



**Cyanco Hermosillo Distribution Center  
Sodium Cyanide Solution**

**ICMI Cyanide Code Re-Certification Audit**

**SUMMARY AUDIT REPORT**

**Submitted to:**

**International Cyanide Management Institute**

**1400 I Street, NW, Suite 550**

**Washington, DC 20005**

**USA**



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## INFORMATION ON THE AUDITED OPERATION

Company/Client:	Winnemucca Chemicals, S.A. de C.V/ Cyanco Hermosillo Distribution Center
Street:	Km 23 Carretera Sahuaripa-Hermosillo, Hermosillo, Sonora, Mexico
City/State	
Company Contact:	Benjamin Cano – Director Mexico Cyanide Operations Team Lead  Office 01152-662-800-1745   Mobile 01152-1-662-167-0680   Email: <a href="mailto:ben.cano@cyanco.com">ben.cano@cyanco.com</a>
Type of Audit:	ICMI Cyanide Code 3rd Party Recertification Audit
Standard	ICMI Cyanide Code: Cyanide Production Verification Protocol
Audit Dates:	August 13 - 14, 2019
ICMI Approved Lead and Technical Auditor:	Bruno Pizzorni  Email: <a href="mailto:icmc@cnauditing.com">icmc@cnauditing.com</a>
Scope:	Transloading and transfer operations at the Hermosillo Distribution Center

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## LOCATION DETAIL AND DESCRIPTION OF OPERATION:

Cyanco has cyanide production facilities in Winnemucca, Nevada and in Alvin, Texas. Cyanco started producing liquid sodium cyanide in Winnemucca in 1990 and solid sodium cyanide at the Alvin plant 2012. Cyanco has terminal operations in Cadillac, Quebec and in Hermosillo, Sonora, Mexico. The scope of this ICMI recertification audit is for the Hermosillo Distribution Center (the Terminal).

Cyanco in Mexico is a consigner for sodium cyanide supply in solution and briquettes, supplying several mines in the country. Cyanco operates the Terminal under the commercial name of Winnemucca Chemicals, S.A. de C.V.

From the manufacturing facilities, liquid and solid cyanide is transported to the Mexico-US border by Union Pacific rail (part of Cyanco's certified supply chain in the US). Then, in Mexico, cyanide is received and transported by Ferromex railroad company, which delivers the rail tanks and flatbed cars to the Hermosillo Terminal.

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

- Liquid sodium cyanide at 28-32% loaded into rail-tanks and into ISO tanks mounted on flatbed rail cars.
- 20 tons (t) solid sodium cyanide in briquettes packaged in double bags within a wooden box containing 1-metric ton of cyanide (Intermediate Bulk Containers or IBC) and loaded into a 20 feet sea container. Each sea container carries 20 boxes to prevent lateral movement. The sea container is mounted on a flatbed rail car.
- 17 t of solid sodium cyanide briquettes loaded into ISO tanks mounted on a flatbed rail car.

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

This audit comprises the transfer, transloading and storage operations from the moment that Ferromex delivers cyanide at the Hermosillo Terminal.

The Terminal comprises a multi purpose-built structure that houses material handling equipment and associated facilities (clothes change rooms, equipment storage, office, ablutions, guard house and yard area). The Cyanco Terminal started operations in 2015 transferring cyanide solution from rail cars to truck's ISO tanks. In 2016 began transloading sea containers with solid

cyanide in IBC's from rail cars to trucks, and in 2018 began transferring cyanide from IBCs to truck ISO tanks for solid cyanide transportation.

Liquid transfer operation is conducted by a team of five workers, being four the minimum required to perform these operations. The operation consists in transferring liquid cyanide from a rail-tank car parked at the railway to ISO tanks, hauled by trucks. 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 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.

Solid transfer operations consist of transferring solid sodium cyanide from IBC's to ISO tank containers to transport cyanide dry rather than shipping it liquid. IBC's are stored in the Terminal in a temporary shelter area within 20' sea containers at the Terminal before being moved to the transloading area. The IBC's are open and the cyanides pellets are discharged into ISO tank containers at the Terminal's solid transfer installations area. This operation is performed at least by 3 workers. Cyanco solid cyanide transfer facility at Hermosillo was constructed to supply mine site customers in Mexico with cyanide transported within ISO tanks.

Transloading operations consist in moving sea containers and ISO tanks from flatbed railcars to awaiting chassis' or to the storage area using a reach stacker. This operation is performed by a team of three workers.

Once the transfer and transloading operations are 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 the IBC's 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.

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### Auditor's Finding

This operation is

**X in full compliance**

- in substantial compliance
- not in compliance

with the International Cyanide Management Code.

This operation has maintained full compliance with the International Cyanide Management Code throughout the previous three-year audit cycle. During the previous three-year audit cycle, this operation did not experienced noncompliance with Code requirements, significant cyanide incidents requiring notification to ICMI and/or cyanide exposures or releases.

Audit Company: CN Auditing Group, LLC  
Audit Team Leader and  
Production Technical Auditor: Bruno Pizzorni  
E-mail: icmc@cnauditing.com  
Date(s) of Audit: August 13 and 14, 2019

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 Production Operations and using standard and accepted practices for health, safety and environmental audits.

Cyanco Hermosillo Distribution Center  
Operation




Lead Auditor

August 14, 2019  
Date

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Cyanco Hermosillo Distribution Center  
Operation



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## **Principle 1 – Operations: Design, construct and operate cyanide production facilities to prevent release of cyanide**

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

The operation is

- ✓ in full compliance with Production Practice 1.1
- in substantial compliance with
- not in compliance with

Summarize the basis for this Finding:

For the initial construction at the Terminal, no records of quality control (QC) and quality assurance (QA) were available, as stated in the previous ICMI certification audit report from 2016, but there were certification records that the facility was constructed according to specifications. During this recertification audit, the auditor confirmed the facility keeps these QA/QC records. Appropriately qualified personnel reviewed the facility construction and provided documentation that it was built as proposed and approved.

According to the as built drawings and specifications, the initial transfer area was built with a geoliner on top of the ground and then concrete slab. The area where the rail-tank is parked also has secondary containment and a fiberglass coating. The secondary containment includes a below-grade sump connected to a pump that discharges to a 25-m<sup>3</sup> plastic tank. The facility was built with chemical resistant materials (e.g. stainless steel, pumps for chemical use, dripless connections, etc.) specifications of the materials and equipment are kept on record.

In 2017 additional construction was added to the transfer facility: the entire area of the cyanide transfer operations was roofed with *tejaban* (industrial metal roofing) supported by a steel structure, and a hopper for solid cyanide transfer was installed, along with extended and improved area of concrete pavement. Construction contractor issued a letter confirming the suitability of the materials quality and roofing impermeability. The auditor also reviewed a third-party inspection report regarding welding's quality of the steel structure, where all its recommendations were followed. The steel vendor also issued a letter certifying the quality of the stainless steel used. Drawings with the cutter bin specifications are signed by Cyanco engineers. In 2018 Civil Defense approved the file containing the technical construction reports as well as the signed and sealed as built plans for the new construction.

Materials used for construction of cyanide production facilities are compatible with the reagents used and the processes employed. The site is equipped with two Mobile Transloading Units (MTU) which are used to purge the rail tank and the ISO tank and then to transload liquid cyanide from the rail tank to the ISO tanks. The MTUs are equipped with chemical resistant hoses and stainless steel pipes to prevent cyanide from being spilled.

Stainless steel is used for process equipment that meets cyanides during box to bulk transfer operations. The ISO tanks into which cyanides are transferred are constructed in carbon steel.

The area around where cyanides are transferred is sealed with concrete that was in good condition at the time of inspection. The lowest point of the concrete sealed system is a sump in the pit that acts as a secondary containment for the ISO tank during transfer operations. A recovery tank has been installed at ground level to provide storage capacity for potential cyanide solution pumped from the pit sump.

The cyanide solution pump and associated hoses and pipework are fabricated from a range of materials including poly vinyl chloride, mild steel and rubber.

Automatic systems to shut down production systems and prevent releases due to power outages or equipment failures are not used at the Terminal due to safety features designed both for cyanide in solution and solid. The Terminal has electrical systems that shut down production to prevent releases due to power outages or equipment failures. In the event of a power outage all pumping activities will stop and the solution would remain in the piping, the ISO tank or the rail-tank.

Cyanide is managed on a concrete surface that can minimize seepage to the subsurface. Concrete surfaces protect the ground throughout the transfer facility where cyanide is managed. According the as built drawings and specifications, the transfer area was built with a geoliner on top of the ground and then concrete slab. In occasion of the construction for the solid cyanide transfer installations in 2017, the existing pavement was improved. During the sit visit, the auditor confirmed the concrete pavement is adequate to provide a competent surface against underground infiltration.

Although there are no overflowing alarms, the transfer operations for cyanide solution is designed to ensure that no overflowing takes place as there are connections that would take any excess flow back to the rail tank. ISO tanks have a peephole which is a visible lever indicator allowing the observer to visually control the liquid level. This process is ruled by the Standard Operating Procedure (SOP) *Transfer of Solution Cyanide in Tank Car to an ISO Tank*, which includes revision of conditions before starting operations and ISO tank and mobile moving unit review, among other controls.



For solid transfers, the access hatch to the ISO tank is opened after the vessel had been placed on place. At this point, the operator inspects the interior of the ISO tank to verify that liquids or solids remaining are in the acceptable range of volume established. This step is prompted by the box to ISO tank checklist, and the volume identified is required to be reported to the Supervisor. Operators can readily see whether the transfer hopper has sufficient capacity to hold a bag of cyanides before introducing it to the hopper for discharge.

Secondary containments are provided for the transfer area, which is constructed of materials that provide a competent barrier to leakage, and which is sized to hold a volume greater than that of the unique tank within the containment and any piping draining back to the tank. Transfer operations are 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 from cleaning activities or a spill during cyanide solution transfer operation, to a unique 25-m<sup>3</sup> HDPE aboveground tank which is periodically cleaned to ensure its containing capacity in case of a spill occurs. During clean-ups, the content of the tank is shipped to a client as water with 2% in contents of cyanide or 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.

For solid cyanide transfers, the auditor considers that the release of the entire ISO tanks inventory of cyanide is not a credible failure scenario and that the loading bay is therefore very conservatively sized with the capacity to hold a volume significantly more than that of one ISO tank. The spillage of one bag (IBC) of cyanides, due to the overfilling of a hopper by one bag is the only credible scenario. Although the building housing the transfer facility is provided with roofing, flood by storm capacity is not a significant consideration as this area is on an elevated embankment with respect to the surroundings.

Spill containment measures are provided for cyanide solution pipelines. The only pipes with cyanide are those of the solution transfer system of the Mobile Transfer Unit (MTU). The other tube is the one that collects the water from the sump to the recovery tank. Additionally, all the couplings of the transfer operation are hermetic.

All cyanide solution pipelines are located within the paved area of the transfer facility. Any water contaminated with cyanide is drained into a containment pit, a suction pump is used to remove the liquid from the pit to the recovery (storage) tank.

***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 Production Practice 1.2
- in substantial compliance with
- not in compliance with

Summarize the basis for this Finding:

The Terminal has procedures, policies and plans that describe the standard practices (SOPs) necessary for its safe and environmentally sound operation. These procedures address such matters as process description, the use of personal protective equipment (PPE) and cyanide test kits, pre-transfer inspection and other preparations by the operating team and detailed instruction for the transfer/transload operation, including cautions and notes regarding hazardous aspects. Procedures include detailed instructions and drawings to allow easy understanding for the operators.

Contingencies procedures during upsets in its activities that may result in cyanide exposures or releases are addressed in the related SOPs, as appropriate. The transloading/transfer procedures include the prohibition of operation during extreme weather conditions such as heat (118 °F in summer), rain or windy (above 25 mph) conditions.

Cyanco has an emergency generator to prevent that power outage would interrupt their operation. In addition, Cyanco has an emergency response program that includes specific instructions to respond to different scenarios, including solid and liquid releases.

The facility has a procedure to identify when site operating practices have changed from those on which the initial design and operating practices were predicated. The *Procedure for the Management of Change* (MOC) is applied before implementing new projects or installing new equipment on site. Any proposed change in a procedure, installation or equipment is first analyzed by the Terminal Manager and the Health, Safety and Environmental (HSE) Supervisor. The procedure is also applied when changes are suggested by the operators. The MOC is implemented using a form/checklist that requires completing a risk assessment.

Preventive maintenance programs are implemented, and activities documented for equipment and devices necessary for cyanide production and handling. Periodic inspections are undertaken by the Terminal personnel to identify any corrective maintenance needs.

There are a limited number of equipment units that are used in the transfer/transloading operations that are subject to preventive maintenance: the hoist, cutter bin, vortex valve, dust collector, reach stacker, forklifts, tractor truck, double diaphragm pump and compressor. Installations subject to maintenance are floors, ramps and recuperation tank among others. Equipment maintenance is performed by external contractors based on operation hours. 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.

Process parameters are monitored with the necessary instrumentation. 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 calibration. According to the records reviewed, the detectors were calibrated according the manufacture's recommendations during the recertification period.

The *Waste Management* and the *Procedure of Cleaning and Decontamination of Transport Equipment* are environmentally sound procedures to prevent unauthorized/unregulated discharge to the environment of any cyanide solution, cyanide-contaminated water that is collected in a secondary containment area, including management of solids contaminated with cyanide.

All water collected in the secondary containment of the transfer facility is pumped into the recovery tank where it is temporarily stored prior to its final disposal. The hopper is wiped down rather than washed at the end of each transfer limiting the production of wastewater. Liquid collected in the transfer area could include water from eye wash and emergency shower testing, storm water, cleaning water or any spill, among others. The accumulated liquid is 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.

The *Cleaning Procedure of Equipment and Tool Contaminated with Cyanide*, the *Waste Management* procedure and the *Procedure of Cleaning and Decontamination of Transport Equipment* deal with environmentally sound procedures for disposal of cyanide or cyanide-contaminated solids. Cyanco has a pollution prevention procedure indicating that any solid contaminated with cyanide must be disposed of as hazardous waste according to Mexican regulations. Used PPE is rinsed within the operations area and stored for reuse; the rinse water is collected in the recovery tank. No solids contaminated with cyanide are generated as part of the normal operations of the facility. Cyanide empty wooden boxes are sent for incineration in the kilns of the neighboring cement factory and the plastic used bags, PPE and other contaminated waste arising from housekeeping (cleaning cloths and sweepings) are placed in used cyanide boxes (sealed when full) to its adequate final disposal by licensed contractor.

The storage of cyanide at the Terminal has adequate ventilation to prevent the build-up of hydrogen cyanide gas. The Terminal stores solid cyanide, pending to transfer into ISO tanks, in 20' maritime containers, also stores rail tanks waiting for liquid cyanide transfer operations in an open yard. All operations are performed outdoors. The rail tanks, sea containers, and ISO tanks are parked outdoors, so there is minimal potential for build-up of hydrogen cyanide gas.

The opening of shipping containers is subject to a procedure requiring ventilation and atmospheric testing prior to entry by means of an HCN gas detector. The roofed area for transfer/transload operations has excellent natural ventilation.

Cyanide is stored with measures to avoid or minimize the potential for exposure of cyanide to moisture. Maritime containers and rail tanks provide protection for material exposure to moisture due to their design.

Containers are stored at the Terminal's yard on a platform elevated above ground level to avoid floods hazards. According to the *Risk Diagnosis* study of July 2017 carried out on the occasion of the roofing project for the cyanide transfer area, the flood risk is low as the site is found on a flat plain of little slope but at a height slightly greater than that of the surrounding areas, being unlikely the presence of flood events.

It is noted that cyanide is stored in double layers of plastic lining within wooden boxes within shipping containers. Hence, there are substantial measures to minimize the potential for exposure of cyanide to moisture. No transfer/transloading operation is done under rainy conditions.

Cyanide is stored in a secure area where public access is prohibited. The facility is completely fenced with wire mesh, including the rail cars entrance gate to the Terminal where is a gate and a guardhouse with 24-hour security guard controlling access to the Terminal. All the place has Close Circuit Television (CCTV) surveillance and security personnel to prevent unauthorized access. Cyanco keeps a record of all site personnel and subcontractors that access the facility. Security is 24 hours 7 days per week. Ferromex rail company, the rail cars operator, is certified in the Custom Trade Partnership Against Terrorist (CTPAT).

There are procedural arrangements to ensure that the cyanide supplied by Cyanco in Mexico is packaged as required by the political jurisdictions through which loads will pass. Placards and other signage is used to identify the shipment being dispatched from the Terminal as liquid or solid cyanide, as required by national and international regulations or standards.

The placards used on containers, include United Nations (UN) numbers and dangerous goods class labels, both of which are prescribed in the UN Model Regulations and the IMDG Code (International Maritime Dangerous Goods Code). Both on arrival and departure of containers in

rail cars and trucks, the containers are checked at the Terminal to ensure that all signage is in place.

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

The operation is

- ✓ in full compliance with Production Practice 1.3
- in substantial compliance with
- not in compliance with

Summarize the basis for this Finding:

The Terminal conducts routine inspections of the recovery tank, valves, pipelines and, containments at the transfer/transload areas and storage facilities. The major plant items that require inspection are those used in the handling of sodium cyanide both from tank rails and from boxes through the transfer system to the ISO tanks. The checklists developed by Cyanco address the inspection of these facilities for their integrity and signs of leaks in significant detail.

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, tank rails, operational areas and transfer/transload equipment. As part of the operation procedures, the valves, pipes and hoses are reviewed while making the connections to identify any deterioration or leakage.

Inspection frequencies are sufficient to assure that equipment is functioning within design parameters. The facility is inspected on a daily basis even if no trans-loading operations are scheduled for that day. Inspections are documented. The documentation identifies specific items to be observed and includes the date of the inspection, the name of the inspector, and observed deficiencies.

The nature and date of corrective actions are documented on the inspection forms. The inspection records are retained. The checklists incorporate a table detailing identified corrective actions, the status of the corrective actions and the review of the status of the corrective actions raised by previous inspections.

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## Principle 2 – Worker Safety: Protect workers’ health and safety from exposure to cyanide

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

The operation is

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

Summarize the basis for this Finding:

The Terminal has developed formal procedures to minimize worker exposure during normal plant operations, non-routine and emergency operations; and maintenance related activities. The procedures in use confirm that they describe safe practices, and the level of detail contained in the procedures is commensurate with the risks involved with the task. The process description details the context for safe operation and states important assumptions underpinning safe operation such as the functions of key equipment, required manning levels and the use of PPE. Procedural documents describe safe operating practices in an integrated way that simplifies the use of documentation to guide operating personnel on how to undertake their tasks whilst minimizing exposure to cyanide.

The Terminal has implemented the *Management of Change* (MOC) procedure to review proposed process and operational changes and modifications for their potential impacts on worker health and safety and incorporate the necessary worker protection measures. This requirement is understood to invoke the controls used to administer the Terminal operating procedures. The formalized elements for reviewing proposed process and operational changes and modifications, or their potential impacts on worker health and safety; are managed through this procedure. Changes to operating practices are not intended to occur without the direct involvement of the Terminal Manager and the HSE Supervisor.

The facility solicits worker input in developing and evaluating health and safety procedures. 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. Additionally, Cyanco’s personnel conducts Job Hazards Analysis prior to performing any new activity, the analysis includes the worker input on the risk identification, assessment and control measures. The *Safety and Health Policy for Employees* establish that workers can communicate their input regarding health and safety procedures to their



direct supervisor at any time and to the immediately superior boss, and that these should consider the opinions and ideas expressed by the operations staff.

There is an established dialogue between the supervisor and workers. At the beginning of each working day, the workers and the supervisor hold daily 5 to 15 minute safety meetings, where, among other issues, workers can give their feedback on the safe work procedures. Workers also have these opportunities during frequent face-to-face training talks with the supervisor.

The facility has monitoring devices to confirm that controls are adequate to limit worker exposure to HCN gas to 4.7 ppm or less. The detectors' low alarm is set at 4.7 ppm and the high alarm at 10 ppm. Seven portable gas detectors *GasBadge® Pro - Industrial Scientific* are used on-site to monitor areas or tasks where the concentration of cyanide gas can exceed 4.7 ppm. In case of detecting HCN levels higher than 4.7 ppm, the Terminal's contingency procedures states to evacuate personnel who are near the danger zone.

The HCN monitoring equipment is maintained, tested and calibrated in a manner consistent with the directions of the manufacturer. The facility has a docking station to calibrate by bump test the HCN detectors. Cyanco has provided documentation to demonstrate that these units have been calibrated periodically, according to the manufacturer's recommendation. The portable gas detectors calibration certificates are retained by the site at least one year.

The Terminal has identified the operation areas and activities where workers may be exposed to HCN gas or sodium cyanide dust and requires the use of personal protective equipment as necessary in these areas when these activities are being performed. During their activities in these areas, the workers use portable gas detectors; as previously mention, the alarm in the detectors is set at 4.7 ppm. In the event that a 4.7 ppm or higher concentration is detected, the workers should evacuate the area. Exposure to harmful concentrations of cyanide is possible depending on the operations being conducted.

There are defined PPE requirements applicable to entry to the transfer/transload operation areas. Signs erected, training materials and standard operating procedures (SOPs) set out requirements for the use of defined PPE. The SOPs dealing with these operations are related on entering to the transfer/transload operations area: *Personal Protection Equipment, Transfer of Solution Cyanide in Tank Car to an ISO Tank, Sodium Cyanide 98% IBC to ISO Container Transloading and Decontamination Procedure*.

The facility has provisions to ensure that a buddy system is used. Cyanco policies determine that any activity in the transloading area should be performed using a buddy system. Workers can communicate with each other for assistance or help where deemed necessary as all employees carry radios to make sure they can promptly communicate any situation. If radio communication fails, the activity is stopped. The SOPs addresses that at least two operators must be present for

any operation involving fitting connections, loadings, preventive maintenance, reach stacker operations and internal cargo movements.

The facility assesses the health of employees to determine their fitness to perform their specified tasks prior to commencing employment. Employees' health is assessed at hiring and then every six months. The assessment is performed by a physician who issues a health certificate. Records are kept on file. The health assessment process of the workers is tracked in a matrix that indicates the date and provides evidence that the medical exams were carried out on the workers. It includes evidence of medical exams performed during the recertification period. Tests taken also assessed the physical suitability of employees to undertake their respective tasks at the Terminal.

The facility has a clothing change procedure for employees, contractors and visitors to areas with the potential for cyanide contamination of clothing, is detailed in the *Decontamination Procedure*. This procedure calls to eliminate the *Tychem* suits once used; the anti-splash suits used during cyanide solution transfer operations, should be rinsed with fresh water under the shower. Rubber boots and other reusables PPE must be kept in the locker once decontaminated for later use. 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.

Warning signs advising workers that cyanide is present and that, if necessary, suitable PPE must be worn, are located around the site. Warning signs are placed in the facility including entrances, cyanide transfer/transloading area and in the containers and ISO tanks parking areas.

Personnel are prohibited from smoking, eating and drinking, and having open flames in some areas where there is the potential for cyanide contamination. There are warning signs placed in the site, indicating these prohibitions 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.



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

Summarize the basis for this Finding:

The Terminal uses a specific written emergency response plan developed by Cyanco, to respond to cyanide exposures. The documented *Global Transportation Emergency Response Plan* (GTERP) addresses all of the Code requirements for the production and transportation of cyanide. The plan was reviewed and was found to be acceptable. All scenarios are considered in the plan and the roles of the different emergency responders are discussed. In addition the Terminal has the procedures *Medical Care* and *Rescue Plan* to attend personnel that has been exposed to cyanide, to be applied by the Emergency Response Brigade members.

The Terminal has two showers, low-pressure eye wash stations in the cyanide transfer area and non-acidic fire extinguishers located strategically throughout the Terminal. Showers, low-pressure eye wash stations are inspected on a daily basis and tested prior to every operation. The eyewash and shower stations are supplied with water from an artesian well located at the Cemex cement factory located nearby, which feeds through a dedicated pipe and a pump, to an elevated tank of 1 m3. Inspections are recorded on a *Safety Checks Pre-Operation Form*. Additionally, the Operations Supervisor checks the correct realization of the pre-use checklist.

Dry powder fire extinguishers were observed throughout the Terminal, for a total of 32 extinguishers between 5 and 6 kg capacity. No carbon dioxide fire extinguishers were observed. Fire extinguishers are available through the facility and are inspected periodically as part of the general site inspection. Extinguishers are maintained by a contractor on a monthly basis.

The facility has oxygen, antidote, means of communication and an automatic defibrillator (resuscitator) readily available for use in the plant. The site emergency response equipment includes oxygen tanks, amyl nitrite ampoules, autonomous breathing equipment, spills kits, first aid kit, gas masks and communication radios. The availability and operability of this equipment was confirmed during the audit.

The facility has a very complete emergency response equipment, in the mobile unit stationed at the cyanide storage area. This mobile unit is an expressly conditioned *state of the art* container equipped with the latest technology, equipment and services to move and meet emergencies both

at the Terminal and on the route for transportations accidents, due to cyanide spills, exposure and cyanide contamination.

The site inspects its first aids equipment, cyanide antidote kits and emergency response equipment to assure that it is available when needed. The antidote kit contents, and first aid equipment are checked weekly. The emergency response equipment is stored locked in the mobile unit with air conditioning. The inspection checklist includes expiration dates of the first aid items. The checklist requires to check the water pressure, blockages and leaks for the eye washes and showers. A section in the checklist is also provided to note comments and corrective actions.

Material Safety Data Sheets (MSDS) and first aid procedures on cyanide safety are in Spanish, the language of the workforce and are available to workers in the Terminal at the transference area and administrative offices, where all employees have access to the files, both for liquid and solid cyanide. MSDS are dated from 2018.

All equipment containing cyanide is properly identified at the Terminal: rail cars containers, sea containers, ISO tanks, IBCs, the recovery tank, and piping in the Mobile Trans-loading Units containing cyanide, are identified to alert workers of their contents and the direction of flow in pipes. Shipping containers packed with cyanide boxes (IBCs) and ISO tanks delivered for transfer operations are clearly labelled.

Containers used for the storage of IBCs at the Terminal prior to transfer and the area used to store waste boxes, bags, liners and used personal protective equipment (within used IBCs) are also clearly identified to alert workers of their contents. The content of the cyanide infrastructure (e.g. hopper, recovery tank, etc.), and directions of flow (where relevant) are designated using stickers.

The facility has the *Decontamination Procedure* for employees, contractors and visitors leaving areas with the potential for skin exposure to cyanide. As previously noted, access to areas where there is the potential for contact with cyanide (transfer/transload 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 Terminal has its on-site capability to provide first aid assistance to workers exposed to cyanide. The procedure: *Medical Care* and the *Rescue Plan*, complemented by the *GTERP* (emergency response plan) describe the site capabilities as well as first aid measures to be taken. The site has first aid kits, cyanide antidote and trained personnel to provide first aids. to workers exposed to cyanide. If external assistance is required, the site has agreements with *CIMA* the *San*

*José* hospitals where workers exposed could be assisted; the procedure includes the route to these hospitals.

The Terminal workforce has received first aids training both from internal and external providers. The training included the administration of oxygen and amyl nitrite and oxygen.

The facility describes in its procedure *Medical Care* and in the *GTERP* emergency plan, the steps to follow to transport exposed workers to locally available qualified, off-site medical facilities. The procedure includes the address and routes to the nearest hospitals. Cyanco has provided training to personnel from two hospitals (*CIMA* and *San Jose*) on medical attention to exposed workers.

In the event of any cyanide exposure it is required the first person on the scene to notify the Terminal Supervisor for response. In the event of cyanide exposure the worker will receive first aids at the Terminal and ambulance from hospitals will be dispatched. Contact numbers are visibly located on the wall of the Terminal administrative offices.

The facility has alerted local hospitals of the potential need to treat patients for cyanide exposure. The notification has been conducted through letters and meetings with *CIMA* and *San José* hospitals. The auditor reviewed the confirmation letter of the agreement established with the *CIMA* hospital, signed by Dr. Burgos, indicating that they have an environment for decontamination of patients, then the terminal staff visited the hospital.

Following a review of the conditions of each hospital and the suitability of the hospitals to meet Cyanco's needs in case of an emergency with cyanide, Cyanco selected these two hospitals and implemented cooperation agreements to respond to a cyanide related emergency. The Terminal has since issued the hospitals with instructions on how to administer sodium cyanide antidotes. The operation is confident that alerted local hospitals have adequate, qualified staff, equipment and expertise to respond to cyanide exposures.

In addition, Cyanco Winnemucca is a member of the *Advisory Committee on Hazardous Materials* of the state of Sonora and as such they meet monthly with Civil Defense authorities, police and emergency responders such as firefighters and hospitals.

Mock emergency drills are conducted periodically to test response procedures for various exposure scenarios. The site has an annual mock emergency drills program, which include scenarios with cyanide spills and exposed employees. Lessons learned are used to update emergency response procedures, if required. The purpose of the simulation drills is to test the procedures, equipment, and resources described in the *Rescue Plan* and the *GTERP*. These emergencies require each simulation drill to be evaluated and a report produced, including final

recommendations which have been documented in the debrief reports and responsible persons have been assigned to close out the required actions.

The site has the procedure *Incident Report* in place to investigate and evaluate incidents, including cyanide exposure and spill incidents to determine if the Terminal's programs and procedures to protect worker health and safety and to respond to cyanide exposures are adequate or need to be revised. The procedure requires all incidents to be reported to Terminal Manager for investigation and corrective action using the Cyanco incident reporting and investigation procedure. The site did not report any cyanide related incident during the recertification period.

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**Principle 3 – Monitoring: Conduct environmental monitoring to confirm that planned or unplanned releases of cyanide do not result in adverse impacts.**

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

The operation is

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

Summarize the basis for this Finding:

This Production Practice is not applicable to the operation. The site does not have indirect discharges to surface water bodies. According to Winnemucca Chemicals, S.A. de C.V/ Cyanco Hermosillo Distribution Center specific permissions and as stated in the Comprehensive Environmental License, the facility does not require monitoring because it does not have indirect and/or direct discharges to surface water bodies. Therefore, no cyanide concentrations in groundwater is monitored. Wastewater potentially contaminated with cyanide is sent to mine sites to be integrated in the mines cyanide circuit or is disposed with a specialized contractor as hazardous material.

The site has a pavement that acts as a competent barrier against water infiltration into soil or underground water, as the project was prepared following the guidelines established in the ASTM D1557 with a layer of 15 cm of silty lime mixed with 5% of Portland concrete compacted at least 95% and a second layer of at least 25 cm, highly concreted, compacted at least 95%. The as built drawings and specifications shows the transfer/transload 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. Based on the hazards identification of the emergency plan, the plant floor where all the transfer/transload operations are performed, is provided with a water proof concrete slab, and due to the absence of open water sources nearby, the auditor considers there is no potential to affect underground water.

Routine operations at the site do not generate hydrogen cyanide gas emissions. The Terminal has a transfer hopper which is a closed space consisting of doors with automatic closing system, designed to receive and discharge the sodium cyanide from polypropylene bags to the ISO tanks. The transfer hopper has negative internal pressure, generated by a fan that controls emissions of cyanide particles to the environment.

## Principle 4 – Training: Train workers and emergency response personnel to manage cyanide in a safe and environmentally protective manner

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

The operation is

- ✓ in full compliance with Production Practice 4.1
- in substantial compliance with
- not in compliance with

Summarize the basis for this Finding:

The facility provides training to his workers to understand the hazards of cyanide and refresher training is annually conducted. Instruction material deals with risks of cyanide, poisoning symptoms, alert and first aids, medical treatment, investigation of facility failures, cyanide emergencies and cyanide recognition. The procedures to follow in the event of exposure are set out.

Cyanco has a *Training Policy* and a *Training Calendar* delivered by Cyanco’s senior personnel which and by an external trainer provider. Workers and contractors are trained when they are hired; this training includes instructional videos with testing sections. Cyanco training includes product safety information, cyanide management procedures, emergency response, first aid and antidote use, among others, as showed in the training records for the recertification period. Training regarding general safety issues and general procedures related to the site is provided through a series of videos. Records were made available to demonstrate workers training records, including annually refresher training and the evaluations made after cyanide awareness training since last certification audit.

The facility trains all the workers in the use of personal protective equipment (PPE), as well as in when and where this equipment is required. The procedure *Personal Protection Equipment* introduce the items of personal protective equipment used at the Terminal under specific circumstances and locations. PPE requirement at the transfer/transload area are, depending on the task performed.

The facility trains its workers to perform their normal production tasks to minimize risk to worker health and safety and in a manner that prevents unplanned cyanide releases.

The operators are trained on the Terminal as soon as they are integrated to the operation. In the normal course of events, the Terminal Supervisor provides the “classroom” training and then follows up with on-plant training in the operating procedures. The Terminal Supervisor gives trainees the job procedures to read through and reviews their progress and understanding with them. When the trainee is confident of the learning, the Terminal Supervisor carries out an oral test in the procedures. This is undertaken whilst walking around the site, so the trainee can demonstrate a practical understanding. Prior to beginning transfer/transloading operations on site, workers must perform drills operating with no cyanide. Workers are evaluated during these drills; a worker is required to obtain a score of 100% prior to work with cyanide.

The material used to train workers on cyanide solution transfer operations and for sodium cyanide box to bulk operations are the respective SOPs, *Transfer of Solution Cyanide in Tank Car to an ISO Tank* and *Sodium Cyanide 98% IBC to ISO Container Transloading*, which are comprehensive.

Appropriately qualified personnel provide the training. The Terminal Manager, the Operations Supervisor and the HSE Supervisor train Terminal operators. There is a sound base of technical expertise in the team of people involved in providing training, both in general and to the cyanide operations. Site management and supervisors were trained directly by Technical Services Manager (from Cyanco’s facility in Winnemucca). Recognized Mexican training and services companies specialized in firefighting and safety consulting, also provides training services to the workers.

Employees are trained prior to being allowed to work with cyanide. The *Training Policy* and SOPs state that operators are not able to work until they have been trained in the task to conduct. They received theoretical training in classroom, then practical training at the facility about the tasks related to cyanide operations: cyanide boxes, cyanide transfer and transloading both in solution and solid, manipulation of dangerous chemical products, MSDS and equipment decontamination between others.

The facility evaluates the effectiveness of cyanide training by testing. Evaluation quizzes are used to evaluate the effectiveness of cyanide management training. The results of the quizzes are filed in connection with the training conducted. Minimum score is required to pass the course. Verbal questioning and on the job observation by the Terminal Supervisor are also mean of assessment for work procedures.



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

The operation is

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

Summarize the basis for this Finding:

Cyanco trains the Terminal workers in the procedures to be followed if a cyanide release is discovered. The *GTERP* (emergency response plan), complemented by the *Rescue Plan* notes all Terminal personnel are to be trained how to recognize an emergency, notify the emergency response team and practice in implementing the emergency plans. Also specifies that emergency response personnel must be trained to cope with emergencies.

To assist in the implementation and tracking of the emergency plans training requirements, the facility has a training matrix. The matrix details the training elements covered, the level of training, the date of the training, the people trained, and the supporting evidence of the training performed.

The facility trains its workers to respond to cyanide exposures and performs drills to test and improve their response skills. 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 *CIMA* and *San José* hospitals to assist workers exposed if required. The training includes practice in the use of the antidote kit.

Cyanco's emergency response planning require simulation drills in the implementation of the emergency respond to be carried out to test the procedures, equipment, and resources described in the plans, and to train personnel in emergency responses. Drills are planned to be conducted periodically, including cyanide related drills of worker exposure and spill scenarios. Lessons learned during drills are used to update emergency response procedures if required.

Emergency drills are evaluated from a training aspect. The purpose of the simulation drills is to test the procedures, equipment, and resources described in the emergency plans, and to determine if personnel have the knowledge and skills required for effective response.

Training records are retained throughout an individual's employment documenting the training they have received, including the names of the employee and the trainer, the date of training, the topics covered. Records are maintained in an Excel spreadsheet-style database.



Training files retained for Cyanco specific training include original assessment records for individual participants, demonstrating how their knowledge was assessed and details of their assessments. Copies of certificates issued to employees are also retained in the record keeping system.

**Principle 5 – Emergency Response: Protect communities and the environment through the development of emergency response strategies and capabilities.**

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

The operation is

- ✓ in full compliance with Production Practice 5.1
- in substantial compliance with
- not in compliance with

Summarize the basis for this Finding:

The facility has developed emergency response plans to address potential releases of cyanide that may occur on-site or that require response, including transportation emergencies. The Emergency Response Plan (ERP), comprised of Cyanco’s corporative *GTERP (Global Transportation Emergency Response Plan)* and complemented by the Terminal’s *Rescue Plan*) include procedures and response actions for cyanide related incidents, a list of key contact personnel, incidents management procedure and preventative and corrective actions procedures.

The ERP considers the potential failure scenarios appropriate for its site-specific environmental and operating circumstances. It’s scope include emergencies with the potential to impact people, environment and property resulting from the operation of the Terminal and the cyanide transport operations. The Plan describes the response actions to be taken for the types of potential release scenarios identified by Cyanco. The emergency scenarios include both cyanide solution and solid spills during a transfer operation. It identifies fires, explosions and power outages events. The Terminal does not have ponds or waste treatment facilities.

The Plan contains sufficient procedural information to allow these actions to be conducted and details of persons responsible to undertake the actions. The Plan also outlines response guidelines for the following identified scenarios.

The Plan describes specific response actions, as appropriate for the anticipated emergency situations, such as evacuating site personnel and potentially affected communities from the area of exposure. Its sections detail the response actions required for individual persons involved in the management of the emergency, the use of cyanide antidotes and first aid measures for cyanide exposure.

The Plan describes cyanide first aid measures for persons intoxicated by HCN or cyanide. The Plan notes the antidotes location and is complemented by the Terminal's procedure *Medical Care*. This procedure for medical attention describes the use of cyanide antidotes and first aid kits, including a route to the *CIMA* and *San Jose* hospitals. Both hospitals have received training regarding attention to cyanide exposure. An external training provider has provided First Aid training to the workforce. The training included the administration of amyl nitrite and oxygen.

The ERP considers controlling cyanide releases at their source, including minor and major cyanide spills. The emergency response procedures detail the procedure to limit the spread of releases and control the releases at their source. It also considers containment, assessment, mitigation and future prevention of releases.

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

The operation is

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

Summarize the basis for this Finding:

The Facility has involved its workforce and stakeholders in the emergency response planning process. The workers have been involved in the emergency response planning process through initial training and simulation exercises. 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 and have been informed of their responsibilities in case of emergency during the training.

In addition to the authorities, Cyanco identifies *Cemex* cement plant as a relevant stakeholder having surveillance personnel to control access to rail area, among others. Since *Cemex* is Cyanco's site landlord, it is actively involved within the emergency response plan, being its emergency responders and surveillance personnel trained in cyanide related emergencies.

Stakeholders have been provided with the emergency response plan and were formally asked for comments about their role in case of an emergency. Cyanco is permanent engaged with its stakeholders as is a member of the Advisory Committee on Hazardous Materials of the state of Sonora and as such they meet monthly with Civil Defense authorities, police and emergency responders such as firefighters and hospitals.

The Facility has considered it was not necessary to made communities aware of the nature of their risks associated with accidental cyanide releases as the closest residential community, Hermosillo, is approximately 20 km from the Terminal gate. According to the Risk Diagnosis study from July 2017, no community has been identified as likely to be affected, based on a review of potential releases from the Terminal and the distances involved.

The site is located within a remote industrial area and has a procedure to inform neighboring facilities as Cemex plant, regarding emergency procedures. The involvement of Cemex is identified as part of the emergency management rather than as an affected community.

Cyanco has informed the nearest facility and civil protection authorities at Hermosillo, 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.

The Terminal has involved local response agencies in the emergency planning and response process. The ERP clearly describes the role of outside responders (civil protection, multifunctional brigades, fire fighters, police and medical facilities).

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

The operation is

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

Summarize the basis for this Finding:

The ERP does designate primary and alternate emergency response coordinators with explicit authority to commit the resources necessary to implement the Plan. According to the Plan, the Terminal Manager will approve the expenditures required to address any emergency and in

addition has the authority to use the committed resources necessary to implement the response measures.

The Plan clearly identifies the Emergency Response Team as the .

- first responder, the emergency coordinator and the terminal manager as the head of the Incident Command System.

The Plan requires appropriate training for emergency responders.

Training requirements have been developed for the Terminal's personnel identifying necessary training for specific positions, scheduling the identified training and tracking the implementation of the training. The Plan notes all Terminal workers are to be trained on how to recognize an emergency, notify the emergency response team and practice in implementing the emergency response plan.

The Plan also notes simulation drills in its implementation will be carried out with the participation of all the concerned/relevant members of the organization. The purpose of these simulation drills is to test the procedures, equipment, and resources described in the Plan, and to train personnel in emergency responses. Each simulation drill is evaluated, and a report will be produced, including a photographic record, chronological record, and final recommendations.

The Plan includes call-out procedures and 24-hour contact information for the coordinators and response team members. It contains clear flow charts describing the call out procedures including details of 24-hour contact information for all internal and external persons involved in the emergency response. The Plan clearly specifies the duties for all Emergency Response Team positions. It includes a list of the emergency response equipment which is available at the Terminal.

The Plan states to periodically inspect emergency response equipment to assure its availability when required. 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 Plan describes the role of outside responders and medical facilities. The local community does not have a designated role within the emergency response procedures.

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.

Cyanco has provided documentation of the emergency response plan to the involved outside entities, confirming their awareness and engaging them in ongoing development of emergency arrangements. Cyanco has determined that the role required of these organizations is such that they do not need to be involved in all mock drills.

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

The operation is

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

Summarize the basis for this Finding:

The Plan contains flow charts describing the call out procedures. Cyanco management, contractors, emergency response team, outside response providers and medical facilities are included within the flow charts. It includes procedures and contact information for notifying regulatory agencies. Duties for all positions and entities listed within the Plan are clearly described. The Plan details 24-hour contact information for all internal and external persons detailed in the emergency response.

Cyanco has a hazard evaluation undertaken for the Terminal. The evaluation identified the immediate response and cleanup as described in the emergency plan, will limit the generation of HCN in the zone of influence. The Plan does include procedures and contact information for notifying potentially affected communities of the incident and response measures and for communication with the media, which allows Cyanco to coordinate even the evacuation of its neighbor Cemex, who could potentially be affected by the emergency event.

***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 operation is

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

Summarize the basis for this Finding:

The Plan and the operational procedures *Decontamination Procedure*, and *Waste Management*, describe specific remediation measures for cyanide recovery and neutralization of solutions and solids, decontamination of soils, other contaminated media and management and disposal of spill clean-up debris. The Plan states the treatment chemicals are stored at the emergency container which was visually confirmed by the auditor, describes how the treatment chemical is to be prepared to the appropriate concentration, and define the end point of the remediation, including how samples will be taken.

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 Plan's states that proper final disposition of all recovered hazardous solids will be arranged with a specialized contractor, who will allocate the contaminated materials to the authorized places by the government and responsible entity.

Based on the hazards identification of the emergency plan, the plant floor where all the transfer/transload operations are performed, is provided with a water proof concrete slab, and due to the absence of open water sources nearby, the auditor considers there is no potential to affect drinking water sources, so there is no cause for concern for an alternate drinking water supply. The Terminal's personnel drinks bottled water.

The Plan prohibits the use of chemicals such as sodium hypochlorite, ferrous sulfate and hydrogen peroxide to treat cyanide that has been released into surface water. According to the Auditor Guidance for Gold Mines of the ICMI, the auditor considers this prohibition would not apply as the plant does not have drainages that connect to surface water gradient below. All

drainages in the plant are collected into an internal tank and the water is transferred to the ISO tanks during the transference process or disposed by a contractor as hazardous material.

The site has the *Decontamination and Sampling* procedure which describes specific measures to be followed when any material is suspected to be contaminated with cyanide. 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. Furthermore, the procedure establishes actions for decontamination and storage of contaminated materials. 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.

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

The operation is

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

Summarize the basis for this Finding:

The Plan contains provisions for periodically reviewing and evaluating its adequacy, and they are being implemented. Learned lessons from the emergency drills are considered to update the Plan and procedures if required. The Plan includes an emergency drill program with several events per year. Additionally, it establishes the date for the next review.

The auditor reviewed yearly updated contact list for emergency responders and outside responders covering the recertification period. The operation periodically reviews, and updates contact information for emergency response personnel and outside responders to ensure its accuracy.

Mock emergency drills are conducted periodically to test response procedures for various exposure scenarios. 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 as required. During the recertification period Cyanco conducted several for cyanide exposure and spills, simulating incidents with cyanide solution or solid cyanide.

In all cases the scenarios were analyzed, and recommendations developed. The scenarios highlighted several issues during the evaluations processes. The recommendations have been highlighted in the debrief reports and responsible persons have been assigned to close out the required actions.

The Plan states to evaluate and revise the Plan after any emergency that required its implementation. It states that must be updated periodically when the conditions or circumstances of the Terminal and its activities vary significantly. Also, to update the Plan according to the mock drills results or when an emergency arises, in some cases improvement possibilities for emergency care are identified. During this recertification period, no cyanide related emergency was reported, therefore no review of the Plan was necessary due to this reason.