INTERNATIONAL CYANIDE MANAGEMENT INSTITUTE

Gold Mining Operations

Verification Protocol

For The
International Cyanide Management Code

www.cyanidecode.org

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Introduction

This Verification Protocol is used by a third-party auditor in assessing whether a gold mining operation of a Signatory to the International Cyanide Management Code is adhering to the Principles and Standards of Practice of the Code. For this audit to be acceptable for this purpose it must be conducted by auditors meeting the third-party auditor criteria of the International Cyanide Management Institute.

The goal of this Protocol is to encourage and support a thorough and probing inquiry by the auditor. This Protocol is structured to require that an auditor provide detailed responses, sufficient to provide a clear justification for the findings. Full responses are necessary for each question; "yes", "no" or "not applicable" answers are not sufficient. The auditor must describe the specific evidence to support the findings that a gold mine operation using cyanide meets the Code provisions. Evidence to support findings may include but is not limited to reviews of documents and records, direct observations, interviews with appropriate personnel and results of inspections by applicable regulatory agencies. Information must be provided on documents reviewed, facilities inspected and personnel interviewed. The auditor must also identify the basis for any representative sampling of records, inspection reports or other documentation.

This Protocol is not meant to limit the inquires made by an auditor in the conduct of an audit or the actions taken by any gold mining operation to manage their cyanide operations in a responsible manner or to implement the provisions of the Code.

It also is not intended to suggest, with respect to any of the Principles or Standards of Practice that there is only one way for a gold mining operation to meet the goals of the Code. While the questions posed in the Protocol are based on the measures typically appropriate to meet the Principles and Standards of Practice as discussed in the Code's Implementation Guidance, a gold mining operation may have used alternative means to meet a particular Code provision. Familiarity with the Implementation Guidance is essential to place each Protocol question in the appropriate context, understand the intent and expectation of performance for each Standard of Practice and evaluate the measures taken by an operation to meet the Standard. Site specific conditions and local regulatory requirements may play a significant role in determining the approaches used by an operation. The auditor's detailed descriptions of the evidence that supports a finding is particularly important to demonstrate how alternative methods have satisfied the Code provisions.

A gold mining operation is expected to develop and implement a number of written management systems or procedures addressing water balance, fluid management, worker health and safety, training, emergency response, and monitoring and reporting, as well as various operating practices. These plans can take any form including but not limited to formalized manuals, standard operating procedures, checklists, signs, work orders and training materials. None of these need be limited solely to issues involving cyanide management. The intent of the Code is that management systems and procedures demonstrate the operation's understanding of the practices necessary to manage cyanide in a manner that prevents and controls releases to the environment and exposures to workers and the community.

In evaluating these plans and procedures for compliance, the auditor must determine if a plan, procedure or system is in place, if it addresses the elements identified in the Protocol, and if there is evidence that the plan or procedure is being implemented. This evidence may be in the form of formal records, direct observations or interviews. The audit should determine if an operation's plans, procedures and management systems may reasonably be expected to meet the performance goals of the Standards of Practice based on available evidence. Disputes over specific assumptions, calculations or procedures should be avoided unless the issue has a significant bearing on the operation's ability to comply with the Code.

In a number of cases, the Protocol calls for design, construction and/or quality assurance/quality control documentation for a facility. It may be difficult for an existing operation to provide this information, either because the information was not initially developed or because it is no longer available. Where design or construction information is called for but documentation is not available, an operation can substitute a report by appropriately qualified personnel substantiating that the facility can continue to be safely operated within established parameters that are consistent with the Code's Principles and Standards of Practice. In some cases, the results of such a review may require modifications to a site's operating practices to account for identified deficiencies or uncertainties in the initial design and/or construction of a cyanide facility.

Information regarding the design, construction and quality assurance/quality control of cyanide facilities need only be verified initially and need not be considered in subsequent re-verifications unless the facility has been modified or additional facilities have been constructed. The auditor should reference the initial audit report as evidence that the operation is in compliance with these Standards of Practice.

The Protocol requires the auditor to make a finding regarding whether the operation is in full compliance, substantial compliance or is not in compliance with each of the Standards of Practice. Being in full compliance does not necessarily require an affirmative answer to all individual questions under a Standard of Practice. An operation may have used alternative means to meet the Standard or the Standard or one of its individual questions may have not been applicable for site-specific reasons.

The auditor must find that an operation is in compliance with the Code if the operation is in full compliance with all Principles and Standards of Practice. If not fully compliant, the auditor must identify where he believes that compliance has not been fully achieved and where improvements are necessary. In order for the auditor to find that the operation is in substantial compliance with a Standard, the operation must have made a good-faith effort to comply and any identified deficiencies must be readily correctable and must not present an immediate or substantial risk to health, safety or the environment. Operations that are in substantial compliance with a Standard of Practice must develop a Corrective Action Plan to correct the deficiency and commit to fully implement the Corrective Action Plan within a time period mutually agreed to with the auditor but in no case longer than one year in order to be certified as in full compliance with the Code. The Corrective Action Plan must also reference any Corrective Action Plans being implemented to bring the mine's cyanide producer and/or transporter into full compliance. An auditor must find that an operation is not in compliance with the Code if it is neither in compliance nor substantial compliance with any one of the Standards of Practice.

Verification Protocol

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

Standard of Practice1.1: 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.

1. Does the operation's contract with all cyanide manufacturer(s) or distributor(s) require that the cyanide be produced at a facility that has been certified as being in compliance with the Code?

2. Is the cyanide purchased by the gold mine manufactured at a facility or facilities certified as being in compliance with the Code?

3. If cyanide is purchased from an independent distributor(s), has the distributor(s) provided evidence that the cyanide shipped to the gold mining operation is from a manufacturer(s) that is certified in compliance with the Code?

Finding: Is the operation in full compliance, substantial compliance, or non-compliance with Standard of Practice 1.1? Explain the basis for the finding.

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.

1. Is there a written agreement between the operation, the cyanide producer, distributor, and transporter(s) designating responsibility for the following, as applicable?
   a) Packaging as required by the United Nations for international shipments and by the political jurisdiction(s) the shipment will pass through
   b) Labeling in languages necessary to identify the material in the political jurisdiction(s) the shipment will pass through, and as required by these jurisdiction(s) and by the United Nations (for international shipments)
   c) Storage prior to shipment
   d) Evaluation and selection of routes, including community involvement
   e) Storage and security at ports of entry
   f) Interim loading, storage and unloading during shipment
   g) Transport to the operation
   h) Unloading at the operation
   i) Safety and maintenance of the means of transportation (e.g., aircraft, vessels, vehicles, trains, etc.) throughout transport

j) Task and safety training for transporters and handlers throughout transport
k) Security throughout transport
l) Emergency response throughout transport

2. Does the written agreement specify that the designated responsibilities extend to any subcontractors used by the producer, distributor, transporter or the operation for transportation-related activities?

Finding: Is the operation in full compliance, substantial compliance, or non-compliance with Standard of Practice 2.1? Explain the basis for the finding.

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

1. Does the operation's contract with the cyanide transporter(s) require that the transporter(s) be certified under the Code?

2. Is the cyanide transporter(s) certified under the Code?

3. Does the operation have chain of custody records identifying all elements of the supply chain (producer, transporter(s), interim storage facilities) that handle the cyanide brought to its site? Are all identified transporters certified in compliance with the Code?

Finding: Is the operation in full compliance, substantial compliance, or non-compliance with Standard of Practice 2.2? Explain the basis for the finding.

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

Note: Also see questions 1, 2, 5 & 7 under Standard of Practice 4.7 and all questions under Standard of Practice 4.8 for additional items applicable to handling and storage of cyanide.

1. Have facilities for unloading, storing and mixing cyanide been designed and constructed in accordance with cyanide producers' guidelines, applicable jurisdictional rules and/or other sound and accepted engineering practices for these facilities?

2. Are unloading and storage areas for liquid and solid cyanide located away from people and surface waters? If not, has the operation evaluated the potential for releases to surface water and/or human exposure, and implemented precautions to minimize these potentials?

3. Is liquid cyanide unloaded on a concrete or other surface that can minimize seepage to the subsurface?

4. Is the cyanide unloading area designed and constructed to contain, recover or allow remediation of any leakage from the tanker truck?

5. Is there a method to prevent the overfilling of cyanide storage tanks, such as a level indicator and high-level alarm?

6. Are cyanide mixing and storage tanks located on a concrete or other surface that can prevent seepage to the subsurface?

7. Are secondary containments for cyanide storage and mixing tanks constructed of materials that provide a competent barrier to leakage?

8. Is cyanide stored:
   a) With adequate ventilation to prevent the build-up of hydrogen cyanide gas?
   b) Under a roof, off the ground or with other measures to minimize the potential for contact of solid cyanide with water?
   c) In a secure area where public access is prohibited, such as within the fenced boundary of the plant or within a separate fenced and locked area?
   d) Separately from incompatible materials such as acids, strong oxidizers and explosives and apart from foods, animal feeds and tobacco products with berms, bunds, walls or other appropriate barriers that will prevent mixing?

Finding: Is the operation in full compliance, substantial compliance, or non-compliance with Standard of Practice 3.1? Explain the basis for the finding. Consider the responses to questions 1, 2, 5 & 7 under Standard of Practice 4.7 and all questions under Standard of Practice 4.8 as they pertain to unloading, storage and mixing of cyanide.

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.*

Note: Also see questions 1, 3, & 6-8 under Standard of Practice 4.1, and question 3 under Standard of Practice 4.7 for additional items applicable to operation of unloading, storage and mixing facilities.

1. With respect to empty cyanide containers, are procedures in place and implemented to:
   a) Prevent empty cyanide containers from being used for any purpose other than holding cyanide?
   b) Rinse empty cyanide drums, plastic bags and liners with water three times and add the rinse water to the cyanidation process or otherwise dispose of it in an environmentally sound manner?
   c) Crush empty cyanide drums prior to disposal in a landfill and burn or otherwise dispose of empty wooden crates in an environmentally sound manner?

d) Clean any cyanide residue from the outside of cyanide containers that are returned to the vendor and securely close them for shipment?

2. Has the operation developed and implemented plans or procedures to prevent exposures and releases during cyanide unloading and mixing activities such as:
   a) Operation of all valves and couplings for unloading liquid cyanide and mixing solid or liquid cyanide;
   b) Handling cyanide containers without rupturing or puncturing;
   c) Limiting the height of stacking of cyanide containers;
   d) Timely clean up of any spills of cyanide during mixing;
   e) Providing for safe unloading of liquid cyanide and manual mixing of solid cyanide by requiring appropriate personal protective equipment and having a second individual observe from a safe area, or remote observation by video?

Finding: Is the operation in full compliance, substantial compliance, or non-compliance with Standard of Practice 3.2? Explain the basis for the finding. Consider the responses to questions 1, 3 & 6-8 under Standard of Practice 4.1, and question 3 under Standard of Practice 4.7 as they pertain to unloading, storage and mixing of cyanide.

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 including contingency planning and inspection and preventive maintenance procedures.

1. Have written management and operating plans or procedures been developed for cyanide facilities including unloading, mixing and storage facilities, leach plants, heap leach operations, tailings impoundments, and cyanide treatment, regeneration and disposal systems?

2. Does the operation have plans or procedures that identify the assumptions and parameters on which the facility design was based and any applicable regulatory requirements (e.g., freeboard required for safe pond and impoundment operation; the cyanide concentrations in tailings on which the facility's wildlife protection measures were based) as necessary to prevent or control cyanide releases and exposures consistent with applicable requirements?

3. Does the operation have plans or procedures that describe the standard practices necessary for the safe and environmentally sound operation of the facility including the specific measures needed for compliance with the Code, such as inspections and preventive maintenance activities?

4. Does the operation have a procedure 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?

5. Does the operation have 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?

6. Does the operation inspect cyanide facilities on an established frequency sufficient to assure and document that they are functioning within design parameters?

7. Does the operation inspect the following at unloading, storage, mixing and process areas, as applicable to the site?
   a) Tanks holding cyanide solutions for structural integrity and signs of corrosion and leakage
   b) Secondary containments for their integrity, the presence of fluids and their available capacity, and to ensure that any drains are closed and, if necessary, locked, to prevent accidental releases to the environment
   c) Leak detection and collection systems at leach pads and ponds, as required in the design documents
   d) Pipelines, pumps and valves for deterioration and leakage
   e) Ponds and impoundments for the parameters identified in their design documents as critical to their containment of cyanide and solutions and maintenance of the water balance, such as available freeboard and integrity of surface water diversions

8. Are inspections documented, including the date of the inspection, the name of the inspector, and any observed deficiencies? Are the nature and date of corrective actions documented? Are records retained?

9. Are preventive maintenance programs implemented and activities documented to ensure that equipment and devices function as necessary for safe cyanide management?

10. Does the operation have necessary 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? Is the back-up power generating equipment maintained and tested? If the back-up power generating equipment is not present on site, has sufficient draindown time been incorporated into the water balance to allow acquisition, installation, and activation of such equipment?

Finding: Is the operation in full compliance, substantial compliance, or non-compliance with Standard of Practice 4.1? Explain the basis for the finding. Consider the responses to questions 1, 3 & 6-8 as they apply to unloading, storage and mixing tanks and pipelines and include them in the finding section of the Verification Protocol for Standard of Practice 3.2.

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

1. Does the operation conduct a program to determine appropriate cyanide addition rates in the mill and evaluate and adjust addition rates as necessary when ore types or processing practices change cyanide requirements?

2. Has the operation evaluated various control strategies for cyanide additions?

3. Has the operation implemented a strategy to control its cyanide addition?

Finding: Is the operation in full compliance, substantial compliance, or non-compliance with Standard of Practice 4.2? Explain the basis for the finding.

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

1. Has the operation developed a comprehensive, probabilistic water balance?

2. Does the water balance consider the following in a reasonable manner and as appropriate for the facilities and environment?
   a) The rates at which solutions are applied to leach pads and tailings that are deposited into tailings storage facilities
   b) A design storm duration and storm return interval that provides a sufficient degree of probability that overtopping of the pond or impoundment can be prevented during the operational life of the facility
   c) The quality of existing precipitation and evaporation data in representing actual site conditions
   d) The amount of precipitation entering a pond or impoundment resulting from surface run-on from the upgradient watershed, including adjustments as necessary to account for differences in elevation and for infiltration of the runoff into the ground
   e) Effects of potential freezing and thawing conditions on the accumulation of precipitation within the facility and the upgradient watershed
   f) Solution losses in addition to evaporation, such as the capacity of decant, drainage and recycling systems, allowable seepage to the subsurface, and allowable discharges to surface water
   g) The effects of potential power outages or pump and other equipment failures on the draindown from a leach pad or the emergency removal of water from a facility
   h) Where solution is discharged to surface waters, the capacity and on-line availability of necessary treatment, destruction or regeneration systems
   i) Other aspects of facility design that can affect the water balance, such as the assumed phreatic surface in a tailings storage facility

3. Do the operating procedures incorporate inspection and monitoring activities to implement the water balance and prevent overtopping of ponds and impoundments and unplanned discharge of cyanide solutions to the environment?

4. Are ponds and impoundments designed and operated with adequate freeboard above the maximum design storage capacity determined to be necessary from water balance calculations?

5. Does the operation measure precipitation, compare the results to design assumptions and revise operating practices as necessary?

Finding: Is the operation in full compliance, substantial compliance, or non-compliance with Standard of Practice 4.3? Explain the basis for the finding.

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

1. Has the operation implemented measures (i.e., fencing, filling in collection ditches with gravel, and covering or netting solution in ponds and impoundments) to restrict access by wildlife and livestock to all open waters where WAD cyanide exceeds 50 mg/l?

2. Can the operation demonstrate that the cyanide concentration in open water in TSFs, leach facilities and solution ponds does not exceed 50 mg/l WAD cyanide?

3. Is maintaining a WAD cyanide concentration of 50 mg/l or less in open water effective in preventing significant wildlife mortality?

4. Does the operation apply leach solutions in a manner designed to avoid significant ponding on the heap surface and limit overspray of solution off the heap liner?

Finding: Is the operation in full compliance, substantial compliance, or non-compliance with Standard of Practice 4.4? Explain the basis for the finding.

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

1. Does the operation have a direct discharge to surface water and if so, is it no greater than 0.5 mg/l WAD cyanide?

2. Is the concentration of free cyanide 0.022 mg/l or lower downstream of any established mixing zone? How has this been determined?

3. Does the operation have an indirect discharge to surface water? If so, does it result in a concentration of free cyanide in excess of 0.022 mg/l downstream of any established mixing zone?

4. If indirect discharges from the operation have caused cyanide concentrations in surface water to rise above levels protective of a designated beneficial use for aquatic life, is the operation engaged in remedial activity to prevent further degradation and restore beneficial use?

Finding: Is the operation in full compliance, substantial compliance, or non-compliance with Standard of Practice 4.5? Explain the basis for the finding.

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

1. Does the operation implement specific water management or other measures to manage seepage to protect the beneficial use(s) of ground water beneath and/or immediately down gradient of the operation?

2. Are WAD cyanide concentrations (or other species of cyanide for which there is a numerical standard established by the applicable jurisdiction) in groundwater at compliance points below or down gradient of the facility at or below levels that are protective of identified beneficial uses of the groundwater?

3. If the operation uses mill tailings as underground backfill, have the potential impacts to worker health and the beneficial uses of ground water been evaluated and have measures been implemented as necessary to address them?

4. If seepage from the operation has caused cyanide concentrations of ground water to rise above levels protective of beneficial use, is the operation engaged in remedial activity to prevent further degradation and restore beneficial use?

Finding: Is the operation in full compliance, substantial compliance, or non-compliance with Standard of Practice 4.6? Explain the basis for the finding.

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

1. Are spill prevention or containment measures provided for all cyanide unloading, storage, mixing and process solution tanks?

2. Are secondary containments for cyanide unloading, storage, mixing and process tanks 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?

3. Are procedures in place and being implemented to prevent discharge to the environment of any cyanide solution or cyanide-contaminated water that is collected in a secondary containment area?

4. For cyanide process tanks without secondary containment, are there procedures for remediation of any contaminated soil such that adverse impacts on surface or ground water are prevented?

5. Are spill prevention or containment measures provided for all cyanide process solution pipelines to collect leaks and prevent releases to the environment?

6. Have areas where cyanide pipelines present a risk to surface water been evaluated for special protection needs?

7. Are cyanide tanks and pipelines constructed of materials compatible with cyanide and high pH conditions?

Finding: Is the operation in full compliance, substantial compliance, or non-compliance with Standard of Practice 4.7? Explain the basis for the finding. Consider the responses to questions 1, 2, 5 & 7 as they apply to unloading, storage and mixing tanks and pipelines and include them in the finding section of the Verification Protocol for Standard of Practice 3.1. Consider the response to question 3 as it applies to cyanide unloading, storage and mixing tanks and pipelines and include it in the finding section of the Verification Protocol for Standard of Practice 3.2.

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.*

1. Have quality control and quality assurance programs been implemented during construction of all new cyanide facilities and modifications to existing facilities, including cyanide unloading, storage, mixing facilities and other cyanide facilities?

2. Have quality control and quality assurance programs addressed the suitability of materials and adequacy of soil compaction for earthworks such as tank foundations and earthen liners, the installation of synthetic membrane liners used in ponds and leach pads, and for construction of cyanide storage and process tanks?

3. Have quality control and quality assurance records been retained for cyanide facilities?

4. Have appropriately qualified personnel reviewed cyanide facility construction and provided documentation that the facility has been built as proposed and approved?

5. Where there is no available quality control and quality assurance documentation or as-built certification for cyanide facility construction, has an appropriately qualified person inspected those elements of the facility involving cyanide and issued a report concluding that its continued operation within established parameters will protect against cyanide exposures and releases?

Finding: Is the operation in full compliance, substantial compliance, or non-compliance with Standard of Practice 4.8? Explain the basis for the finding. Consider the responses to all questions as they apply to unloading, storage and mixing tanks and pipelines in the finding section of the Verification Protocol for Standard of Practice 3.1.

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

1. Has the operation developed written standard procedures for monitoring activities?

2. Have sampling and analytical protocols been developed by appropriately qualified personnel?

3. Do procedures specify how and where samples should be taken, sample preservation techniques, chain of custody procedures, shipping instructions, and cyanide species to be analyzed?

4. Are sampling conditions (e.g., weather, livestock/wildlife activity, anthropogenic influences, etc.) and procedures documented in writing?

5. Does the operation monitor for cyanide in discharges of process water to surface water and in surface and ground water down gradient of the site?

6. Does the operation inspect for and record wildlife mortalities related to contact with and ingestion of cyanide solutions?

7. Is monitoring conducted at frequencies adequate to characterize the medium being monitored and to identify changes in a timely manner?

Finding: Is the operation in full compliance, substantial compliance, or non-compliance with Standard of Practice 4.9? Explain the basis for the finding.

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.*

1. Has the operation developed written procedures to decommission cyanide facilities at the cessation of operations?

2. Does the plan include an implementation schedule for decommissioning activities?

3. Does the operation review its decommissioning procedures for cyanide facilities during the life of the operation and revise them as needed?

Finding: Is the operation in full compliance, substantial compliance, or non-compliance with Standard of Practice 5.1? Explain the basis for the finding.

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

1. Has the operation developed an estimate of the cost to fully fund third party implementation of the cyanide-related decommissioning measures as identified in its site decommissioning or closure plan?

2. Does the operation review and update the cost estimate at least every five years and when revisions to the plan are made that effect cyanide-related decommissioning activities?

3. Has the operation established a financial mechanism approved by the applicable jurisdiction to cover the estimated costs for cyanide-related decommissioning activities as identified in its decommissioning and closure strategy? If so, no further demonstration is required to comply with this Standard of Practice.

4. If the applicable jurisdiction does not require financial guarantees, has the operation established a mechanism other than self-insurance or self-guarantee to cover estimated costs for the cyanide-related decommissioning activities as identified in its decommissioning and closure strategy? If so, no further demonstration is required to comply with this Standard of Practice.

5. If the operation has established self-insurance or self-guarantee as a financial assurance mechanism, has the operation provided a statement by a qualified financial auditor that it has sufficient financial strength to fulfill this obligation as demonstrated by an accepted financial evaluation methodology?

Finding: Is the operation in full compliance, substantial compliance, or non-compliance with Standard of Practice 5.2? Explain the basis for the finding.

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 and control them.*

1. Has the operation developed procedures describing how cyanide-related tasks such as unloading, mixing, plant operations, entry into confined spaces, and equipment decontamination prior to maintenance should be conducted to minimize worker exposure?

2. Do the procedures require, where necessary, the use of personal protective equipment and address pre-work inspections?

3. Does the operation implement procedures 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?

4. Does the operation solicit and actively consider worker input in developing and evaluating health and safety procedures?

Finding: Is the operation in full compliance, substantial compliance, or non-compliance with Standard of Practice 6.1? Explain the basis for the finding.

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.*

1. Has the operation determined the appropriate pH for limiting the evolution of hydrogen cyanide gas during mixing and production activities?

2. Where the potential exists for significant cyanide exposure, does the operation use ambient or personal monitoring devices to confirm that controls are adequate to limit worker exposure to hydrogen cyanide gas and sodium, calcium or potassium cyanide dust to 10 parts per million on an instantaneous basis and 4.7 parts per million continuously over an 8-hour period, as cyanide?

3. Has the operation identified areas and activities where workers may be exposed to cyanide in excess of 10 parts per million on an instantaneous basis and 4.7 parts per million continuously over an 8-hour period and require use of personal protective equipment in these areas or when performing these activities?

4. Is hydrogen cyanide monitoring equipment maintained, tested and calibrated as directed by the manufacturer, and are records retained for at least one year?

5. Have warning signs been placed where cyanide is used advising workers that cyanide is present, and that smoking, open flames and eating and drinking are not allowed, and that, if necessary, suitable personal protective equipment must be worn?

6. Are showers, low-pressure eye wash stations and dry powder or non-acidic sodium bi-carbonate fire extinguishers located at strategic locations throughout the operation and are they maintained, inspected and tested on a regular basis?

7. Are unloading, storage, mixing and process tanks and piping containing cyanide identified to alert workers of their contents, and is the direction of cyanide flow in pipes designated?

8. Are MSDS, first aid procedures or other informational materials on cyanide safety in the language of the workforce available in areas where cyanide is managed?

9. Are procedures in place and being implemented to investigate and evaluate cyanide exposure incidents to determine if the operation's programs and procedures to protect worker health and safety, and to respond to cyanide exposures, are adequate or need revising?

Finding: Is the operation in full compliance, substantial compliance, or non-compliance with Standard of Practice 6.2? Explain the basis for the finding.

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

1. Does the operation have water, oxygen, a resuscitator, antidote kits and a radio, telephone, alarm system or other means of communication or emergency notification readily available for use at cyanide unloading, storage and mixing locations and elsewhere in the plant?

2. Does the operation inspect its first aid equipment regularly to ensure that it is available when needed, and are materials such as cyanide antidotes stored and/or tested as directed by their manufacturer and replaced on a schedule to ensure that they will be effective when needed?

3. Has the operation developed specific written emergency response plans or procedures to respond to cyanide exposures?

4. Does the operation have its own on-site capability to provide first aid or medical assistance to workers exposed to cyanide?

5. Has the operation developed procedures to transport workers exposed to cyanide to locally available qualified off site medical facilities?

6. Has the operation made formalized arrangements with local hospitals, clinics, etc., so that these providers are aware of the potential need to treat patients for cyanide exposure? Is the operation confident that the medical facility has adequate, qualified staff, equipment and expertise to respond to cyanide exposures?

7. Are mock emergency drills conducted periodically to test response procedures for various cyanide exposure scenarios, and are lessons learned from the drills incorporated into response planning?

Finding: Is the operation in full compliance, substantial compliance, or non-compliance with Standard of Practice 6.3? Explain the basis for the finding.

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

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

1. Has the operation developed an Emergency Response Plan to address potential accidental releases of cyanide?

2. Does the Plan consider the potential cyanide failure scenarios appropriate for its site-specific environmental and operating circumstances, including the following, as applicable?

a) Catastrophic release of hydrogen cyanide from storage or process facilities
b) Transportation accidents
c) Releases during unloading and mixing
d) Releases during fires and explosions
e) Pipe, valve and tank ruptures
f) Overtopping of ponds and impoundments
g) Power outages and pump failures
h) Uncontrolled seepage
i) Failure of cyanide treatment, destruction or recovery systems
j) Failure of tailings impoundments, heap leach facilities and other cyanide facilities

3. Has planning for response to transportation-related emergencies considered transportation route(s), physical and chemical form of the cyanide, method of transport (e.g., rail, truck), the condition of the road or railway, and the design of the transport vehicle (e.g., single or double walled, top or bottom unloading)?

4. Does the Plan describe specific response actions (as appropriate for the anticipated emergency situations) such as clearing site personnel and potentially affected communities from the area of exposure, use of cyanide antidotes and first aid measures for cyanide exposure, control of releases at their source, and containment, assessment, mitigation and future prevention of releases?

Finding: Is the operation in full compliance, substantial compliance, or non-compliance with Standard of Practice 7.1? Explain the basis for the finding.

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

1. Has the operation involved its workforce and stakeholders, including potentially affected communities, in the cyanide emergency response planning process?

2. Has the operation made potentially affected communities aware of the nature of their risks associated with accidental cyanide releases, and consulted with them directly or through community representatives regarding appropriate communications and response actions?

3. Has the operation involved local response agencies such as outside responders and medical facilities in the cyanide emergency planning and response process?

4. Does the operation engage in consultation or communication with stakeholders to keep the Emergency Response Plan current?

Finding: Is the operation in full compliance, substantial compliance, or non-compliance with Standard of Practice 7.2? Explain the basis for the finding.

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

1. Do the cyanide-related elements of the Emergency Response Plan:
   a) Designate primary and alternate emergency response coordinators who have explicit authority to commit the resources necessary to implement the Plan?
   b) Identify Emergency Response Teams?
   c) Require appropriate training for emergency responders?
   d) Include call-out procedures and 24-hour contact information for the coordinators and response team members?
   e) Specify the duties and responsibilities of the coordinators and team members?
   f) List emergency response equipment, including personal protection gear, available along transportation routes and/or on-site?
   g) Include procedures to inspect emergency response equipment to ensure its availability?
   h) Describe the role of outside responders, medical facilities and communities in the emergency response procedures?

2. Has the operation confirmed that outside entities included in the Emergency Response Plan are aware of their involvement and are included as necessary in mock drills or implementation exercises?

Finding: Is the operation in full compliance, substantial compliance, or non-compliance with Standard of Practice 7.3? Explain the basis for the finding.

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

1. Does the Plan include procedures and contact information for notifying management, regulatory agencies, outside response providers and medical facilities of the cyanide emergency?

2. Does the Plan include procedures and contact information for notifying potentially affected communities of the cyanide related incident and any necessary response measures, and for communication with the media?

Finding: Is the operation in full compliance, substantial compliance, or non-compliance with Standard of Practice 7.4? Explain the basis for the finding.

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.*

1. Does the Plan describe specific, remediation measures as appropriate for the likely cyanide release scenarios, such as:
   a) Recovery or neutralization of solutions or solids?
   b) Decontamination of soils or other contaminated media?

c) Management and/or disposal of spill clean-up debris?
d) Provision of an alternate drinking water supply?

2. Does the Plan prohibit the use of chemicals such as sodium hypochlorite, ferrous sulfate and hydrogen peroxide to treat cyanide that has been released into surface water?

3. Does the Plan address the potential need for environmental monitoring to identify the extent and effects of a cyanide release, and include sampling methodologies, parameters and, where practical, possible sampling locations?

Finding: Is the operation in full compliance, substantial compliance, or non-compliance with Standard of Practice 7.5? Explain the basis for the finding.

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

1. Does the operation review and evaluate the cyanide related elements of its Emergency Response Plan for adequacy on a regular basis?

2. Are mock cyanide emergency drills conducted periodically as part of the Emergency Response Plan evaluation process?

3. Are provisions in place to evaluate and revise the Emergency Response Plan after any cyanide related emergency requiring its implementation? Have such reviews been conducted?

Finding: Is the operation in full compliance, substantial compliance, or non-compliance with Standard of Practice 7.6? Explain the basis for the finding.

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.

1. Does the operation train all personnel who may encounter cyanide in cyanide hazard recognition?

2. Is cyanide hazard recognition refresher training periodically conducted?

3. Are cyanide training records retained?

Finding: Is the operation in full compliance, substantial compliance, or non-compliance with Standard of Practice 8.1? Explain the basis for the finding.

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.*

1. Does the operation train workers to perform their normal production tasks, including unloading, mixing, production and maintenance, with minimum risk to worker health and safety and in a manner that prevents unplanned cyanide releases?

2. Are the training elements necessary for each job involving cyanide management identified in training materials?

3. Do appropriately qualified personnel provide task training related to cyanide management activities?

4. Are employees trained prior to working with cyanide?

5. Is refresher training on cyanide management provided to ensure that employees continue to perform their jobs in a safe and environmentally protective manner?

6. Does the operation evaluate the effectiveness of cyanide training by testing, observation or other means?

7. Are records retained throughout an individual's employment documenting the training they receive? Do the records include the names of the employee and the trainer, the date of training, the topics covered, and if the employee demonstrated an understanding of the training materials?

Finding: Is the operation in full compliance, substantial compliance, or non-compliance with Standard of Practice 8.2? Explain the basis for the finding.

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

1. Are all cyanide unloading, mixing, production and maintenance personnel trained in the procedures to be followed if cyanide is released?

2. Are site cyanide response personnel, including unloading, mixing, production and maintenance workers, trained in decontamination and first aid procedures? Do they take part in routine drills to test and improve their response skills?

3. Are Emergency Response Coordinators and members of the Emergency Response Team trained in the procedures included in the Emergency Response Plan regarding cyanide, including the use of necessary response equipment?

4. Has the operation made off-site Emergency Responders, such as community members, local responders and medical providers, familiar with those elements of the Emergency Response Plan related to cyanide?

5. Is refresher training for response to cyanide exposures and releases regularly conducted?

6. Are simulated cyanide emergency drills periodically conducted for training purposes? Do they cover both worker exposures and environmental releases?

7. Are cyanide emergency drills evaluated from a training perspective to determine if personnel have the knowledge and skills required for effective response? Are training procedures revised if deficiencies are identified?

8. Are records retained documenting the cyanide training, including the names of the employee and the trainer, the date of training, the topics covered, and how the employee demonstrated an understanding of the training materials?

Finding: Is the operation in full compliance, substantial compliance, or non-compliance with Standard of Practice 8.3? Explain the basis for the finding.

9. DIALOGUE: Engage in public consultation and disclosure.

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

1. Does the operation provide the opportunity for stakeholders to communicate issues of concern regarding the management of cyanide?

Finding: Is the operation in full compliance, substantial compliance, or non-compliance with Standard of Practice 9.1? Explain the basis for the finding.

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

1. Are there opportunities for the operation to interact with stakeholders and provide them with information regarding cyanide management practices and procedures?

Finding: Is the operation in full compliance, substantial compliance, or non-compliance with Standard of Practice 9.2? Explain the basis for the finding.

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

1. Has the operation developed written descriptions of how their activities are conducted and how cyanide is managed? Are these descriptions available to communities and other stakeholders?

2. Has the operation disseminated information on cyanide in verbal form where a significant percentage of the local population is illiterate?

3. Does the operation make information publicly available on the following confirmed cyanide release or exposure incidents?
   a) Cyanide exposure resulting in hospitalization or fatality
   b) Cyanide releases off the mine site requiring response or remediation
   c) Cyanide releases on or off the mine site resulting in significant adverse effects to health or the environment
   d) Cyanide releases on or off the mine site requiring reporting under applicable regulations
   e) Releases that are or that cause applicable limits for cyanide to be exceeded

Finding: Is the operation in full compliance, substantial compliance, or non-compliance with Standard of Practice 9.3? Explain the basis for the finding.