractors.

### 2.5 **EMERGENCY RESPONSE: PROTECT COMMUNITIES AND THE ENVIRONMENT THROUGH THE DEVELOPMENT OF EMERGENCY RESPONSE STRATEGIES AND CAPABILITIES**

#### 2.5.1 **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

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

The site has developed and implemented an Emergency Response Plan and safety procedures in case of cyanide release (liquid solution or solid), fire and explosion, among others; including potential releases of cyanide during trans-loading operations. The Site Emergency Response Plan includes potential failure scenarios at the trans-loading facility including cyanide release, intoxication, fire and explosion.

The Site Emergency Response Plan and safety procedures include specific actions in case of cyanide release, explosion and fire. The plan also includes evacuation procedure and cyanide containment, assessment and mitigation measures to prevent future releases. Additionally, Cyanco has a procedure for medical attention, including use of cyanide antidotes and first aid kits; this procedure includes a route to the CIMA Hospital, which is equipped with an antidote kit, and the San José Hospital. Both hospitals have received training regarding attention to cyanide exposure.

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

- in full compliance with

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- in substantial compliance with Production Practice 5.2
- not in compliance with

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

The site Emergency Response Plan and safety procedures were prepared by site personnel.

Local emergency response agencies such as the State Civil Protection Agency, Fire Department and the CIMA and San José hospitals have been trained by Cyanco, been informed of their responsibilities in case of emergency during the training, participated in the implementation of the site emergency response plan, and participated in emergency drills.

The Site is located within a remote industrial area. The Site has a procedure to inform neighboring facilities regarding emergency procedures. The Site has informed the nearest facility and civil protection authorities regarding its operations. The site submitted an internal civil protection program to the civil protection authorities; this program includes a copy of the emergency response procedures. Additionally, Cyanco has visited local universities to explain the site operations and cyanide management.

According to the Emergency Response Plan, and the procedure for informative talks with neighboring facilities, Cyanco provides training to the neighbors and external responders on a yearly basis and perform at least one emergency drill per year involving them.

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

The operation is

- in full compliance with
- in substantial compliance with Production Practice 5.3
- not in compliance with

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


Site workers and site management personnel are members of the site emergency response brigade. Their roles are described in the civil protection plan. Cyanco's Mexico Logistics and Safety Manager is the brigade coordinator and the Operations Chief is the person in charge of the internal and external communications in case of emergency.

The members of the emergency response brigade have been trained by qualified Cyanco personnel and by instructors authorized by the Federal Labor Agency.

The role of the local emergency response agencies is described in the emergency response plan; they are considered in the emergency drills to be conducted by the site.

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The site has an updated emergency telephone numbers list. It includes telephone numbers of the local emergency response agencies and Cyanco representatives.

Emergency response equipment is inspected monthly using a checklist. Its availability and operability, in general, was confirmed during the audit. The inspection checklist includes information specific to perishable items (i.e. antidote kits and first aid kits) in order to replace them prior to the expiration date. The rest of the emergency response equipment was observed to be available and operable. Records from October 2015 to June 2016 were reviewed.

External entities as the Police Department, Fire Department, and State Civil Protection Agency are aware of their involvement in the site emergency plan; they have received training on cyanide emergency response from Cyanco and have participated in the site emergency drills conducted by the site.

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

The operation is

- in full compliance with
- in substantial compliance with Production Practice 5.4
- not in compliance with

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

As mentioned above, the Emergency Response Plan includes an emergency telephone numbers list, where telephones numbers of the nearest hospitals (CIMA hospital and San José hospital), local emergency agencies and the Cyanco representatives are included. The Plan also establishes a list of elements of the emergency response brigade, which states who is responsible for calling the external responders and authorities.

The Site is located within a remote industrial area. According to the incident scenarios simulation, no sensitive receptors or communities would be impacted if an incident takes place on-site. The contact directory includes the names of the emergency response agencies and authorities that would be notified in case of emergency.


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

The operation is

- in full compliance with
- in substantial compliance with Production Practice 5.5
- not in compliance with

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

The facility has the MEX-OPS-EHSS-PRO-0013-(PDM) V1.0 procedure for decontamination and sampling which describes specific measures to be followed when any material is suspected to be contaminated with cyanide. In case of cyanide contamination, all materials will be treated as hazardous waste and stored in the hazardous waste storage area. For decontamination of reusable equipment, the procedure includes a rinse with fresh water, then rinse with a 5% sodium hypochlorite solution, and finally triple rinse with fresh water. The procedure includes the materials to be used, the PPE to be worn for sampling, and the criteria to determine the number of samples to be collected. The procedure includes a form to record the collection of samples. The procedure states that the samples must be analyzed for cyanide by an external laboratory.

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

The operation is

- in full compliance with
- in substantial compliance with Production Practice 5.6
- not in compliance with

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

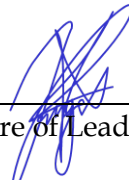
The site has an annual emergency drills program. Emergency drills are evaluated by the site management. Learned lessons from the emergency drills are considered to update the Emergency Response Plan and procedures if required. The modifications to the Emergency Response Plan and procedures are notified to the site workers.

The plan includes an emergency drill program with several events per year. Additionally the plan establishes the date for the next review. The Emergency Response Plan does not formally state that it should be reviewed and updated after any emergency. However, during the site interviews, workers and site management employees were aware that the plan should be reviewed in case of emergencies.

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