

# ***Gold Mining Operations Summary Audit Report***

*for*

***Minera El Peñon Ltd/ Yamana Gold Group.***

***17~21/ March/ 2019.***

***Prepared by NCA Brasil Expert Auditors Ltd.***

***www.globalsheq.com***

***(this report contains 22 pages)***

## **SUMMARY AUDIT REPORT FOR GOLD MINING OPERATIONS**

Minera El Peñon

Celso Sandt Pessoa

19/06/2019

Name of Mine

Signature of Lead Auditor

Date

## ***Instructions***

1. The basis for the finding and/or statement of deficiencies for each Standard of Practice should be summarized in this Summary Audit Report. This should be done in a few sentences or a paragraph.
2. The name of the mine operation, lead auditor signature and date of the audit must be inserted on the bottom of each page of this Summary Audit Report. The lead auditor's signature at the bottom of the attestation on page 3 must be certified by notarization or equivalent.
3. An operation that is in substantial compliance must submit a Corrective Action Plan with the Summary Audit Report.
4. The Summary Audit Report and Corrective Action Plan, if appropriate, with all required signatures must be submitted in hard copy to:

**ICMI**  
**1400 I Street, NW, Suite 550.**  
**Washington, DC, 20005, USA.**  
**Tel: +1-202-495-4020.**

5. The submittal must be accompanied with 1) a letter from the owner or authorized representative which grants the ICMI permission to post the Summary Audit Report on the Code Website and, 2) a completed Auditor Credentials Form. The letter and lead auditor's signature on the Auditor Credentials Form must be certified by notarization or equivalent.
6. Action will not be taken on certification based on the Summary Audit Report until the application form for a Code signatory and the required fees are received by ICMI from the applicable gold mining company.
7. The description of the operations should include sufficient information to describe the scope and complexity of the gold mining operation and gold recovery process.

Name of Mine: Minera El Peñón Ltda.

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Name of Mine Owner: Yamana Gold Inc.  
 Name of Mine Operator: Minera El Peñón Ltda.  
 Name of Responsible Manager: Rodrigo Gutierrez  
 Address: Ruta Panamericana Norte, km 1258.  
 State/Province: Antofagasta Country: Chile  
 Telephone: (56+55) 256662055  
 Fax: None  
 E-Mail: [rodrigo.gutierrez@yamana.com](mailto:rodrigo.gutierrez@yamana.com)

**Location detail of the operation:**

Location and access:

**Figure 1: Map of location and access to the study area.**



**Figure 2: Aerial photos of El Peñón mine facilities.**

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Figure 3: Process flow “El Peñon”





This operation is:

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

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with the International Cyanide Management Code.

During the previous three years certification cycle, Minera El Peñon did not experience any significant cyanide related incidents nor any compliance problems related to cyanide management.

\* 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: NCA Brasil Expert Auditors Ltd.

Audit Team Leader: Celso Sandt Pessoa

E-mail: [celsopessoa@ncabrasil.com.br](mailto:celsopessoa@ncabrasil.com.br) (ICMI qualified lead auditor and TEA)

Names and Signatures of Other Auditors: none

Date(s) of Audit: 06 ~10/ Dec/2018 (on-site), 17 ~21/ March/2019 (on-site) and 17 ~19/ June/ 2019 (off-site).

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

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**1. PRODUCTION: Encourage responsible cyanide manufacturing by purchasing from manufacturers who operate in a safe and environmentally protective manner.**

Standard of Practice 1.1: Purchase cyanide from manufacturers employing appropriate practices and procedures to limit exposure of their workforce to cyanide, and to prevent releases of cyanide to the environment.

The operation is:  in full compliance with Standard of Practice 1.1  
 in substantial compliance with  
 not in compliance with

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

It was evidenced that the contract between Chemours (formerly E.I.DuPont), and Yamana Gold Canada clearly states that the cyanide produced by Chemours must be produced in a facility having a current certification under the International Cyanide Management Code. The contract is valid for a period of five years from 01/03/2013 up to 28/02/2018 (the original term) and could be extended for another two years. It is important to note that Chemours (formerly DuPont USA) is the cyanide supplier for the operation since the initial certification audit. The solid sodium cyanide provided to Minera El Peñon is imported and delivered by Chemours Chile. Reviewed DuPont USA spin-off communication, dated 09/12/2014, transferring to Chemours Company FC LLC on 01/02/2015, all contracts and obligations, including all branches, as DuPont Chile to Chemours Chile. Reviewed that Yamana Gold Canada (and its subsidiaries) signed-off the new amendment on 30/02/2014. Reviewed also two amendments, dated 25/02/2015 and 29/02/2016, performed by Chemours. The contract is valid by 31/12/2019. The sodium cyanide used by Minera El Peñon is produced by the Chemours facility at Memphis/TN/ USA, which is certified by Cyanide Code according to the information available in the ICMI website. Minera El Peñon only buys sodium cyanide from a certified producer (Chemours/ Memphis facility, through its Chilean branch, Chemours de Chile), and not from any distributor.

**2. TRANSPORTATION: Protect communities and the environment during cyanide transport.**

Standard of Practice 2.1: Establish clear lines of responsibility for safety, security, release prevention, training and emergency response in written agreements with producers, distributors and transporters.

The operation is:  in full compliance with Standard of Practice 2.1  
 in substantial compliance with  
 Not in compliance with

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

The agreements among the operation, the cyanide producer (Chemours USA and Chemours Chile) and the cyanide transporter (Transportes Verasay Chile) were reviewed and it was evidenced to be within required by the Cyanide Code. Reviewed DuPont spin-off communication, dated 09/12/2014, transferring to Chemours Company FC LLC on 01/02/2015, all contracts and obligations, including all branches, as DuPont Chile to Chemours Chile. The sodium cyanide is transported in containers specifically designed for this purpose (UNO), according to international and Chilean road transport legislation. Chemours USA and Chemours Chile transport supply chain are certified in conformance with ICMI principles for transportation, according to the information available at ICMI's website. The container and NaCN maxi- boxes labeling are in English and in Spanish, and in accordance with the Chilean road transport legislation. During the on-site audit, it was evidenced the first solid NaCN batch arriving with colorant dye. Evidenced the first trial with this red colorant dye, without any problems. The sodium cyanide container is stored and loaded at Chemours USA facilities before its transported to the operation. The transport truck departs from Chemours Chile port facilities straight to the operation.

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The route between USA and Chile are determined in accordance with international maritime transportation laws. The route between Chemours Chile port facility (Antofagasta Mejillones) and the operation are defined in conjunction by the seller, local authorities and the operation, without any interim storage or unloading. The risks of the route are identified and evaluated. The route is 100% asphalted.

The cyanide is transported by Verasay Transportes Chile Ltd., which is certified by ICMI (according to the ICMI website), under Chemours Chile coordination.

The transport truck is received at the operation by a safety officer which inspects the cargo documentation, the truck condition, the driver permit, the safety equipment. After that, if approved, the truck is authorized to go into the operation and parks in the cyanide reception area, specifically assigned for this activity, assigned by the operation operators. From this moment on, the reception employees proceed the cyanide unloading, which is monitored by safety technicians. Evidenced in the field audit fully implemented.

Chemours USA supply chain (rail, truck and ocean transportation) is certified by ICMI. Transportes Verasay Chile is also ICMI certified. In both cases. The information was evidenced in the ICMI's website.

All the transport supply chain is certified by ICMI. Verasay Chile maintains a process to have their drivers trained in cyanide sodium related activities, including emergencies (in conjunction with Chemours Chile). Verasay Chile drivers shall have specific permits (according to the Chilean legislation) for road transportation of cyanide. These permits are reviewed in the reception of cyanide at the operation, and are verified in all cyanide receiving activities, by the operation's safety officer).

Chemours transport supply chain is certified by ICMI. All trucks are online monitored, since it departs from the port facility at Antofagasta Mejillones until it arrives in the operation, as evidenced during the field audit.

Chemours USA supply chain is certified by ICMI and has implemented emergency response procedures. The cyanide transporting truck (belonging to Verasay Transportes Chile is fully monitored during the trip, between the port of entry and the operation. The communication between the driver and the Verasay operation center is also maintained during the trip (radio contact). In the event of any type of emergencies, the driver launches an emergency alert, involving all stakeholders. These procedures are tested, time to time, in conjunction by Chemours Chile, Minera El Peñon and Verasay Transportes (refer to Principle # 7).

The written agreement, as previously mentioned, addresses all the responsibilities and authorities including the extension to subcontractors, although neither the producer/ transporter are allowed by the operation to subcontract anybody without prior acceptance by the operation. The operation maintains a system to monitor the contracts with the producer and the transporter.

***Standard of Practice 2.2: Require that cyanide transporters implement appropriate emergency response plans and capabilities and employ adequate measures for cyanide management.***

The operation is:  in full compliance with Standard of Practice 2.2  
 in substantial compliance with  
 not in compliance with

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

As previously mentioned, and evidenced, the contract between the operation, the producer and the transporter, clearly addresses the requirement that the transporter must be certified by ICMI. The cyanide transporter, Verasay Transportes Chile is certified by ICMI, as evidenced at the ICMI website. Chemours USA supply chain and Verasay Transportes Chile are certified by ICMI, according to the information available at ICMI website.

It is important to note that transportation of Chemours cyanide from the Chemours Memphis production plant to the El Peñon Mine uses the certified Chemours Global Ocean Supply Chain and the certified Chemours Chile Supply Chain, including the most recent recertification dates for the Chemours US/Canada Rail and Barge Supply Chain (August 18, 2017), the Chemours Global Ocean Supply Chain (August 18, 2017), the Chemours Chile Supply Chain (May 26, 2017), and Transportes Verasay (June 20, 2017), as indicated on the Cyanide Code website.

Was evidenced that Minera El Peñon established an incoming inspection control in order to verify the cyanide related documentation (from origin until the operation) in the reception of the solid cyanide. Evidenced several incoming inspection records that were performed between 2016 and 2018. All road transportation records are kept by the operation.

***3. HANDLING AND STORAGE: Protect workers and the environment during cyanide handling and storage.***

***Standard of Practice 3.1: Design and construct unloading, storage and mixing facilities consistent with sound, accepted engineering practices, quality***

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*control/quality assurance procedures, spill prevention and spill containment measures.*

The operation is:  in full compliance with Standard of Practice 3.1  
 in substantial compliance with  
 Not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified: (Due to the sensitivity of security issues regarding storage of cyanide, no descriptions of substantial or non-compliance with this aspect of the Standard of Practice should be provided).**

It was evidenced that Minera El Peñon designed and constructed two receiving/storage areas for the reception of the solid cyanide (without any change since the last recertification audit) and constructed according to Chilean engineering standards. Refer to SoP 4.8). These facilities were designed and constructed in accordance with acceptable Chilean engineering standards. Receiving and storage areas were evidenced, in the field audit, to have concreted floor, bricked wall separating materials, metallic roof, locked access, adequate ventilation and HCN sensors. The cyanide solution preparation area has also concreted floor and natural ventilation system. The two warehouses did not suffer any change since the last recertification audit, and are included in the inspection and preventive maintenance programs.

During the field audit it was evidenced that the access to the process plant is controlled, through magnetic cards specifically assigned for authorized persons. The entire process plant is fenced. Once inside the process plant, the unloading, storage and preparation areas are separated from people and far from surface waters (there is no surface waters in this operation). The areas have a drainage system which is linked with a specific containment pool (process pool). During the unloading, storage and preparation activities only authorized operators are allowed to circulate in these areas.

The cyanide preparation tank has an HCN sensor, pH sensor and level sensor (all calibrated against international standards). After preparing, the solution is transferred to distribution tanks, which are equipped with a calibrated level sensor.

It was evidenced that the cyanide reception, storage and preparation areas were constructed in structural concrete, inside a secondary containment pool (preparation area), as evidenced in the design/ construction documentation and in the field audit.

It was evidenced that the containment pools are constructed in structural concrete and HDPE, according to specific international and Chilean standards.

It was evidenced that El Peñon stores solid NaCN boxes in specific warehouses, as previously mentioned, in well ventilated areas. HCN detectors and alarm systems are in place as evidenced in the field audit.

It was evidenced that Minera El Peñon stores solid NaCN in their original boxes, over pallets, on concreted floor, under roof, with adequate ventilation as evidenced in the field audit.

It was evidenced that Minera El Peñon controls the access the process plant and the warehouses (both inside the fenced process plant). The warehouses are inside fenced areas, well signed and locked. During the field audit it was observed that only authorized and qualified operators are allowed to access these areas.

The cyanide storage areas (warehouses) are isolated (through a bricked wall) and apart from other storage areas and specifically assigned to store only solid sodium cyanide. It was evidenced that they are well maintained, clearly signed, clean and ordered. Food and tobacco products are not allowed in these areas. During the field audit this was clearly evidenced.

***Standard of Practice 3.2: Operate unloading, storage and mixing facilities using inspections, preventive maintenance and contingency plans to prevent or contain releases and control and respond to worker exposures.***

The operation is:  in full compliance with Standard of Practice 3.2  
 in substantial compliance with  
 not in compliance with

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

The empty cyanide containers (big-bags) are washed, decontaminated, dried and sent to a qualified environmental supplier (Hidronor) which makes the final disposition (thermal destruction) in accordance with Chilean environmental legislation and the environmental permits obtained by the operation.

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It was evidenced that all cyanide containers are washed, decontaminated and dried in a specific installation available for this activity in accordance with internal documented procedure. After that, the decontaminated containers are sent to, a qualified supplier (by Chilean local EPA), Hidronor, which makes the final disposition in accordance with Chilean environmental legislation. The effluent of this activity returns to the cyanidation process. Evidenced during the field audit.

Before departing the operation, the truck is verified to be in conformance, without any kind of leakage and completely empty. The operation has implemented a formal inspection of the container that is sent back to Chemours Chile. This activity is recorded and the Verasay Transportes driver receives a copy of the inspection record. Evidenced during the field audit.

It was evidenced that Minera El Peñon defined, documented and implemented a procedure to unload the solid cyanide during the reception. The operators are trained and qualified in this procedure. Records of such training activities and the field audit evidenced that the operational procedure clearly addresses the steps to be followed and the activity is fully monitored. Evidenced during the field audit.

It was also evidenced that the operation defined, documented and implemented an operational procedure to prepare the cyanide solution, using solid NaCN briquettes. Again, all the operators are trained and qualified in this operational procedure. Medical team monitor the cyanide solution preparation all the time.

Both operations were evidenced during the field audit (planned job observation), and found in conformance.

The cyanide big-bags are handled with the help of lifting devices, including fork lifters, in a specific area designed for this purpose. The lifting device is included in a preventive maintenance program. Records of its maintenance were evidenced. Evidenced during the field audit. Cyanide boxes are piled in three (max), according to the cyanide producer directions. In the event of any real spills, the operational procedure covers the neutralization and cleaning of the spills, which is directed to the drainage system. It was not evidenced any kind of spills (solution or solid cyanide) during the field audit. A qualified operator, using appropriate PPE (including calibrated HCN detectors), is observed full time by a second operator that remains in a safe area. A paramedic and an ambulance is placed all the time in a cold zone, also observing the cyanide solution preparation activity. This practice was evidenced in the field audit.

There is no manual mixing of solid cyanide. During the audit, the operation received the first solid NaCN batch with red colorant dye. Initial trials were performed and no problems were detected.

**4. OPERATIONS: Manage cyanide process solutions and waste streams to protect human health and the environment.**

*Standard of Practice 4.1: Implement management and operating systems designed to protect human health and the environment utilizing contingency planning and inspection and preventive maintenance procedures.*

The operation is:  in full compliance with  in substantial compliance with  not in compliance with Standard of Practice 4.1

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

It was evidenced that Minera El Peñon defined, implemented and maintained internal management and operational documented procedures defining methodology for the operation of cyanide facilities including unloading, mixing and storage facilities, leach plants operations, which were found in conformance with a safe operation.

It was evidenced that Minera El Peñon defined, implemented and maintains internal documented procedures which identify the assumptions and parameters on which the facility design was based and any applicable regulatory requirements

It was evidenced that Minera El Peñon defined, implemented and maintained internal operational and management documented procedures which describe the standard practices necessary for the safe and environmentally sound operation including the specific measures needed for compliance with the Code, such as inspections and preventive maintenance activities.

Yamana Gold Corporation defined and documented a corporate procedure, PCS-00-21-001-07(1), to identify when changes in a site's processes or operating practices may increase the potential for the release of cyanide and to incorporate the necessary release prevention measures. No such changes, that could impact or increase the potential of cyanide release were identified in the last three years. Reviewed four change management projects (improvement processes) related to cyanide containing installations.

It was evidenced that the Minera El Peñon implemented a set of cyanide management contingency procedures for situations when there is an upset in a facility's water balance, when inspections and monitoring identify a deviation from design or standard operating procedures, and/or when a temporary closure or cessation of operations may be necessary.

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It was evidenced that Minera El Peñon inspect (operational ones (every shift) and maintenance ones (weekly, monthly, quarterly, semesterly or annually)) cyanide facilities on an established frequency, depending on the installation/ equipment type, according internal documented procedures, sufficient to assure and document that they are functioning within design parameters criteria. The inspection and preventive maintenance system are controlled by a JD Edwards/ Oracle software.

It was evidenced that Minera El Peñon, inspect tanks holding cyanide solutions for structural integrity and signs of corrosion and leakage. Records of such inspections were found in place, as previously mentioned.

Operational inspections are performed every shift, focusing secondary containments integrity and available capacity, including the floor pumping system effectiveness. Records of such inspections, performed between 2016 and

2018 were reviewed. It was evidenced during the field audit, that several structural concrete structures, such as process

tanks bases, are passing through preventive maintenance. The operation has a daily inspection plan for all open waters (process pool and emergency pool) available at the site. Records of such inspections are in place and the inspections performed between 2016 and 2018 were sampled and reviewed. All previously mentioned inspections are recorded, including the date, the inspector name, the equipment/ installation being inspected and the inspection results.

It was evidenced that preventive maintenance programs are implemented and results are recorded to ensure that equipment and devices function as necessary for safe cyanide management. They prescribe the specific nature and frequency of preventive maintenance activities. Reviewed the annual maintenance plan, focusing tanks, piping, valves, instrumentation and structural concrete structures (secondary containments). All main leaching tanks are in process of recertification in accordance with API-653/2009 standard.

It was evidenced that Minera El Peñon has an emergency power resources to operate pumps and other equipment to prevent unintentional releases and exposures in the event its primary source of power is interrupted (the operation has seven generators providing around 10 MWh for different installations). The back-up power generator equipment is covered by a preventive maintenance program (annual) and inspections. The generators are turned on every two weeks.

*Standard of Practice 4.2: Introduce management and operating systems to minimize cyanide use, thereby limiting concentrations of cyanide in mill tailings.*

The operation is:  in full compliance with Standard of Practice 4.2  
 in substantial compliance with  
 not in compliance with  
 not subject to

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

The operation conducts a program to determine appropriate cyanide addition rates and optimize gold recovery. This program is based on a geo-metallurgical test model. On a monthly basis, the metallurgical laboratory defines the cyanide consumption target (theoretical) and informs the production process. The cyanide solution consumption is monitored on a daily basis, which is adjusted when necessary. It was evidenced, in the process plant, an expert cyanide solution addition system.

The operation conducts a program to determine appropriate cyanide addition rates and optimize gold recovery. This program is based on a geo-metallurgical test model. The addition of cyanide solution is also done in two different leaching tanks, resulting is less cyanide consumption and increased gold recovery.

*Standard of Practice 4.3: Implement a comprehensive water management program to protect against unintentional releases.*

The operation is:  in full compliance with Standard of Practice 4.3  
 in substantial compliance with  
 not in compliance with

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

Minera El Peñon developed a comprehensive, probabilistic and dynamic water balance system, focused on the process plant and the TSFs (dry one), which includes the reference to the design assumed inputs and outputs, and the real inputs and outputs. The water balance is managed and monitored on a daily basis, in accordance with the water balance model defined by a Yamana Gold corporate management procedure. The operation water balance management model considers the storm duration and the storm return interval. It is important to note that the El Peñon operation is in the Atacama desert, the driest in the world. There is no potential of freezing. The TSF is only for dried tailings, where the residual moisture is evaporated. These aspects data are provided by the Chilean Institute responsible to monitor and collect data about precipitation and evaporation along the years. Did not change since de certification audit. The solution losses in addition to evaporation, such as the capacity of decant, drainage and recycling systems, allowable seepage to the subsurface has no significant impact on the water balance. There are no discharges to surface water because there is no surface water in the surroundings of the operation.

There is no leach pad at Minera El Peñon. Power outages or pump and other equipment failures will not impact the water balance significantly. If this occurs the operation will maintain the balance. The operation counts with energy backup systems

It was evidenced that Minera El Peñon implement operating procedures that incorporate inspection and monitoring activities to implement the water balance and prevent overtopping of ponds (all secondary containments are interconnected and then connected to the process pool, which is connected to the emergency pool) and impoundments and unplanned discharge of cyanide solutions to the environment; Records of such inspections were reviewed. This inspection checklist also considers the presence of solution in the secondary containment. These inspections are performed by the process plant operators. There is a positive available volume at the operation. The ponds and impoundments designed and operated with adequate freeboard above the maximum design storage capacity determined to be necessary from water balance calculations. There are inspections in place to ensure the control of all design and operational parameters. As previously mentioned, the process pool and the emergency pool are connected.

Standard of Practice 4.4: *Implement measures to protect birds, other wildlife and livestock from adverse effects of cyanide process solutions.*

The operation is:  in full compliance with  in substantial compliance with  not in compliance with Standard of Practice 4.4

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

Minera El Peñon monitors all open waters (process pool and emergency pool), in a frequency defined by the Chilean environmental authority. All monitorings are performed by an ISO 17025 certified laboratory (Universidad Católica del Norte). All reviewed monitoring reports did not show any result for WAD cyanide (CNw) exceeding 50mg/l. Reviewed reports were: Environmental control and monitoring plan (2017, 2018 and 2019), reports for July 2017, January 2018, July 2018 and January 2019. Special measures (fencing and sound alarms) were implemented to restrict access by wildlife and livestock in the two pools area. Process pool is used to receive, when necessary, effluents from the secondary containment drainage system (usually is empty). Emergency pool is also usually empty, as evidenced in the field audit. There is no record of wildlife mortality since the certification audit.

Standard of Practice 4.5: *Implement measures to protect fish and wildlife from direct and indirect discharges of cyanide process solutions to surface water.*

The operation is:  in full compliance with  in substantial compliance with  not in compliance with Standard of Practice 4.5

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

Minera El Penon does not have any direct discharge to surface water. There are no surface waters in the surroundings of the mining operation. Minera El Penon does not have any indirect discharge to surface water. There are no surface waters in the surroundings of the mining operation.

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Standard of Practice 4.6: *Implement measures designed to manage seepage from cyanide facilities to protect the beneficial uses of ground water.*

The operation is:  in full compliance with Standard of Practice 4.6  
 in substantial compliance with  
 not in compliance with

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

It was evidenced that the operation has implemented a specific water management system, where seepage is not a critical aspect to the water balance (refers to SoP 4.3). Operational controls such soil compaction, HDPE liners, structural concrete secondary containments, desert soil characteristics and underground water quality monitoring (08 wheels are installed) are effective barriers to protect the underground water to be impacted by cyanide. It was evidenced that the monitoring conducted by an ISO 17025 certified laboratory indicates that there is not any contamination of ground water caused by any type cyanide (total, wad or free). The Chilean law # 1333 "Requisitos para calidad de aguas para diferentes usos/ quality criteria for general use of water", did not establish any value for WAD or free cyanide for underground water, only for total cyanide (<0,20 ppm). Reviewed the following underground monitoring reports: July 2017, January 2018, July 2018 and January 2019, where CNw and CNf were below 0,004 ppm (not detectable). The underground water used by the mining operation is collected 20 km away from the operation, in a depth of 280 meters. Minera el Peñon does not use mill tailings as underground backfill. It was evidenced that there is no record of seepage from the operation to the ground water in the last three years as previously mentioned.

Standard of Practice 4.7: *Provide spill prevention or containment measures for process tanks and pipelines.*

The operation is:  in full compliance with Standard of Practice 4.7  
 in substantial compliance with  
 not in compliance with

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

It was evidenced, during the field, that the cyanide unloading, storage, mixing and process solution tanks are provided with spill prevention and containment measures, such as secondary containment (structural concrete + impermeable varnish) and HDPE liners. It was evidenced that according the design drawings, all cyanide unloading, storage, mixing and process tanks contain secondary containment sized to hold a volume greater than that of the largest tank within the containment and any piping draining back to the tank, and with additional capacity for the design storm event. All secondary containments are provided with floor pumping system, as evidenced during the field audit. There are procedures in place, as previously mentioned, that ensures a pumping system to recirculate the cyanide solution or cyanide-contaminated effluent or pulp, that is collected in a secondary containment area, back to the leach tanks. All secondary containments are interconnected and this system is connected to a process pool which is connected to a emergency pool. There is a positive volume balance in the operation. Minera El Peñon does not have process tank without secondary containment. It was evidenced, during the field audit, that all cyanide process solution pipelines are provided with spill prevention to collect leaks and prevent releases to the environment. It was evidenced that all cyanide containing pipelines are inside other pipelines. Flanges have collecting trays below them, when outside the secondary containment. There are no areas where cyanide pipelines present a risk to surface water. All pipelines are within controlled areas, are contained by secondary containments, mainly by HDPE piping (pipe inside a pipe), as evidenced during the field audit. There are no surface waters in the surroundings of the operation. It was evidenced that all cyanide tanks and pipelines are constructed of materials compatible with cyanide and high pH conditions, such as carbon steel (tanks and piping) and HDPE (piping).

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**Standard of Practice 4.8:** *Implement quality control/quality assurance procedures to confirm that cyanide facilities are constructed according to accepted engineering standards and specifications.*

The operation is:  in full compliance with Standard of Practice 4.8  
 in substantial compliance with  
 not in compliance with

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

Since the last recertification audit, the operation designed and is constructing a new flocculant distribution system. Reviewed the following design and construction documentation, drawings 80P&D.001M, CAD-8028-P-005, material list (rev. 0), all provided by the equipment designer ProMinent Ltd. Receiving inspection records for AISI 316 sch40 pipelines, HDPE pipelines, AISI 316 elbows were reviewed and found in place.

Verified that Minera El Peñon developed a quality control and quality assurance program (design planning) addressing the suitability of materials to be used in the new flocculant facility (AISI 316 stainless steel and HDPE for piping, elbows) and adequacy of soil compaction through the performance of several standard compaction tests. Records of such tests are available and were reviewed in this opportunity. Reviewed also the testing records of the structural concrete structures (base). It was evidenced that Minera El Peñon retains all records of quality control and quality assurance for the new flocculant facility., as previously mentioned. Related to the original cyanide installations, that were maintained in the last three years, it was evidenced that the operation still retains the related documentation (drawings, QA/QC records, calculations sheets, among others) of its construction, as reported in the previous recertification report (2015).

The new facility was under construction during the audit. Reviewed some in process inspections, such as the approval of the structural concrete structures. The new installation commissioning is planned for May 2019.

**Standard of Practice 4.9:** *Implement monitoring programs to evaluate the effects of cyanide use on wildlife, surface and ground water quality.*

The operation is:  in full compliance with Standard of Practice 4.9  
 in substantial compliance with  
 not in compliance with

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

It was evidenced that the operation defined, documented and implemented an environmental control and monitoring plan, focused on the water (open and underground) quality and fauna, in accordance with the local EPA permits and the Chilean environmental legislation for mining activities. All analytical protocols were developed by qualified personnel and are in accordance with the "Standard Methods for The Examination of Water and Wastewater/ 22<sup>nd</sup> edition". The supplier laboratory is certified in accordance with ISO 17025, as previously mentioned. It was evidenced that the environmental monitoring and control plan and protocols addresses how and where samples shall be taken, describe the sample preservation techniques, describe the chain of custody and cyanide species to be analyzed. It was evidenced that these procedures are in conformance with Chilean Standard NCh 411/2010.

It was reviewed procedures and records of sampling conditions (weather, livestock/wildlife activity, anthropogenic influences) in accordance with the supplier laboratory protocols. It was evidenced that Minera El Peñon inspect for and record wildlife mortalities related to contact with and ingestion of cyanide solutions. There were no records of wildlife and livestock mortality in the last three years.

The monitoring frequencies are defined by the local EPA and addressed at the environmental permits. In my perception and experience, such frequencies are adequate to characterize the medium being monitored and to promptly identify any changes in the environmental circumstances.

***5. DECOMMISSIONING: Protect communities and the environment from cyanide through development and implementation of decommissioning plans for cyanide facilities.***

**Standard of Practice 5.1:** *Plan and implement procedures for effective decommissioning of cyanide facilities to protect human health, wildlife and livestock.*

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The operation is:  in full compliance with Standard of Practice 5.1  
 in substantial compliance with  
 not in compliance with

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

The operation defined and documented a decommissioning plan, MER-14003-REP-MA-005, dated 16/11/2018, developed by MWH/ Stantec Chile. The plan was submitted to SERNAGEOMIN, the public authority responsible to review and approve all mining decommissioning plans. Life of mine (LoM) is defined for 2028. The plan is under SERNAGEOMIN review.

The above mentioned decommissioning plan for cyanide facilities addresses the implementation schedule and all decommissioning activities, including the decontamination of all cyanide related activities. The forecast to implement the plan is also defined in the plan and was developed by MWH/ Stantec Chile, considering that the decommissioning plan will be implemented by a third part.

Minera El Peñon updates the decommissioning plan with sufficient frequency (every five years, at least) to reflect changes in the operation as they affect decommissioning activities. Last update was in 2018.

Standard of Practice 5.2: *Establish an assurance mechanism capable of fully funding cyanide related decommissioning activities.*

The operation is:  in full compliance with Standard of Practice 5.2  
 in substantial compliance with  
 not in compliance with

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

Minera El Peñon develop an estimate of cost to fully fund third party implementation of cyanide related decommissioning activities, as mentioned at SoP 5.1.2. The ARO (Asset Reclamation Obligation) is updated on a yearly basis. there is new Chilean law (# 20551) that defines a financial mechanism and will require from the mining operation to implement such mechanism. This process is yet in progress and will be applicable when the operation decommissioning plan is approved by SERNAGEOMIN.

Minera El Peñon established a self-guarantee as a financial assurance mechanism. It was evidenced the last two financial audit reports, performed by Delloite Chile, dated 16/03/2018 (refer to financial years ended 31/12/2016 and 31/12/2017). The audits were carried out in accordance with IASB (International Accounting Standards Board) and led by Mr. Martin Colossi, a certified financial auditor in accordance with the Chilean legislation, which concluded that the Yamana Gold Corporation has financial health to fully fund the implementation of the decommissioning plan. Reports are available, for public consultation, at the web site [www.yamana.com](http://www.yamana.com).

**6. WORKER SAFETY: Protect workers' health and safety from exposure to cyanide.**

Standard of Practice 6.1: *Identify potential cyanide exposure scenarios and take measures as necessary to eliminate, reduce or control them.*

The operation is:  in full compliance with Standard of Practice 6.1  
 in substantial compliance with  
 not in compliance with

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

It was evidenced that Minera El Peñon established, implemented and maintains internal management and operational documented procedures which clearly defines methodology for unloading, mixing, plant operations, entry into confined spaces, and equipment decontamination prior to maintenance. There were no major changes in the operation documented cyanide management system in the last three years.

It was evidenced that Minera El Peñon established, implemented and maintains internal management and operational documented procedures which clearly defines the use of personal protective equipment and address pre-work inspections. Please refer to item "6" of this report. It was evidenced during the field audit, the adequate use of EPPs and pre-activity inspections, including EPPs inspection, safety installations (shower and low-pressure eye-washer) and the operational ones.

The operation implemented a documented corporate change management procedure.

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The work force participates effectively in the hazard identification and risk evaluation (PEACE) and in the development of operational procedures, through specific meetings specifically planned for this purpose. Such meetings are led by the process supervisor. Please refer to item "6" of this report. During the field audit and personal interviews, this procedure was clearly identified. It was evidenced that the job rotation among the operational workforce is very low. Process plant operators and supervisors are very experienced.

*Standard of Practice 6.2: Operate and monitor cyanide facilities to protect worker health and safety and periodically evaluate the effectiveness of health and safety measures.*

The operation is:  (X) in full compliance with  
 in substantial compliance with Standard of Practice 6.2  
 not in compliance with

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

It was evidenced that Minera El Peñon defined and documented that the minimum pH value shall be equal or greater than 10,5. During the field audit and reviewing pertinent records it was verified that the pH has been effectively controlled and monitored (through calibrated pH meters) in the operation. Alarm systems are in place. Additionally, during the field audit, it was noted that the usual pH value remains between 10,5 and 12. The pH is controlled through the online addition of CaO solution using a calibrated flowmeter.

It was evidenced that Minera El Peñon has fixed calibrated HCN detectors in the tank leaching areas and at the cyanide solution preparation area, and the operators also use portable calibrated HCN detectors. Both cases were evidenced in the field audit. Alarm level is set for 4ppm HCN. Reviewing pertinent records evidences were provided that the parameters have been maintained as stated (below exposition limits). In the event of alarm situation (4 ppm HCN), the operators are ordered to leave the area, only returning when allowed by the supervision, after technical checking. Also observed that all the operators use adequate personal protective equipment.

The operation has fixed calibrated HCN detectors in the tank leaching area and the cyanide solution preparation area, and the operators also use portable calibrated HCN detectors. Both cases evidenced in the field audit. Beyond these controls, all the operators use adequate personal protective equipment.

As previously mentioned, both, the fix and portable ones, are maintained and calibrated in accordance with a calibration management system, each three months. Calibration records (Drager calibration certificates) were evidenced and are retained by the operation.

It was evidenced during the field audit that the signage is effective, covering the presence of cyanide, that eating, drinking and smoking is not allowed and also open flames are prohibited.

As previously mentioned, during the on-site audit, the operation received its first batch of solid NaCN containing colorant dying. First trials were performed and the results fulfilled the expectations.

It was observed, during the field audit, that all the required auxiliary installations were evidenced to be in place and operational. They were tested during the field audit and worked properly. The operation has also implemented a system to manage all the fire extinguishers available at the plant. Inspection records of such equipment provided evidences that they have been adequately maintained. Occupational Safety process is responsible to manage the maintenance of all fire extinguishers.

During the field audit it was evidenced that all cyanide tanks and piping are clearly painted, identified and the flow direction clearly showed. It was evidenced that the operation is overhauling all the process tanks and pipelines paintings.

It was evidenced that Minera El Peñon implemented and maintains an emergency response program inside the plant, where all cyanide related information is available in Spanish. This emergency response program includes the safety information related to cyanide (Chemours MSDS), first aid procedures including decontamination and alarm systems.

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Minera El Peñon defined, documented, implemented and maintains a documented management procedure to investigate real and potential cyanide related incidents. This procedure is managed through the Antirion system. In the last three years there was two minor real incidents (2018), without victims or environmental impacts, where the rinsing of the empty NaCN bigbags was not effective. The investigation of such incidents was recorded and corrective actions implemented. The effectiveness of the implemented corrective actions was verified and such type of incident did not occur since then. The emergency response plan for this scenario was promptly activated and demonstrated that it was effective. Lessons learned, including causes, were addressed at the emergency response plan (refer to Principle # 7).

***Standard of Practice 6.3: Develop and implement emergency response plans and procedures to respond to worker exposure to cyanide.***

The operation is:  in full compliance with  
 in substantial compliance with Standard of Practice 6.3  
 not in compliance with

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

It was evidenced during the field audit that Minera El Peñon has a health care center (ambulatory), fully equipped with water, one resuscitator, two ambulances, antidote kits, oxygen cylinders, three AED, self-contained breathing equipment, alarm system and several communication channels such as telephone, cell phone and radio channel. It was evidenced also, that the medical team has adequate PPEs at the ambulatory and at the ambulances. The medical team monitor every cyanide solution preparation.

It was evidenced there is a monthly inspection of personal protective equipment (PPE). It was also evidenced that inspections results are recorded. During the field audit it was observed that all the first aid equipment and antidotes, including the ambulances are effectively inspected by the medical personnel. Such inspections are performed based on a specific checklist, specifically designed for this purpose. Storage conditions of amyl nitrite, sodium nitrite and sodium thiosulphate are clearly defined. Evidenced inspection records from February 2016 up to February 2019. The antidotes are stored under controlled conditions as directed by their manufacturer, into a refrigerator and their validity is monthly checked. The medical services are provided by an external provider ACHS (Asociacion Chilena de Seguridad/ Chilean Safety Association), including medics, nurses and paramedics.

It was evidenced that the operation and the medical services (ACHS) clearly identifies the procedures to respond to cyanide exposures and intoxication, defining protection measures (PPEs) in first aid, considering several intoxication scenarios such as first aid with conscious victim, first aid treatment for unconscious victim breathing, first aid treatment for unconscious victim not breathing, standard medical treatment (intravenous antidotes), first aid for contact with skin and eyes, administration of activated charcoal, medical treatment kits against intoxication by cyanide, CRP procedures, including the use of AED. Chemours MSDS is also used as an emergency response procedure. See also principle # 7.

It was evidenced that Minera El Peñon has a medical facility, fully equipped with oxygen, antidotes, first aid procedures, telephone, filters, AED and PPEs. It was evidenced that Minera El Peñon has two doctors, one supervisor nurse and five paramedics, they are supplied by ACHS, all working in shifts.

It was observed the operation developed and implemented medical procedures to transport intoxicated works to external, medical facilities, such as the La Portada Hospital (belongs to the ACHS), in Antofagasta or Hospital del Trabajador in Santiago. Transfer procedures include the use of local ambulances to Antofagasta, after the implementation of the first procedures, when the intoxicated workers are stabilized.

It was evidenced that Minera El Peñon has formal arrangements with La Portada Hospital in Antofagasta and with Hospital del Trabajador (both belonging to the ACHS), in Santiago. Such resources were approved by the medical team of the operation, and are inspected on a regular basis. Refresh training in first aid procedures, with medical teams of such institutions, are performed also on a regular basis (refer to SoP 8.3).

It was evidenced the operation developed and implemented an emergency response plan, which includes an annual calendar for cyanide related mock drill exercises. Reviewed 2017, 2018 and 2019 annual emergency drill program, and associated reports. Refer to SoP 7.6.

***7. EMERGENCY RESPONSE Protect communities and the environment through the development of emergency response strategies and capabilities.***

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Standard of Practice 7.1: *Prepare detailed emergency response plans for potential cyanide releases.*

The operation is:  in full compliance with  
 in substantial compliance with, Standard of Practice 7.1  
 not in compliance with

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

It was evidenced that Minera El Peñon defined, documented and implemented procedures to respond to cyanide related emergencies. It was reviewed the emergency response plan GH/R10 (1.12), dated 12/09/2018, a general emergency response plan, and GH-P02/R10 (1.04), dated 01/03/2018, GH-P11/R10 (1.04), dated 10/09/18, GH-P17/R10 (1.03), dated 20/03/2017, and GH-P20/R10, dated 10/09/2018, specific ones for cyanide related emergencies, encompassing cyanide emergency scenarios related to transport, unloading and operations. These emergency plans clearly address the required resources, PPEs, communication channels and telephones (including the NaCN supplier and transporter ones) as well as the specific procedures for each identified scenario. It was evidenced that the emergency plans describe specifically the response for all cyanide related emergencies scenarios (all anticipated emergency situations).

It was evidenced that are defined and documented cyanide related emergencies responses during external transportation to Minera El Peñon, which are shared by the NaCN producer (Chemours) and NaCN transporter (Verasay), both ICMI certified, and the operation, that will have a support role in this scenario.

It was evidenced that the mentioned emergency plans clearly address specific responses to that situations, considering internal and external stakeholders.

Standard of Practice 7.2: *Involve site personnel and stakeholders in the planning process.*

The operation is:  in full compliance with  
 in substantial compliance with Standard of Practice 7.2  
 not in compliance with

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

It was evidenced that the emergency response plans, were reviewed, approved and communicated to several stakeholders (internal and external), including security (Carabineros de Chile, firefighters of Antofagasta ), other two copper mines that are in the perimeter of the operation, and they have a mutual agreement in cooperation during emergency situations, and health authorities (ILa Portada hospital, ACHS), public authorities, emergency response suppliers (e.g: Chemours Chile) and community representatives (city of Antofagasta).

The emergency response plan was reviewed, approved and communicated to several stakeholders (internal and external), including security and health authorities, public authorities, emergency response suppliers, community representatives (the operation in conjunction with Chemours, planned and performed specific meetings with external stakeholders about cyanide related emergencies. Records of such meetings are retained by the operation. Please refer to Principle # 9.

The emergency response plan was reviewed, approved and communicated to several stakeholders (internal and external), including security and health authorities, public authorities, emergency response suppliers, community representatives, as previously mentioned.

It was evidenced that the emergency response plan was reviewed, approved and communicated to several stakeholders (internal and external), including security and health authorities, public authorities, emergency response suppliers, community representatives. When performing emergency drills, the operation invites specific stakeholders to participate in the drills. Another implemented control is to perform periodic meetings with stakeholders, in order to discuss and updated (if necessary) the emergency response plan)). The last one was performed on 30/08/2017. This process is being maintained along the years.

Standard of Practice 7.3: *Designate appropriate personnel and commit necessary equipment and resources for emergency response.*

in full compliance with

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The operation is:  in substantial compliance with Standard of Practice 7.3  
 not in compliance with

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

It was evidenced that Minera El Peñon defined, documented and implemented procedures to respond to cyanide related emergencies, as previously mentioned (refer to SoP 7.1). Responsibilities and authorities are clearly defined and communicated to all involved stakeholders (internal and external). The emergency committee organizational flowchart was defined.

The emergency coordinator is always the process plant shift supervisor, which specifically qualified for this purpose (refer to SoP 8.3). The alternate emergency coordinator is the head of area involved in the emergency.

The emergency response brigade members are voluntary and passed through a selection process (medical, theoretical and practical), to be assigned as a brigade member. The brigade members were trained and qualified before being assigned as emergency brigade members. All brigade members are plant operators and supervisors. Refer to SoP 8.3.

The emergency brigade master list addresses all the necessary information about the brigade members, including contact details of internal and external stakeholders. The emergency coordinator also maintains a contact list personally. The contact list is available at security process, human resources process, plant control room, and at communication boards. The emergency brigade organizational flowchart clearly defines the role of each member.

The emergency response plans (internal and the Chemours Chile one) identifies the required resources (hardware) that are necessary to each situation. The basic emergency response hardware is consisted of two ambulances (fully equipped) , auxiliary equipment (PPEs) for the brigade members, such as chemical/flame resistant overall, chemical gloves, oxygen masks and cylinders, chemical masks. The Chemours Chile emergency plan covers that situations outside the operation (during transportation), in conjunction with Verasay Transportes, both ICMI certified.

The emergency response hardware is monthly inspected by the safety officers of the operation. Records of such inspections were evidenced and found in place. Reviewed records were dated 05/09/2018, 03/10/2018, 21/08/2017, 27/12/2017, 06/09/2016 and 04/06/2016.

It was evidenced that the emergency response plans were reviewed, approved and communicated to several stakeholders (internal and external), including security and health authorities, public authorities, emergency response suppliers, community representatives. When performing emergency drills, the operation invites specific stakeholders to participate in the drills. Another implemented control is to perform periodic meetings with stakeholders, in order to discuss and updated (if necessary) the emergency response plan. Basically, the external emergency responders are involved in road control (Policia Nacional de Carreteras/ Carabineros de Chile), the transport and reception of intoxicated people (ACHS hospitals, La Portada Hospital Antofagasta and Hospital del Trabajador Santiago), cyanide supplier (Chemours Chile/ emergency response management).

It was evidenced that the emergency response plan was reviewed, approved and communicated to several stakeholders (internal and external), including security and health authorities, public authorities, emergency response suppliers, community representatives. When performing emergency drills, the operation invites specific stakeholders to participate in the drills. Another implemented control is to perform periodic meetings with stakeholders, in order to discuss and updated (if necessary) the emergency response plan)).

*Standard of Practice 7.4: Develop procedures for internal and external emergency notification and reporting.*

The operation is:  in full compliance with Standard of Practice 7.4  
 in substantial compliance with  
 not in compliance with

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

Was evidenced that contact information for notifying management, regulatory agencies, outside response providers as well as medical facilities of the cyanide emergency is defined and documented. It was evidenced that the emergency response plans were reviewed, approved and communicated to several stakeholders (internal and external), including security and health authorities, public authorities, emergency response suppliers, community representatives. When performing emergency drills, the operation invites specific stakeholders to participate in the drills. Another implemented control is to perform periodic meetings with stakeholders, in order to discuss and updated (if necessary) the emergency response plan)). The emergency communication loop is clearly defined and also contact information is available in the plans.

It was evidenced that the emergency response plan was reviewed, approved and communicated to several stakeholders (internal and external), including security and health authorities, public authorities, emergency response

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suppliers, community representatives. When performing emergency drills, the operation invites specific stakeholders to participate in the drills. Another implemented control is to perform periodic meetings with stakeholders, in order to discuss and updated (if necessary) the emergency response plan). The emergency communication loop is clearly defined and also contact information is available in the plan. Communication procedures with external media were found in place (addressed at crisis management plan).

***Standard of Practice 7.5: 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 Standard of Practice 7.5  
 in substantial compliance with  
 not in compliance with

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

It was evidenced that the mentioned emergency response plans clearly defines recovery or neutralization of solutions or solids, clearly defines decontamination of soils or other contaminated media, the management and/or disposal of spill clean-up debris, defines provision of an alternate drinking water supply.

All chemical products (MgO) used to neutralize solutions or solid NaCN are stored in a specific warehouse, in accordance with a compatibility table. Operational instructions as well as MSDS are available to the operators. Access to this warehouse is limited to authorized personnel only. This area is fenced and locked, as evidenced in the field audit.

The operation has its own drinking water treatment plant.

It was evidenced that there are no surface waters in the surroundings of the operation and that the operation emergency brigade does not have this kind of chemicals in their emergency response kit, as evidenced in the field audit.

It was evidenced that the Environmental Monitoring and Control plan clearly defines the required monitoring procedures to be implemented in the event of soil and water potential contamination.

***Standard of Practice 7.6: Periodically evaluate response procedures and capabilities and revise them as needed.***

The operation is:  in full compliance with Standard of Practice 7.6  
 in substantial compliance with  
 not in compliance with

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

It was evidenced that Minera El Peñon defined and documented an Emergency Response Plan and keep it up to date. Last update was on October 2018. Evidenced that Minera El Peñon review and evaluate the cyanide related elements of its emergency response plans at least every two years or after mock drills or real emergencies.

Evidenced the 2017, 2018 and 2019 Emergency Drill Plan. Evidenced that Minera El Peñon has been performing emergency mock drills as required in the Emergency Drill Plans. Reviewed the reports related to the last three emergency drills performed on 29/06/2017, 25/01/2018 and 12/05/2016.

It was evidenced that Minera El Peñon, evaluate after each emergency drill, the drill results. They are reviewed and discussed among the participants (a SWOT analysis is performed) and when necessary, the opportunities of improvement raised-up during the drill are considered as corrective or preventive actions and managed adequately. Reports related to the drills and their reviewed were found in place. The records of the three reported drills were reviewed and, the opportunities of improvement identified during the drills, were implemented.

***8. TRAINING: Train workers and emergency response personnel to manage cyanide in a safe and environmentally protective manner.***

***Standard of Practice 8.1: Train workers to understand the hazards associated with cyanide use.***

The operation is:  in full compliance with Standard of Practice 8.1  
 in substantial compliance with  
 not in compliance with

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not in compliance with

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

The operation designed and implemented a safety, health and environmental general induction program for all new employees joining the operation. This induction program encompasses a general approach about the cyanide related risks and a specific web platform self training, divided in four modules, including cyanide related emergencies. Every two years, the induction program is refreshed for all employees and contractors. All training records related to the induction program (initial and refresh) are retained by the operation. Reviewed initial induction training for new employees (to work in the process plant and other functions outside the process plant).

Standard of Practice 8.2: *Train appropriate personnel to operate the facility according to systems and procedures that protect human health, the community and the environment.*

in full compliance with

The operation is:  in substantial compliance with Standard of Practice 8.2  
 not in compliance with

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

The operation designed, documented and implemented a training program specific for that new employees that will work at the process plants, straight with cyanide. This program is divided in two phases, where phase one is related to theoretical (operational and emergency response procedures) training of new employees (plant induction training program) and the second phase, where the new employees will work during three months under the mentoring of an expert supervisor or operator. New employees never work alone before being evaluated by tests and job observations. The mentor and the plant manager must sign-off the approval (or not) of the new employee. It is important to observe that the job rotation in the process plant is very low.

The training materials are basically the operational procedures and the emergency response procedures, including first aid and decontamination activities. All the instructors are expert operators, supervisors and process engineers. Every time that an operational or emergency response procedure is changed, all involved personnel are retrained in that procedure. Independent if the employee participated or not in the review of the updated procedure. If, in a three years period, there are no changes in the operational and emergency response procedures, the operation provides a refresh training for all process plant and maintenance personnel. It was evidenced that Minera El Peñon evaluate the effectiveness of cyanide training by testing (theoretical training) and planned job observations (operational training under surveillance).

The operation retains all training records related to the employees working straight with cyanide, including the initial and the refresh ones. The records address the employee and the instructor name, the training scope and the final evaluation about the understanding of the training (acquiring or maintaining the knowledge). During the field audit, several plant operators and plant maintainers were interviewed and demonstrated adequate knowledge about their activities and the risks related to cyanide.

Standard of Practice 8.3: *Train appropriate workers and personnel to respond to worker exposures and environmental releases of cyanide.*

in full compliance with

The operation is:  in substantial compliance with Standard of Practice 8.3  
 not in compliance with

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

As previously mentioned, it was evidenced that plant operators and maintainers have specific training in emergency response procedures, including first aid and decontamination procedures. All emergency brigade members (surface team) are operators or maintainers of the process plant.

All plant operators and maintainers, as previously mentioned, receive specific training on emergency response procedures. Beyond that, all emergency brigade (surface team) members belong to the process plant or to the maintenance process.

All emergency response coordinators (principal and replacements) and the emergency brigade members (surface team) are trained in the emergency response procedures addressed at the emergency response plan mentioned at Principle # 7.

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As previously mentioned (refer to Principle # 7), the emergency response plan is communicated to external stakeholders that are included in the emergency response plan, such as the Antofagasta firefighters, Carabineros de Chile, community representatives.

Reviewed refresh training sessions performed in 2017,2018 and 2019 (beyond the emergency mock drills reported at SoP 7.6) for the following brigade members.

It was evidenced that Minera El Peñon uses mock emergency drills to evaluate its emergency response plans and procedures and to evaluate the performance of the emergency brigade members and coordinators. When opportunities of improvement are identified (after a SWOT analysis), they are implemented. Refer to Principle # 7.

It was evidenced that the operation retains all records related to emergency training, addressing the trainee and the instructor name, the date, the training scope, and the instructor evaluation.

**9. DIALOGUE: Engage in public consultation and disclosure.**

*Standard of Practice 9.1: Provide stakeholders the opportunity to communicate issues of concern.*

The operation is:  in full compliance with  in substantial compliance with  not in compliance with Standard of Practice 9.1

*Summarize the basis for this Finding/Deficiencias Identified:*  
The operation provides for internal and external stakeholders to communicate issues of concern regarding the cyanid management system. Internally, there are several means for every employee to clarify concerns about the cyanide, mainly through training, daily safety dialogs, meetings, emergency mock drills, emails, communication boards and CCTV. For external stakeholders, there is a specific communication process which interacts with the surrounding communities (two other copper mines), through specific meetings. Telephone lines are available to contact the operation. The operation has a specific magazine (El Peñon) to be distributed among the stakeholders. Public authorities have direct contact with the operation. The operation implemented a specific visiting program called Puertas Abiertas (Open Doors).

*Standard of Practice 9.2: Initiate dialogue describing cyanide management procedures and responsively address identified concerns.*

The operation is:  in full compliance with  in substantial compliance with  not in compliance with Standard of Practice 9.2

*Summarize the basis for this Finding/Deficiencias Identified:*  
The operation provides for internal and external stakeholders to communicate issues of concern regarding the cyanid management system. Internally, there are several means for every employee to clarify concerns about the cyanide, mainly through training, daily safety dialogs, meetings, emergency mock drills, emails, communication boards and CCTV. For external stakeholders, there is a specific communication process which interacts with the surrounding communities (two other copper mines), through specific meetings. Telephone lines are available to contact the operation. The operation has a specific magazine (El Peñon) to be distributed among the stakeholders. Public authorities have direct contact with the operation. The operation implemented a specific visiting program called Puertas Abiertas (Open Doors).

Standard of Practice 9.3: *Make appropriate operational and environmental information regarding cyanide available to stakeholders.*

The operation is  in full compliance with Standard of Practice 9.3  
 in substantial compliance with  
 not in compliance with

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

The operation developed and implemented a specific leaflet, describing how cyanide is managed at the operation. A plastic card is also available for all stakeholders (internal and external) containing information about cyanide management. The majority of the local population is literate.

The operation, through its communication process, have specific communication channels to provide information related to cyanide related incidents. It was evidenced that the operation has a crises management plan (revision dated March 2018), addressing specific communication procedures to be followed in front of any confirmed real incident involving cyanide.

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