



INTERNATIONAL CYANIDE MANAGEMENT INSTITUTE

MINING OPERATIONS VERIFICATION PROTOCOL

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MINING OPERATIONS VERIFICATION PROTOCOL

Table of Contents

Introduction	1
Principles and Standards of Practice	2
Principle 1 PRODUCTION AND PURCHASE.....	2
Standard of Practice 1.1.....	2
Principle 2 TRANSPORTATION.....	2
Standard of Practice 2.1.....	2
Principle 3 HANDLING AND STORAGE.....	2
Standard of Practice 3.1.....	2
Standard of Practice 3.2.....	3
Principle 4 OPERATIONS.....	4
Standard of Practice 4.1.....	4
Standard of Practice 4.2.....	6
Standard of Practice 4.3.....	6
Standard of Practice 4.4.....	7
Standard of Practice 4.5.....	7
Standard of Practice 4.6.....	8
Standard of Practice 4.7.....	8
Standard of Practice 4.8.....	9
Standard of Practice 4.9.....	9
Principle 5 DECOMMISSIONING.....	10
Standard of Practice 5.1.....	10
Standard of Practice 5.2.....	10
Principle 6 WORKER SAFETY	11
Standard of Practice 6.1.....	11
Standard of Practice 6.2.....	11
Standard of Practice 6.3.....	12
Principle 7 EMERGENCY RESPONSE	13
Standard of Practice 7.1.....	13
Standard of Practice 7.2.....	13
Standard of Practice 7.3.....	14
Standard of Practice 7.4.....	14



MINING OPERATIONS VERIFICATION PROTOCOL

Standard of Practice 7.5.....	15
Standard of Practice 7.6.....	15
Principle 8 TRAINING.....	16
Standard of Practice 8.1.....	16
Standard of Practice 8.2.....	16
Standard of Practice 8.3.....	17
Principle 9 DIALOGUE AND DISCLOSURE	17
Standard of Practice 9.1.....	17
Standard of Practice 9.2.....	17

DRAFT



MINING OPERATIONS VERIFICATION PROTOCOL

The International Cyanide Management Code (hereinafter “the Code”, “Code” or “the Cyanide Code”), this document, and other documents or information sources referenced at www.cyanidecode.org are believed to be reliable and were prepared in good faith from information reasonably available to the drafters. However, no guarantee is made as to the accuracy or completeness of any of these other documents or information sources. No guarantee is made in connection with the application of the Code, the additional documents available or the referenced materials to prevent hazards, accidents, incidents, or injury to employees and/or members of the public at any specific site where gold or silver is extracted from ore by the cyanidation process. Compliance with this Code is not intended to and does not replace, contravene or otherwise alter the requirements of any specific national, state or local governmental statutes, laws, regulations, ordinances, or other requirements regarding the matters included herein. Compliance with this Code is entirely voluntary and is neither intended nor does it create, establish, or recognize any legally enforceable obligations or rights on the part of its signatories, supporters or any other parties.



MINING OPERATIONS VERIFICATION PROTOCOL

Introduction

This Mining Verification Protocol is designed for assessing whether a mining operation of a Signatory to the International Cyanide Management Code (“Code”, “the Code” or “the Cyanide Code”) is adhering to the Principles and Mining Standards of Practice of the Code.

The Mining Verification Protocol applies to the management of cyanide at gold and silver mining operations. As defined in the Code’s *Definitions and Acronyms* document, “gold and silver mining” means an “activity using cyanide to leach gold and/or silver from ore, including a facility or activity where cyanide is used as a flotation reagent to separate gold and/or silver-bearing material from other metal-bearing material, providing that flotation takes place at a site where cyanide is also used to leach gold and/or silver from ore.

Detailed guidance and instructions for use of this Protocol and application of Protocol questions during a Code certification audit is provided in the International Cyanide Management Institute’s *Auditor Guidance for Use of the Mining Operations Verification Protocol*, available on the *Cyanide Code* website.



MINING OPERATIONS VERIFICATION PROTOCOL

Principles and Standards of Practice

Principle 1 | PRODUCTION AND PURCHASE

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

Standard of Practice 1.1

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

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

Principle 2 | TRANSPORTATION

Protect communities and the environment during cyanide transport.

Standard of Practice 2.1

Require that cyanide is safely managed through the entire transportation and delivery process from the production facility to the mine by use of certified transport with clear lines of responsibility for safety, security, release prevention, training and emergency response.

1. Does the operation have chain of custody records or other documentation identifying all transporters and supply chains responsible transporting cyanide from the producer to the operation?
2. Are all identified transporters individually certified in compliance under the Code or included in certified supply chain(s)?

Principle 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.

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



MINING OPERATIONS VERIFICATION PROTOCOL

2. Are cyanide unloading, mixing and storage facilities 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 and is the unloading area designed and constructed to contain, recover or allow remediation of any leakage from the tanker truck or isotainer system?
4. Are there systems in place to prevent overflowing of cyanide storage tanks, and are the systems tested and maintained on a routine basis?
5. Are cyanide mixing and storage tanks located on a concrete or other surface that can prevent seepage to the subsurface?
6. Are secondary containments for cyanide storage and mixing tanks constructed of materials that provide a competent barrier to leakage?
7. Is cyanide stored:
 - a) Under a roof, off the ground or with other measures to minimize the potential for contact of solid cyanide with water?
 - b) With adequate ventilation to prevent the build-up of hydrogen cyanide gas?
 - 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?

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.

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, including the hose connections and couplings on tanker trucks and isotainers?



MINING OPERATIONS VERIFICATION PROTOCOL

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 and maintenance 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 cleanup of any spills of cyanide during mixing and transfer of liquid cyanide from tanker trucks and isotainers;
 - 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 observe remotely by video.
 - f) Addition of colorant dye to solid cyanide prior to or at the point of mixing into solution and/or provisions for the addition of colorant dye to high-strength liquid cyanide prior to delivery at the mining operation?

Principle 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, process plants, heap leach operations, tailings impoundments, and cyanide treatment, regeneration and disposal systems?
2. Do the operation's plans or procedures identify and account for the assumptions and parameters on which the facility design was based and any applicable regulatory requirements as necessary to prevent or control cyanide releases and exposures consistent with applicable requirements?
3. Do the operation's plans or procedures 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 water management, inspections and preventive maintenance activities?
4. Does the operation implement procedures to review proposed changes to production processes, operating practices, or cyanide facilities to determine if they may increase the potential for cyanide releases and worker exposures, and incorporate any measures necessary to protect worker health and safety and the environment?



MINING OPERATIONS VERIFICATION PROTOCOL

5. Does the operation have cyanide management contingency procedures for non-standard operating situations that may present a potential for cyanide exposures and releases, such as:
 - a) an upset in the operational water balance that presents a risk of exceeding the design containment capacity;
 - b) problems identified by facility monitoring or inspection; and
 - c) temporary closure or cessation of operations due to situations such as work stoppages, lack of ore or other essential materials, economics, civil unrest, or legal or regulatory actions?
6. 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 provided for tanks and pipelines for physical integrity, the presence of fluids and 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.
7. Does the operation inspect cyanide facilities on an established frequency sufficient to ensure and document that they are functioning within design parameters?
8. Are inspections documented?
 - a) Does the documentation identify specific items to be observed and include the date of the inspection, the name of the inspector, and any observed deficiencies?
 - b) Are the nature and date of corrective actions documented, and 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?



MINING OPERATIONS VERIFICATION PROTOCOL

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 implement a program to evaluate cyanide use in the mill and adjust the addition rate to minimize its use?

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 model?
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 the rates at which tailings 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 runoff from any 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 any 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 cyanide 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. Are ponds and impoundments designed and operated with adequate freeboard above the maximum design storage capacity determined to be necessary from water balance calculations?
4. 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?



MINING OPERATIONS VERIFICATION PROTOCOL

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

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 Tailings Storage Facilities, leach facilities and 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 leach pad liner?

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. Does the operation monitor for cyanide in surface water downgradient of the site and can the operation demonstrate that direct discharges to surface water do not cause the concentration of free cyanide in the receiving water to exceed 0.022 mg/l downstream of any established mixing zone?
3. Can the mine demonstrate that indirect discharges to surface water do not cause the in-stream concentration of free cyanide to exceed 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?



MINING OPERATIONS VERIFICATION PROTOCOL

Standard of Practice 4.6

Implement measures designed to manage seepage from cyanide facilities to protect the beneficial uses of groundwater.

1. Does the operation implement specific water management or other measures to manage seepage to protect the beneficial use(s) of groundwater beneath and/or immediately downgradient of the operation?
2. Does the operation monitor for cyanide in groundwater downgradient of the site and can the operation demonstrate that concentrations of WAD cyanide (or other species of cyanide for which there is a numerical standard established by the applicable jurisdiction) in groundwater at compliance points below or downgradient of the facility are 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 groundwater been evaluated and have measures been implemented as necessary to address them?
4. If seepage from the operation has caused cyanide concentrations of groundwater to rise above levels protective of beneficial use, is the operation engaged in remedial activity to prevent further degradation and restore beneficial use?

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 groundwater 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?



MINING OPERATIONS VERIFICATION PROTOCOL

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

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. Were quality assurance and quality control programs implemented during construction and substantial modification of all 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. Has an appropriately qualified person 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 facilities and issued a report concluding that their continued operation within established parameters will protect against cyanide exposures and releases?

Standard of Practice 4.9

Implement monitoring programs to evaluate the effects of cyanide use on wildlife, and surface and groundwater quality.

1. Has the operation developed written standard procedures for monitoring activities?
2. Have sampling and analytical protocols been developed by an appropriately qualified person?
3. Do procedures specify how and where samples should be taken, sample preservation techniques, chain of custody procedures, shipping instructions, cyanide species to be analyzed and quality assurance and quality control requirements for cyanide analyses?
4. Are sampling conditions (e.g., weather, livestock/wildlife activity, anthropogenic influences, etc.) and procedures documented in writing?
5. Is monitoring conducted at frequencies adequate to characterize the medium being monitored and to identify changes in a timely manner?



MINING OPERATIONS VERIFICATION PROTOCOL

Principle 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, livestock, and the environment.

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?

Standard of Practice 5.2

Establish a financial 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 decommissioning 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?



MINING OPERATIONS VERIFICATION PROTOCOL

Principle 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 solicit and actively consider worker input in developing and evaluating health and safety procedures?

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. Has the operation identified areas and activities where workers may be exposed to hydrogen cyanide gas or cyanide dust in excess of 10 parts per million (ppm) (11 mg/m³) on an instantaneous basis and 4.7 ppm (5 mg/m³) continuously over an 8-hour period, as cyanide, and require use of appropriate personal protective equipment in these areas or when performing these activities?
3. Does the facility use monitoring devices in process areas and for activities involving management of cyanide to confirm that workers are not exposed to hydrogen cyanide gas or cyanide dust exceeding 10 ppm on an instantaneous basis or 4.7 ppm continuously over an 8-hour period, as cyanide?
4. Is hydrogen cyanide monitoring equipment maintained, tested and calibrated as directed by the manufacturer, and are records retained for at least three years?
5. Have warning signs been placed where cyanide is used advising workers that cyanide is present, of any necessary personal protective equipment that must be worn, and that smoking, open flames and eating and drinking are not allowed?
6. Is high-strength cyanide solution dyed for clear identification?



MINING OPERATIONS VERIFICATION PROTOCOL

7. Are showers, low-pressure eyewash 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?
8. Are unloading, storage, mixing and process tanks and piping containing cyanide solution identified to alert workers of their contents, and is the direction of cyanide flow in pipes designated?
9. Are Safety Data Sheets, first aid procedures or other informational materials on cyanide safety written in the language of the workforce and available in areas where cyanide is managed?
10. 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 to be revised?

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 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 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 informed local medical facilities 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?



MINING OPERATIONS VERIFICATION PROTOCOL

Principle 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 and cyanide exposure incidents?
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, process or regeneration facilities?
 - b) Transportation accidents occurring on site or in close proximity to the operation?
 - c) Cyanide releases during unloading and mixing?
 - d) Cyanide 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:
 - a) Specific response actions (as appropriate for the anticipated emergency situations) such as clearing site personnel and potentially affected communities from the area of exposure?
 - b) Use of cyanide antidotes and first aid measures for cyanide exposure?
 - c) Control of releases at their source?
 - d) Containment, assessment, mitigation and future prevention of releases?

Standard of Practice 7.2

Involve site personnel and stakeholders in the planning process.

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



MINING OPERATIONS VERIFICATION PROTOCOL

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 identified external entities having emergency response roles, and involved those entities in the cyanide emergency response planning process?
4. Does the operation engage in consultation or communication with stakeholders to keep the Emergency Response Plan current?

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 on-site?
 - g) Include procedures to inspect emergency response equipment to ensure its availability?
 - h) Describe the role of external responders, medical facilities and communities in the emergency response procedures?
2. Has the operation confirmed that external entities with roles and responsibilities identified in the Emergency Response Plan are aware of their involvement and are included as necessary in mock drills or implementation exercises?

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, external 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?



MINING OPERATIONS VERIFICATION PROTOCOL

3. Does the operation have a procedure for notifying ICMI of any significant cyanide incidents, as defined in ICMI's *Definitions and Acronyms* document? Have all such significant cyanide incidents that have occurred been reported to ICMI?

Standard of Practice 7.5

Incorporate remediation measures and monitoring elements into response plans and 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 or that has the potential to reach 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?

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?
3. Are provisions in place to evaluate and revise the Emergency Response Plan, as necessary, following mock drills and following an actual cyanide-related emergency requiring its implementation? Have such evaluations been conducted?



MINING OPERATIONS VERIFICATION PROTOCOL

Principle 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?

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. Is task training related to cyanide management activities provided by an appropriately qualified person?
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?



MINING OPERATIONS VERIFICATION PROTOCOL

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, including decontamination and first aid procedures?
2. 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?
3. Has the operation made external responders, such as local fire brigades and emergency medical services familiar with those elements of the Emergency Response Plan related to cyanide?
4. Is refresher training for response to cyanide exposures and releases regularly conducted?
5. Are records retained documenting the cyanide emergency response 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?

Principle 9 | DIALOGUE AND DISCLOSURE

Engage in public consultation and disclosure.

Standard of Practice 9.1

Promote dialogue with stakeholders regarding cyanide management and responsibly address identified concerns.

1. Does the operation provide stakeholders with information on its cyanide management practices and engage with them regarding their concerns?

Standard of Practice 9.2

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?



MINING OPERATIONS VERIFICATION PROTOCOL

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 cause applicable limits for cyanide to be exceeded

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