



# ***INTERNATIONAL CYANIDE MANAGEMENT INSTITUTE***

## ***Auditor Guidance for Use of the Cyanide Transportation Verification Protocol***

[www.cyanidecode.org](http://www.cyanidecode.org)

**January 2011**

The International Cyanide Management Code (hereinafter “the Code”), this document, and other documents or information sources referenced at [www.cyanidecode.org](http://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 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.

# Table of Contents

	Page
Introduction	1
General Guidance	
• 1. Use of Protocol	1
• 2. Scope	1
• 3. Nature of Responses	2
• 4. Evidence	2
• 5. Implementation Guidance and Alternative Measures	2
• 6. Management Plans and Procedures	3
• 7. Potential Audit Findings	4
• 8. Certification Decision	5
• 9. Consignor Supply Chain Audits and Due Diligence Investigations	6
• 10. Submission of Audit Reports and ICMI Completeness Review	9
Principle 1, Transport	
• Transport Practice 1.1	11
• Transport Practice 1.2	15
• Transport Practice 1.3	16
• Transport Practice 1.4	17
• Transport Practice 1.5	18
• Transport Practice 1.6	22
Principle 2, Interim Storage	
• Transport Practice 2.1	24
Principle 3, Emergency Response	
• Transport Practice 3.1	26
• Transport Practice 3.2	28
• Transport Practice 3.3	29
• Transport Practice 3.4	30
• Transport Practice 3.5	31

## **Introduction**

This guidance is issued by the International Cyanide Management Institute (ICMI) to assist cyanide transporters in understanding their obligations in implementing the International Cyanide Management Code, and to aid Code auditors in their evaluation of Code compliance.

Compliance is evaluated against the Protocol's Principles and Transport Practices. The questions in this Verification Protocol are based on the measures typically necessary to meet these Principles and Practices. Determining the exact way these measures should be implemented for any given transporter, and how an auditor is to evaluate them for compliance with the Code, can require interpretation and use of professional judgment. This interpretive guidance discusses such situations and advises transporters and auditors on the factors to be considered when making these judgments.

Additionally, operations may implement alternatives to the measures identified in the Verification Protocol and still meet the Principles and Transport Practices. This guidance document identifies some of these alternatives. Further, it places each of the Verification Protocol questions in the appropriate context so that operations and auditors can better understand their intent and expectation of performance, and evaluate any alternative measures taken by a transporter to meet a Transport Practice.

## **General Guidance**

1. Use of Protocol: In order to be certified, a gold mining operation undergoing an International Cyanide Management Code audit must have its cyanide transported by transporters that are certified under the Code, including transport operations that are certified individually and those included as part of a certified supply chain, as discussed below in Section 9 of the General Guidance.

Except as specifically excluded below, all elements of the cyanide transportation and distribution system bringing cyanide from its point of manufacture to a gold mining operation are subject to this Protocol. This includes each individual transporter involved in a shipment, interim storage sites used during transport (as defined in the Code's Definitions and Acronyms document), and any signatory consignors transporting cyanide through contracted carriers included in a designated supply chain. The Protocol also applies to any subcontractors that handle cyanide or otherwise conduct activities addressed in the Protocol for a transporter, and the audit findings regarding a subcontractor's cyanide management practices are to be included with the findings of the transport audit. Storage of cyanide in a warehouse (as defined in the Code's Definitions and Acronyms document) is considered to be a cyanide production activity and is subject to the Cyanide Production Verification Protocol, and storage of cyanide at a gold mine is subject to the Gold Mining Operations Verification Protocol.

2. Scope: This Protocol applies to those entities engaged in the transport of cyanide from its point of manufacture to the mine site. In addition to the actual physical carriers of the cyanide, any subcontractors whose activities are addressed by the Verification Protocol, as

well as the cyanide producer, consignor and/or the mine itself, may be subject to the Verification Audit, depending on how the arrangements for delivery are structured. Other entities, such as contract transport vehicle maintenance facilities, may also be subject to parts of the Protocol. See Section 9 of the General Guidance for information regarding consignors and shipments by sea or rail.

Storage of cyanide in a warehouse (as defined in the Code's Definitions and Acronyms document) is subject to the Cyanide Production Verification Protocol, and storage of cyanide at a gold mine is subject to the Gold Mining Operations Verification Protocol.

3. Nature of Responses: Detailed written responses to each Protocol question are necessary. Since the completed Verification Protocol becomes the Detailed Audit Report, answers to each question must be of sufficient detail to provide a clear justification for the resulting audit finding. A simple "yes" or "no" or "not applicable" answer is not adequate. In response to each question, the auditor must describe the evidence that supports the finding. What evidence demonstrates that the operation is in full compliance? What deficiency results in only substantial compliance? Why is a question "not applicable"? Data to support a finding, such as the specific limitations on driver's hours, should also be provided, where applicable.

Should the auditor wish to make recommendations to the operation for improvements that are outside of the scope of the Code, it is not necessary that this information be shared with ICMI. However, any such additional recommendations should be authorized by the client, and auditors are requested to clearly identify these as additional measures and explain, as necessary, why they are not required for Code compliance.

4. Evidence: As with any formal audit, various types of evidence are necessary to support the findings. These include documents reviewed by the auditor, the auditor's direct observations in the field, and interviews with appropriate personnel. In many cases, the most appropriate personnel for interviews are those in the field doing the job, as these are the individuals with first-hand knowledge of what is actually done at the operation. While a supervisor should know what a procedure calls for or what is supposed to be done, this may not be what is actually done in the field. Auditors should interview several employees in order to confirm, for example, how a written procedure actually is being implemented in the field. It is also important to record the names of each person interviewed in the detailed audit notes. Useful evidence may also be found in inspection reports of applicable regulatory agencies.

The nature of the supporting evidence should be identified in response to each question so this information is available in the Detailed Audit Findings Report. The response should also identify the nature of any representative sampling of records, inspection reports or other documentation; for example, what records were reviewed in determining whether or not an inspection program was implemented?

5. Implementation Guidance and Alternative Measures: The Verification Protocol questions are based on the measures believed typically to be necessary for Code compliance, but variations and alternatives are also acceptable if they are demonstrated to achieve a Transport Practice.

Therefore, an operation can still be in full compliance with a Transport Practice even if the auditor answers “no” to one of more of the audit questions under that Practice. The auditor’s familiarity with the Code’s Implementation Guidance can provide significant additional insight into the intent of many provisions.

The Code’s Implementation Guidance was developed specifically for gold mines but the concepts are generally applicable to cyanide transporters as well. The Implementation Guidance helps the auditor understand the intent and expectation of performance for related Transport Practices. In doing so, it allows the auditor to better evaluate any alternate measures taken by an operation to meet a Practice. Full and complete answers to Protocol questions are extremely important when alternative measures are used to meet a Transport Practice because in these cases, the operation has not implemented the measure identified in a question. The auditor must describe how and why the alternate measure meets the Practice.

Site-specific conditions and local regulatory requirements may legitimately affect how an operation chooses to meet a given Transport Practice, and these must also be identified in the responses to the Protocol questions. Since compliance with local regulations is separate from Code compliance, the auditor must describe substantively how or why compliance with a local regulation ensures compliance with the Code.

6. Management Plans and Procedures: Transporters are expected to develop and implement a number of written management systems or procedures to comply with the Code. These include standard operating practices, worker health and safety programs, training information and emergency response procedures.

The Code does not mandate any specific form or format for these systems, plans and procedures. Formalized manuals, standard operating procedures, checklists, signs, work orders, training materials, or other forms all can be acceptable if they accomplish the goal of the Transport Practices. Moreover, none of these documents need be limited solely to issues involving cyanide management. However they are structured, an operation’s management systems and procedures should demonstrate that the operation understands the practices necessary to manage cyanide in a manner that prevents and controls releases and exposures.

The auditor must determine whether the necessary plan, procedure or system is in place, whether it addresses the elements identified in the Verification Protocol, and whether there is evidence that the plan, procedure or system is being implemented.

While the auditor must determine if the operation’s plans, procedures and systems can reasonably be expected to meet the performance goals of the Transport Practice, based on available evidence, he is neither expected nor advised to conduct an exhaustive analysis of every plan, procedure and management system to confirm every assumption and calculation. Obviously, if an assumption or calculation that may have a significant bearing on the operation’s ability to comply with the Code appears to be questionable, it should be further investigated. For example, if the load-bearing capacity of a piece of cyanide transport equipment seems to be significantly higher than expected, the auditor should follow up to determine if the value is appropriate. But the auditor should not substitute his own judgment

for that of another professional when the impact of the difference will not adversely affect the ability of the plan, procedure or management system to meet the Transport Practice.

The intent of third-party auditing of the Code is not to have the auditor judge each decision made by the transporter's design engineers or planners, but to ensure that the transport operations' design, construction and operation are based on the reasonable assumptions and calculations of competent professionals. The question of when to accept what is presented to the auditor, and when it is necessary to dig deeper into an issue is intrinsic to auditing. The auditor's professional judgment is especially important in this regard during Code audits.

**7. Potential Audit Findings:** Auditors make separate findings for each Transport Practice. These individual findings determine the overall finding for the operation and its certification status.

The Verification Protocol does not have a numerical score. Compliance with the Code and its Transport Practices is a "Pass/Fail" situation. But with respect to audits conducted for Code certification, there are two passing categories: full compliance and substantial compliance.

Full compliance with any individual Transport Practice means just what it says; there are no exceptions to compliance with any Verification Protocol questions under that Practice. A finding of full compliance with a Transport Practice can be made if there are affirmative answers to all applicable Verification Protocol questions under that Practice, or if the operation has implemented an alternative to the measure identified in the audit question that achieves the Transport Practice.

An operation can be in substantial compliance with a Transport Practice if it is not in full compliance (that is, if there are one or more negative answers to Verification Protocol questions and no alternate measures that achieve the Practice). However, three criteria must be satisfied for an auditor to make a finding of substantial compliance.

First, the operation must have made a good-faith effort to comply. This means that it has made a reasonable attempt to manage cyanide in a manner consistent with the Transport Practice rather than simply ignoring a particular aspect of Code. An example of a good-faith effort would be having a vehicle inspection program that needed additional elements as opposed to having no inspection program at all. The auditor will need to exercise considerable professional judgment in determining whether or not the operation has made a "good faith" effort to comply.

Second, to make a finding of substantial compliance, the deficiency must be readily correctable. The concept of "readily correctable" implies that the deficiency can be brought into full compliance within one year, which is the time limit for implementation of a Corrective Action Plan. This determination also may require a considerable degree professional judgment on the part of the auditor.

Third, there can be no immediate or substantial risk to health, safety or environment from a situation found in substantial compliance. For example, many deficiencies related to paperwork or documentation would not pose an immediate or substantial risk to health, safety or environment, and if the other two criteria are met, these types of deficiencies can often result in a finding of substantial compliance. This decision also may require significant professional judgment.

An operation may not be fully compliant with any of the Protocol questions under a given Transport Practice, but can still be found in substantial compliance with that Practice if it met the three criteria discussed above for each of the questions. It should also be recognized that a facility could be found in full compliance even if the auditor has identified some deficiency. For example, one or two missing inspection reports out of three years of regular documentation could be viewed as an isolated situation and the operation could still be found in full compliance.

Generally speaking, although the auditor must use his professional judgment to evaluate site-specific circumstances, a finding of full compliance can more easily be supported when a situation involves an isolated problem rather than a programmatic deficiency, where the issue involves paperwork or retention of records rather than on-the-ground non-compliance, or when a problem that may have occurred early in a three-year audit cycle has not reoccurred.

An operation that is neither in full nor substantial compliance with a Transport Practice is in non-compliance. It could be that no good-faith effort was made to comply, that the deficiency is not readily correctable, or that the deficiency could present immediate or substantial risk to health, safety or environment.

As an auditor makes his findings, he must keep in mind that any deficiency that drops the operation from full to substantial compliance, or from substantial to non-compliance for a given Transport Practice should only be applied to a single Practice. The Protocol questions have been drafted to be as narrow as possible, and they should be read and applied carefully so there is no overlap and the same deficiency is not counted against an operation under more than one Practice.

8. Certification Decision: The auditor can determine the certification status of the operation once he has made findings with respect to each individual Transport Practice. For this decision, the lowest individual finding for any Transport Practice prevails as the overall audit finding.

An operation can be found in full compliance with the Code only if all Transport Practices are found in full compliance. Operations in full compliance are certified as such under the Code.

An operation is in substantial compliance with the Code if any Transport Practice is found in substantial compliance and none are in non-compliance. These operations are conditionally certified subject to their implementing a Corrective Action Plan and coming into full compliance.

An operation is in non-compliance with Code if it is found in non-compliance with any Transport Practice.

ICMI does not make a separate decision regarding an operation's certification. ICMI certifies an operation when an Audit Report which has been accepted by ICMI finds the operation in full or substantial compliance. ICMI has no independent means of determining whether or not an operation complies with the Code, and it therefore relies entirely on the findings of the certified professional auditor. The auditors will have observed the operation in its entirety and should evaluate what they observe within the context of the operation as a whole. While the guidance provided in this document is intended to assist auditors around the world to see things from a similar perspective and reach consistent findings given the same set of facts, the professional auditors and technical experts conducting verification audits must use their own professional and expert judgment to reach their own independent conclusions.

9. Consignor Supply Chain Audits and Due Diligence Investigations: Many cyanide producers, as well as entities such as distributors, sales agents, brokers and gold mining companies, arrange for and oversee the transport of cyanide along all or some portion of the supply chain from producer to gold mine. These consignors, which may rely on contracted carriers such as trucking companies, railways and shipping companies to transport cyanide, can become Code signatories for cyanide transportation and designate supply chains for certification that consist of more than one cyanide carrier.

Consignors define the extent of their supply chain(s), but in addition to truck carriers, any railways, rail terminals, ocean carriers and ports used by the consignor for transport of cyanide to certified gold mines must be included within its supply chains so that stakeholders will be able to review their due diligence investigations along with the summary audit reports of the trucking companies involved in a certified supply chain. If a supply chain includes signatory trucking companies that are individually certified, these also should be identified for informational purposes.

The Code signatory application of a consignor must list each supply chain to be certified and identify each entity in each supply chain that manages cyanide (e.g., each trucking company, railway and rail terminal, shipping company and port). Upon the written request of a signatory consignor, the initial listing of this information on the transporter's ICMI signatory web page will include only a general description of the supply chain (e.g., "from the X sodium cyanide manufacturing facility to gold mines in South America"); the identity of each individual cyanide carrier and the country or countries in which they operate will be added only after the supply chain has been certified.

Each of a consignor's supply chains are certified separately and each individual truck transporter within each supply chain would require a Code Verification Audit. However, trucking companies that have signed the Code and been certified independent of the supply chain would not require additional auditing as part of the supply chain audit.

If a trucking company, rail line or terminal, port or shipping company is included as part of more than one of a consignor's supply chains, the common segment(s) can be evaluated for one chain and the results (Code Verification Audit Report or Due Diligence Investigation) can be used as part of the required documentation for the other of the same consignor's supply chains. In such a case, the duration of the certification period of the second supply chain would be limited to that remaining for the first supply chain certified with that common segment until that supply chain was recertified.

However, a consignor using a carrier that has been part of a different signatory consignor's certified supply chain would be required to conduct its own Code Verification Audit or Due Diligence Investigation of that carrier as part of the certification of its supply chain. This is necessary because a consignor often provides its carriers that are not individually certified with some of the elements necessary for Code compliance, such as emergency response capabilities, route assessments, and community consultation processes.

Consignors are expected to have documented operating plans and procedures for selecting the overall route of shipment and for selecting and for overseeing the individual cyanide carriers that comprise their supply chains to ensure that they have all the required Code compliance elements or get the necessary assistance from the consignor or other contracted entities. The consignor is therefore subject to a Code Verification Audit as part of the certification process for its supply chains, using the applicable portions of the existing Verification Audit Protocol for Cyanide Transport to evaluate its route and contractor selection processes as well as any elements of Code compliance it provides to its contract carriers such as emergency response capabilities and training in cyanide safety and management. This audit should also evaluate the consignor's implementation of these procedures and its oversight of its carriers and of any other contracted support services as necessary to maintain Code compliance. A single audit of the consignor's procedures and oversight activities can satisfy this requirement for all of its supply chains as long as it addresses any differences in how it manages its supply chains as well as the common issues applicable to all its supply chains.

The extent to which the consignor is subject to the various provisions of the Cyanide Transportation Verification Protocol will depend on the nature of the support the consignor provides to its contracted carriers. In most cases, Transport Practices and Protocol questions related to route evaluation and contractor selection will apply to consignors, while the applicability of other provisions must be determined based on the consignor's contractual relationships with the carriers in its supply chains.

Just as a certified gold mine can modify its cyanide facilities during the duration of its three-year certification period without prior notice to or approval by ICMI, a consignor can change individual carriers within a certified supply chain during its certification period. However, unlike a certified gold mine, a consignor does not have direct control over its contract carriers. Therefore, a consignor that changes or adds carriers within a certified supply chain must submit a revised signatory application to ICMI identifying the change, and must submit an addendum to its Verification Audit Report addressing the new carrier, within 9 months of the new carrier initiating its activities. Such a change does not affect the certification status

of the supply chain or extend the three-year duration of its certification. Pursuant to Item 6 of the instructions for the Signatory Application Form, the consignor should notify ICMI of such a change in a certified supply chain within 72 hours of the initiation of activities by the new carrier.

Co-producers that are Code signatory consignor-transporters may transport cyanide to certified gold mines using portions of each consignor's certified supply chain, as illustrated in the following example: Producer A has a contract to sell sodium cyanide to Mine Z, a Code-certified gold mine, but fulfills the contract with cyanide manufactured by Producer B. Producer B transports the cyanide from its production facility to its port of departure via truck and rail carriers that are part of one of its certified supply chains. Producer A takes responsibility for the remainder of the transport, starting with the ocean carrier and continuing to the port of entry on another continent and on to Mine Z via a trucking company. The ocean carrier, port of entry and trucking company are all included in one of Producer A's certified supply chains, which also includes other carriers not involved in the shipment of cyanide to Mine Z. In this situation, the transport of Producer B's cyanide to certified Mine Z complies with the Code even though it involves portions of two certified supply chains of two different consignors because 1) the cyanide is manufactured by a certified producer; 2) there is a written agreement between Producer A and Producer B that defines the responsibilities of each consignor with respect to the management of their respective portions of the overall supply chain from the cyanide production facility to the mine; 3) each carrier remains under the control and oversight of its signatory consignor-transporter during the transport of cyanide to Mine Z; and 4) the individual carriers in both supply chains have undergone Code Verification Audits or Due Diligence Investigations as part of the certification of their respective supply chains.

Except as specifically identified in this Guidance document, the Cyanide Transportation Protocol is not to be used to evaluate transport by rail and ship or management of cyanide at rail terminals and port facilities due to security issues, limited access, and the inability of consignors to affect changes in the operating practices of these transport facilities. Rather than conduct Code audits of these facilities, the consignor must conduct and document due diligence investigations of rail carriers, rail terminals, shipping companies and port facilities that are engaged to handle cyanide shipments, as further discussed below under Transport Practice 1.1. The consignor's due diligence investigation must either be conducted or reviewed by an auditor meeting ICMI requirements for a transport expert, and the auditor must conclude that the due diligence investigation has reasonably evaluated these facilities and that the consignor has, to the extent practical, implemented any necessary management measures. Due diligence investigations must be conducted on a three-year cycle.

Consignor supply chains may include interim storage facilities and warehouses, both of which are defined in the Code's Definitions and Acronyms document. Since interim storage facilities are part of cyanide transportation, they are evaluated pursuant to the provisions of Transport Practice 2.1 in the Cyanide Transportation Verification Protocol. However, warehouses are considered to be cyanide production facilities and if included in a supply chain, they must be evaluated by a lead auditor and a cyanide production expert auditor using the Cyanide Production Verification Protocol.

10. Submission of Audit Reports and ICMI Completeness Review: Lead auditors must submit the following documents to ICMI within 90 days of the completion of the site inspection portion of a Verification Audit: Detailed Audit Findings Report; Summary Audit Report; Auditor Credentials Form; Corrective Action Plan (for operations found in substantial compliance with the Code); and a letter from the owner or authorized representative of the audited operation granting the ICMI permission to post the Summary Audit Report and Corrective Action Plan (if required) on the Code web site. The lead auditor's signature on the Auditor Credentials Form must be certified by notarization or its equivalent.

Upon its receipt of the required information, ICMI will conduct a review of the submitted documentation for "completeness." This review is intended to ensure that all necessary information has been provided. It does not address the substantive issues of Code compliance.

ICMI's "completeness review" of the Detailed Audit Findings Report is intended to determine that all relevant questions have been answered and that sufficient details are provided in support of the auditor's findings. The Summary Audit Report is reviewed to ensure that it accurately represents the results of the Detailed Audit Findings Report and includes sufficient information to demonstrate the basis for each finding. The Auditor Credentials Form is also reviewed to confirm that the auditors meet ICMI criteria at the time of the audit and that the required information and attestation is available for public review. The Corrective Action Plan, if required, is reviewed to confirm that it covers all deficiencies that resulted in findings of substantial compliance.

If the documentation is complete, ICMI will inform the auditor and operation and post the Summary Audit Report, Auditor Credentials Form, and, if required, the Corrective Action Plan on its web site. If the documentation is incomplete, ICMI will advise the auditor and operation of the deficiencies and request that revised documentation be submitted within 30 days. ICMI will not accept an incomplete audit report.

Since supply chain audit reports will typically include multiple individual carriers as well as the consignor itself, the reporting process for these audits is structured slightly differently than that for certification of single transporters. Separate Detailed Audit Findings Reports are required for each truck transporter as well as for the consignor, and due diligence reports are required for rail and sea transport, rail yards and ports. No report is required for truck transporters included in a supply chain that are Code signatories and individually certified. The requirement for submittal of Verification Audit Reports within 90 days of the completion of the field portion of the audit applies to the entire supply chain audit rather than to the audit of any individual carrier.

Supply chain auditors must make findings with respect to each individual carrier as well as the consignor itself. Deficiencies identified during a supply chain audit should be addressed in a single Corrective Action Plan applicable to the entire supply chain; the Corrective Action Plan may therefore include items applicable to any or all of these carriers as well as to the consignor.

A single Summary Audit Report for the entire supply chain must be submitted for posting on the ICMI web site. The introduction to the Summary Audit Report should clearly identify the entire supply chain, including each truck, rail or/and ocean carrier as well as any rail terminals and port. The Summary Audit Report is comprised of a series of individual summary reports of the consignor, each truck carrier, and of any due diligence reports of rail lines and terminals, ports and shipping companies. Where a supply chain includes an individually-certified truck transporter, the Summary Audit Report should refer to the existing Summary Audit Report already posted on the ICMI web site. Auditor Credential Form(s) for the auditor(s) evaluating the consignor's programs and activities and each of the trucking companies, are also required. The Code transport expert auditor who conducted or reviewed any due diligence investigations should be included on the Auditor Credential Form(s).

# Cyanide Transportation Verification Protocol

**1. TRANSPORT:**                    **Transport cyanide in a manner that minimizes the potential for accidents and releases.**

Transport Practice 1.1:            Select cyanide transport routes to minimize the potential for accidents and releases.

Transport route refers to the path taken to get cyanide from the point of production (the producer) to the point of use (the mine site seeking Code certification). The route may involve a single carrier (e.g., a truck transporting cyanide from a production plant to a mine site) or multiple carriers and/or transport modes (e.g., several different trucks or a combination of truck, rail and/or ship transport with transfer of cyanide between the different transporters). Individual carriers, whether the sole carrier or part of a multi-carrier supply chain, typically will select their own route, and therefore are responsible for the evaluation of alternatives and risks associated with the selected route. However, when a supply chain includes multiple individual transporters, the consignor of the shipment (i.e., the signatory transporter) typically will select the overall route. In such a case, the consignor is responsible for evaluating the potential risks involved in the available alternatives, as well as the risks of the selected transport route and measures to address them.

For example, shipment overseas may involve truck shipment to a port, shipping to a port on another continent and then either truck or rail and truck transport to a mine. The consignor would be expected to evaluate available options for different ports, and the use of trucks only versus rail and truck to identify a route that minimizes the potential for accidents and releases. These activities should be evaluated during a Code Verification Audit of the consignor's activities. Once a route has been selected, the consignor must exercise due diligence in determining if the cyanide shipment will be handled safely by the ports, ships and/or rail facilities chosen or if additional measures must be implemented. For example, if a port lacks a dedicated and secure area for temporary storage of hazardous goods, then the consignor may need to make special arrangements for delivery to or pick-up from the port so the material can be safely stored to the maximum extent practical. The consignor's efforts in this regard must be documented in a due diligence investigation that will be included in the supply chain audit report. See the guidance for questions 1-4 and 6 below, and items g-i under Transport Practice 1.5, question 1, for additional discussion of how the route selection and due diligence requirements apply to consignors.

1. Does the transporter implement a process or procedure for selecting transport routes that minimizes the potential for accidents and releases or the potential impacts of accidents and releases? If so, does the process or procedure consider:
  - a) Population density
  - b) Infrastructure (roadway, rail, port, runway, helipad) construction and condition
  - c) Pitch and grade
  - d) Prevalence and proximity of water bodies and fog

Transporters must evaluate alternative transport routes and to the extent practical, select the one that minimizes both the potential for accidents and releases and the potential impacts of such accidents and releases if they do occur. The evaluation should consider the issues identified in the question as well as any others that may affect the relative risks of the various routes being evaluated, such as natural hazards (volcanic activity, landslides, flooding, etc) and security issues. The auditor should be able to review evidence that such a selection process was used. This may include a written procedure or policy that calls for such an evaluation, documentation that the procedure was used in selecting the route used by the transporter, and/or the results of the selection process.

However, in many cases, the evaluation and/or selection of routes may be limited by, or otherwise depend on the actual availability of alternatives, designations of preferred or required routes for transport of dangerous goods, or other jurisdictional requirements on such transport. The auditor must take these restrictions into account when determining whether the transporter's process or procedure effectively addresses the question.

A transporter's route evaluation procedure must be applicable to all its cyanide transportation activities. An individual transporter's route evaluation procedure should be applicable to the selection of all routes for truck transport of cyanide, while a consignor's route evaluation procedure should be applicable to the selection of the overall routes for all of its supply chains.

Where a consignor arranges for transport by multiple carriers, including, if applicable, the use of rail and ship transport, he must evaluate alternatives for the overall transport route to minimize risks just as an individual carrier must evaluate the alternatives for his segment of a route. The most preferable overall route may not be the one with the best port facilities, as the risks posed over the entire route, including the overland portion, must be considered during the route selection process. Consignors' procedures for evaluation of contracted transportation companies should address their safety records, and their compliance with items g-i under question 1 of Transport Practice 1.5.

It also should be recognized that the auditor is not expected to challenge the selected route or otherwise judge the decision made as a result of the evaluation unless that decision calls into question the legitimacy of the procedure itself. That is, the Code requires that the transporter have a route evaluation procedure or process, and as long as the outcome of the process is a reasonable one, the specific route selected is not within the auditor's purview.

2. Does the transporter implement a procedure to evaluate the risks of selected cyanide transport routes and take the measures necessary to manage these risks?

Even the best route available to transport cyanide to a mine site may have some portions or features that present an increased risk of accidents or potential impacts, such as sharp turns, rough road or proximity to surface water resources. The transporter's procedures should include an evaluation of the selected route to determine if extra precautions are necessary at points along the route. Consignors may also be responsible for these evaluations for their supply chains, particularly when cyanide is transported by rail or sea. In these situations, the

consignor's due diligence investigation should, to the extent practical, evaluate the security, safety, training and emergency response aspects of the selected rail and/or port facilities and determine if additional management procedures are necessary. For example, if a port lacks a secure storage area for off-loaded dangerous goods, the consignor may need to make special arrangements to pick up the cyanide shipment as soon as it is off-loaded and have it taken to a more secure temporary storage location until it is loaded onto trucks for transport to the mine site. Evidence of the implementation of these measures would be through interviews, records of the evaluation, and implementation and documentation of procedures to mitigate the identified risks.

3. Does the transporter implement a process or procedure to periodically reevaluate routes used for cyanide deliveries or does the transporter have a process for getting feedback on route condition from the transporter's operators?

The transporter should have a procedure to periodically reevaluate the route used for cyanide transport to confirm that no new risks have developed. This may be a formal administrative review, periodically accompanying the cyanide load to review conditions, or a process whereby the driver reports on road conditions. No frequency for the review is specified. Consignors should also reevaluate their overall supply chains periodically. The auditor will look for both a procedure for such a review and for documentation showing that it has occurred.

4. Does the transporter document the measures taken to address risks identified with the selected routes?

Any procedures that have been developed to address risks along the selected route should be documented in writing both for driver training and as a reference. Sharp turns, areas of proximity to surface water, rail crossings or areas of high population density may all require special precautions. This question may also apply to consignors when, based on their due diligence investigations, they have determined that additional safeguards are necessary to address deficiencies in rail and/or port operations or other aspects of their supply chains. However, it must be recognized that the options for such additional safeguards may be limited by the consignor's lack of control over these facilities. The auditor will review such documentation, as appropriate.

5. Does the transporter seek input from communities, other stakeholders and applicable governmental agencies as necessary in the selection of routes and development of risk management measures?

The nature and degree of consultation with communities, stakeholders and governmental agencies will depend on a number of route-specific factors. Compliance with the Code does not require the transporter to seek input from every individual or community along a cyanide delivery route. The intent of the Code is that the consultations enable the transporter to accurately evaluate potential routes for their relative risk, identify the risks that exist along the chosen route, and determine the measures necessary to manage this risk. In some situations, consultation with community leaders and/or designated transport and/or

emergency response agencies may be sufficient. Whatever the nature of the consultation, the transporter should have records to demonstrate to the auditor that input has been sought.

Community or stakeholder consultations are not contemplated with respect to the use of rail lines and terminals, and ports and shipping companies. However, the due diligence investigation required of the consignor must still evaluate these aspects of the transport chain for their relative risk, identify the risks that they may present along the chosen route, and determine, as practical, the measures necessary to manage this risk.

6. Where routes present special safety or security concerns, does the transporter use convoys, escorts or other additional safety or security measures to address the concern?

The use of convoys or escorts is typically more appropriate where road conditions are poor, there are recognized security concerns, or the potential need for immediate emergency response is relatively high. If such conditions exist and no special safety or security measures are in place, the transporter should be prepared to justify his decision that such measures are unnecessary. However, unless there are demonstrated issues of concern that appear to require the use of convoys, escorts or other special safety precautions, there may be no basis for the auditor to conclude that such measures are required. This question may also apply to consignors, as discussed under Transport Practice 1.1.

7. Has the transporter advised external responders, medical facilities and communities of their roles and/or mutual aid during an emergency response?

Depending on the nature of the transport route, it may be necessary for external responders, medical facilities and/or communities along the route to play a role during an emergency. Where such resources are available, they should be informed that cyanide will be transported through the area so that they can be prepared to respond as necessary. The transporter should retain records documenting any such communications and the availability of these resources should be identified in the transporter's emergency planning documents for review by the auditor. This question may also apply to consignors, as discussed under Transport Practice 1.1.

8. If the transport company subcontracts any of the cyanide handling or transport, does the transport company implement a procedure to ensure its subcontractors meet elements 1, thru 7 of this Transport Practice 1.1?

The requirements of the Code, and the questions in the Transportation Verification Protocol, apply to all entities involved in cyanide transport, including the transporter, and any subcontractors contracted by the transporter(s) with responsibility for items addressed in the Protocol. It will therefore be necessary for the transport auditor to evaluate the on-the-ground compliance of subcontractors with designated responsibilities for Code compliance.

In addition to auditing these entities for their respective cyanide transport responsibilities, this question seeks to ensure that subcontractors have been made aware of their responsibilities under the Code, and that the transporter being certified takes measures to

ensure that its subcontractors are aware of these responsibilities and are implementing the measures necessary for compliance. The transporter should provide the auditor with documentation that subcontractors have been notified of their responsibilities with regard to Code compliance and that the transporter takes measures as necessary to ensure that the subcontractor implements the required provisions, such as conducting its own review of subcontractor documentation and activities.

Transport Practice 1.2: Ensure that personnel operating cyanide handling and transport equipment can perform their jobs with minimum risk to communities and the environment.

1. Does the transport company use only trained, qualified and licensed (where required) operators to operate its transport vehicles?

Transporters must be able to demonstrate that personnel operating its cyanide transport vehicles have been properly trained and licensed (in jurisdictions requiring specific licenses to operate transport equipment) for vehicle operation. Auditors should review the documentation for a representative sample of vehicle operators to confirm their training and licenses. Where training and/or a demonstration of competency is required for issuance of an operating license, the license itself is adequate if no training record exists. This training requirement focuses on the operation of the vehicle; operation of off-loading or other cyanide-specific handling equipment is addressed in the following question.

2. Have all personnel operating cyanide handling and transport equipment been trained to perform their jobs in a manner that minimizes the potential for cyanide releases and exposures?

All personnel operating cyanide handling and transport equipment (e.g., fork lifts, cranes, delivery trucks) should be trained to perform their assigned tasks in a safe and environmentally sound manner. While this previous question addressed operation of the equipment or vehicle itself, this question focuses on those aspects that are specific to minimizing risks from handling of the cyanide. For example, delivery truck drivers must be trained on the procedures for loading and off-loading their trucks (if that is part of their job function), and fork lift operators must be trained on moving loads without rupturing cyanide containers. However, such training need not be cyanide-specific; training that addresses management of hazardous materials can be acceptable if it covers the appropriate issues.

Consignors that assist contracted trucking companies with training in cyanide safety and/or management are also subject to this requirement.

The Code does not require that the training or its documentation be in any specified form. However, the auditor must be able to confirm that such training has been given and that it has included the elements appropriate for the nature of the transport and responsibilities of the operator. Therefore, some type of training materials (e.g., standard operating procedures, a list of necessary training elements) will generally be necessary as well as documentation that operators have received the training (e.g., training records, sign-off sheets) will typically be

necessary. In addition to reviewing such records, the auditor should interview equipment operators to confirm that they had received the specified training.

3. If the transport company subcontracts any of the cyanide handling or transport, does the transport company have a procedure to ensure its subcontractors meet elements 1, 2 and 3 of this Transport Practice 1.2?

See discussion under question 8, Transport Practice 1.1.

Transport Practice 1.3: Ensure that transport equipment is suitable for the cyanide shipment.

1. Does the transport company only use equipment designed and maintained to operate within the loads it will be handling?

Transporters should have records documenting the load-bearing capacities of its transport equipment and their maximum operating cyanide weight available for the auditor's review. This includes equipment such as forklifts and cranes as well as over-the-road vehicles.

In addition to the general preventive maintenance program addressed under Transport Practice 1.4, the transporter also should have a specific maintenance component that ensures that its transport equipment retains a load-bearing capacity adequate for the anticipated load. This may include periodic inspections or testing as well as appropriate specifications for equipment and parts that may be replaced during maintenance.

In addition to reviewing documentation of these capacities and procedures as evidence of compliance, the auditor also should review maintenance records and/or interview maintenance personnel to confirm that the transporter's procedures are followed.

2. Are there procedures to verify the adequacy of the equipment for the load it must bear?

In addition to the ensuring that the manufacturer's rating of the loading capacity of transport equipment is adequate, the transporter also should verify this by inspecting and/or testing its equipment to identify signs of stress or overloading. This may be done as part of the operation's routine preventive maintenance inspection program. The auditor should consider evidence such as documentation of inspections and interviews with maintenance personnel or equipment operators in evaluating compliance with this provision.

3. Are there procedures in place to prevent overloading of the transport vehicle being used for handling cyanide (i.e., overloading a truck, ferry, barge, etc.)?

Systems or procedures should be in place to ensure that equipment is not loaded in excess of its design. These may include limits on the number of cyanide crates that can be loaded on a given piece of equipment, calculations demonstrating that a tanker fully loaded with product is below the load-bearing limit of the vehicle, or other means by which overloading can be prevented. Transporters should retain records demonstrating that the procedure achieves this

goal, and the auditor also should interview operators as appropriate to confirm that the procedure is implemented.

4. If the transport company subcontracts any of the cyanide handling or transport, does the transport company have a procedure to ensure its subcontractors meet elements 1, 2 and 3 of this Transport Practice 1.3?

See discussion under question 8, Transport Practice 1.1.

Transport Practice 1.4:        Develop and implement a safety program for transport of cyanide.

1. Are there procedures to ensure that the cyanide is transported in a manner that maintains the integrity of the producer's packaging?

Transporters should have handling and inspection procedures as necessary to ensure that the integrity of cyanide packaging is maintained during loading, shipment and unloading (if the transporter's responsibility). The auditor should review these procedures, inspect shipments (if available), and interview equipment operators for evidence of compliance with this provision.

2. Are placards or other signage used to identify the shipment as cyanide, as required by local regulations or international standards?

Cyanide shipments must be identified with the placards or other signage required by those jurisdictions through which it will pass, and international shipments must be identified as required by international standards. The auditor should inspect the placards and other signage used to identify the presence of cyanide on transport vehicles in evaluating compliance with this provision. Special labeling, marking and placarding requirements applicable to transport by sea are included under Transport Practice 1.5.

3. Does the transporter implement a safety program for cyanide transport that includes (where appropriate or applicable):
  - a) Vehicle inspections prior to each departure/shipment?
  - b) A preventive maintenance program?
  - c) Limitations on operator or drivers' hours?
  - d) Procedures to prevent loads from shifting?
  - e) Procedures by which transportation can be modified or suspended if conditions such as severe weather or civil unrest are encountered?
  - f) A drug abuse prevention program?
  - g) Retention of records documenting that the above activities have been conducted?

Transporters must implement safety programs addressing the elements of this question that apply to their mode of transportation. The Code does not specify the scope or details of the various elements of a safety program. The auditor must determine if the program reasonably addresses each identified issue as necessary to ensure the safe transport of cyanide and considering the specific circumstances presented by the transport route. Although the auditor

should evaluate the nature of each of the applicable programs or procedures, it must be recognized that there is a significant degree of flexibility in how the transporter implements these provisions. Therefore, the auditor should base his finding on whether the transporter's programs meet the Code's intent rather than whether they include the identical details or are structured in the same way as preferred by the auditor.

4. If the transport company subcontracts any of the cyanide handling or transport, does the transport company have a procedure to ensure its subcontractors meet elements 1, 2 and 3 of this Transport Practice 1.4?

See discussion under question 8, Transport Practice 1.1.

Transport Practice 1.5: Follow international standards for transportation of cyanide by sea and air.

1. Are shipments of cyanide by sea transported in compliance with the Dangerous Goods Code of the International Maritime Organization?

The International Maritime Organization's (IMO) Dangerous Goods (DG) Code (2004 Edition, Amendment 32) places a number of requirements on the transport of cyanide by sea. In most cases, the cyanide producer or the consignor of the shipment will be responsible for implementing these requirements. Several of the requirements apply to the vessel itself, and should be addressed as part of the due diligence investigation to be conducted by the consignor. The following provisions of the DG Code are to be addressed under this question, and if the supply chain includes ocean transport, the auditor should have a copy of the DG Code available for reference.

- a) Is the cyanide shipment packaged as required by Part 4 of the IMO DG Code and according to the packaging instructions and packaging provisions indicated on the DG List?

Part 4 of the IMO DG Code describes the required packaging for cyanide. Specific instructions and additional packaging provisions for various types of packages are included in columns 5 through 12 of the DG List, which is found in Chapter 3.2 of the DG Code.

- b) Are cyanide packages marked as required by Section 5.2.1 of the IMO DG Code and according to the labeling requirements indicated on the DG List?

Section 5.2.1 of the IMO DG Code identifies the marking required for cyanide packages that will be transported by sea. The proper shipping name and UN number must be marked on each package. The shipping names and UN numbers for the most widely used solid cyanide is: Sodium Cyanide, UN #1689. Consult the IMO DG List in Chapter 3.2 of the DG Code for the proper shipping names and UN numbers of other cyanides.

Each cyanide package also must be marked with the triangular Marine Pollutant marker. See Section 5.2.1.6.3 of the DG Code for this marker and its required color and size specifications.

- c) Are cyanide packages labeled as required by Section 5.2.2 of the IMO DG Code and according to the labeling requirements indicated on the DG List?

In addition to the marking required under Section 5.2.1 of the DG Code, each cyanide package must be labeled with the skull and crossbones marker used for Class 6.1 toxic substances. This marker is shown and its required colors and specifications are described in Section 5.2.2.2 of the DG Code.

- d) If cyanide is shipped in cargo transport units, are the units placarded and marked as required by Chapter 5.3 of the IMO DG Code?

A cargo transport unit is defined in Section 1.2.1 of the DG Code as “a road freight vehicle, a railway freight wagon, a freight container, a road tank vehicle, a railway tank wagon or a portable tank.” Chapter 5.3 of the DG Code requires that freight containers, semi-trailers and portable tanks must have one placard on each side and one on each end of the unit. The placard is an enlarged version of the skull and crossbones marker used for Class 6.1 toxic substances. The size and color of the required placard is specified in Section 5.3.1.2.1.

The proper shipping name must be displayed on both sides of tank transport units and bulk containers, but no size or color are specified. The UN number must be displayed either on or adjacent to the placards, and specifications for the size and color of these markings are found in Section 5.3.2.1.2. Additionally, the Marine Pollutant triangle marking must be displayed on cargo transport units as specified in Section 5.3.2.3.

- e) Has a dangerous goods transport document been prepared with the information required under Chapter 5.4 of the DG Code?

The consignor of the shipment must prepare a dangerous goods transport document that includes the following information, as required in Chapter 5.4 of the IMO DG Code:

- Name and address of consignor and consignee, and date the document was prepared or the shipment was given to the initial carrier;
- Dangerous Goods Description, including:
  - Proper Shipping Name (if the container is empty but not decontaminated, the words “empty uncleaned” must be placed before the shipping name);
  - UN Number;
  - Hazard Classification;
  - Packaging Group;
  - For cyanide, identification as a Marine Pollutant;
- Total weight or volume and number and kind of packages;
- A certification or declaration that the consignment is acceptable for transport and that the goods are properly packaged, marked and labeled, and in proper condition for

transport in accordance with the applicable regulations. The required text for this certification is:

"I hereby declare that the contents of this consignment are fully and accurately described above by the Proper Shipping Name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national government regulations."

The certification must be signed and dated by the consignor. Facsimile signatures are acceptable where applicable laws and regulations recognize the legal validity of facsimile signatures. An example of the required dangerous goods description is: Sodium Cyanide, class 6.1, UN 1689, P002, MARINE POLLUTANT. No specific format for the dangerous goods transport document is required, and any format is acceptable as long as it includes the necessary information.

- f) If the cyanide is packed or loaded into a container, has a "container/vehicle packing certificate been prepared meeting the requirements of Section 5.4.2 of the DG Code?

When dangerous goods are packed or loaded into any freight container (as defined in Section 1.2.1 of the DG Code) or vehicle, those responsible for packing the container or vehicle shall provide a "container/vehicle packing certificate" specifying the container/vehicle identification number(s) and certifying that the operation has been carried out in accordance with the following conditions:

- The container/vehicle was clean, dry and apparently fit to receive the goods;
- Packages which need to be segregated in accordance with applicable segregation requirements have not been packed together onto or in the container/vehicle;
- All packages have been externally inspected for damage, and only sound packages have been loaded;
- Drums have been stowed in an upright position, unless otherwise authorized by the competent authority, and all goods have been properly loaded and, where necessary, adequately braced with securing material to suit the mode(s) of transport for the intended journey;
- Goods loaded in bulk have been evenly distributed within the container/vehicle;
- The container/vehicle and packages are properly marked, labeled and placarded, as appropriate; and
- A dangerous goods transport document has been received for each dangerous goods consignment loaded in the container/vehicle.

A container/vehicle packing certificate is not required for portable tanks.

In most cases, the cyanide will be packaged by the producer, who will be responsible for implementing the requirements of questions a) through f), above. Transportation auditors will need to determine whether the entity responsible for cyanide packaging has procedures in place to ensure that the cyanide is labeled, marked, placarded and accompanied by the necessary documentation, as required by the IMO DG Code, and whether these procedures are being implemented.

In addition to the above questions, and as discussed under Transport Practice 1.1, consignors of overseas shipments of cyanide must exercise due diligence during their overall route selection and evaluation process to determine if the cyanide shipment will be handled safely by ships and port facilities. The following three provisions of the IMO DG Code, which directly apply to transport of cyanide aboard ships, should be addressed as part of any due diligence investigation conducted by the consignor. The investigation should, to the extent practical, evaluate whether the port and/or shipping company have the necessary procedures and whether these procedures are being implemented. Where deficiencies are identified, the consignor may have to implement additional procedures to ensure that the cyanide is managed responsibly. However, it is acknowledged that the extent to which the consignor can fully and effectively evaluate management measures at a port or on board a ship, and implement additional management procedures, may be limited.

- g) Does the ship carrying the cyanide have a list or manifest identifying the presence and location of the cyanide or a detailed stowage plan including this information, as required under Section 5.4.3.1 of the DG Code?

Pursuant to Section 5.4.3.1 of the DG Code, a ship carrying cyanide must have a special list or manifest identifying its presence and stowage location. A detailed stowage plan, which identifies dangerous goods by hazard class and sets out the location of all dangerous goods and marine pollutants, may be used in place of such a special list or manifest. This list or manifest must include the information found in the dangerous goods transport document as well as the stowage location and the total quantity of the cyanide.

- h) Does the ship carrying the cyanide have cyanide emergency response information, as required under Section 5.4.3.2 of the DG Code?

Emergency response information must be available on the ship at all times in the event of an accident or incident involving cyanide. This information must be immediately accessible in the event of an incident and available away from packages containing the cyanide. The information may be included on the list, manifest or stowage plan required pursuant to Section 5.4.3.1 of the DG Code, in a separate document such as a safety data sheet, or in separate documentation such as the *Emergency Response Procedures for Ships Carrying Dangerous Goods* or the *Medical First Aid Guide for Use in Accidents Involving Dangerous Goods*.

- i) Does the ship comply with the stowage and separation requirements of Part 7 of the DG Code?

Consignors should evaluate the shipping company's compliance with Part 7 of the DG Code, which establishes requirements for the stowage and separation of dangerous goods such as cyanide while aboard ship, as part of their due diligence investigation. Pursuant to the general provisions of Chapter 7.1 for stowage of category B materials, cyanide can be stowed either on deck or below deck. After off-loading, the area used for cyanide stowage must be inspected for signs of contamination, and if contamination is observed,

the area must be cleaned before being used again. Cyanide stowage must be separated from stowage of acids, as defined in Chapter 7.2 of the DG Code. Pursuant to Chapter 7.4, cargo transport units (as defined above at question d) containing cyanide must be inspected for external signs of damage, leakage or sifting of contents before being loaded. If damage, leakage or sifting is found, the cargo transport unit must not be accepted for shipment until it has been repaired.

2. Are shipments of cyanide by air transported in compliance with the Technical Instructions for the Transport of Dangerous Goods by Air of the International Civil Aviation Organization?

To ICMI's knowledge, no gold mines belonging to Code signatory companies transport cyanide by air. No guidance on auditing air transport will be developed until and unless it becomes necessary to do so.

Transport Practice 1.6: Track cyanide shipments to prevent losses during transport.

1. Do transport vehicles have means to communicate with the transport company, the mining operation, the cyanide producer or distributor and/or emergency responders?

Communication by radio, mobile phone, satellite phone or other means are all acceptable under the Code. The auditor should confirm that the transport vehicle is required to carry communications equipment (e.g., a written procedure or list of necessary equipment), and that the procedure is being implemented (e.g., a completed checklist of required equipment for each shipment). Additionally, vehicle operators should have pre-determined contact information (e.g., a written procedure or list of phone numbers) for emergency notification of the appropriate individuals or entities along the route, as necessary to mobilize the appropriate response capabilities.

2. Is the communication equipment (GPS, mobile phone, radio, pager, etc.) periodically tested to ensure it functions properly?

Any communication equipment available to the vehicle operator should be tested periodically. The transporter should have a written requirement for such testing to ensure that it is done, and records should be retained demonstrating that the procedure is implemented. This can be as simple as including a fully charged and tested mobile phone on a pre-transport checklist, and retaining copies of completed checklists for the auditor's review.

3. Have communication blackout areas along transport routes been identified? Are special procedures implemented for the blackout areas?

The Code does not prevent the use of communications equipment such as mobile phones in situations where there is a blackout area along the route. However, in such cases, the transporter should develop and implement procedures to account for these areas, such as calling in prior to entering the blackout area and immediately after leaving it. The auditor

should interview operators and inspect trip records to confirm that this procedure was being implemented.

4. Are there systems or procedures to track the progress of cyanide shipments?

Transporters should be able to track the progress of cyanide shipments. This may be done through the same means of communication identified above (e.g., periodic mobile phone contact or text messaging), through use of global positioning systems, reports from checkpoints along the route, or other means. Transporters should address these in a written procedure and should retain trip records for the auditor's inspection. Evidence of compliance may also consist of interviews with operators and observation of the procedure in the field.

5. Does the transporter implement inventory controls and/or chain of custody documentation to prevent loss of cyanide during shipment?

The transporter should have some system to ensure that loads of cyanide arrive at their destination intact. Some type of inventory control or chain of custody procedure should be used, and its nature and sophistication will be dependent on the specifics of the transport process. Direct shipment completed with no stops may only require confirming that the initial inventory arrives in full at the destination. Shipments that involve transfer of cyanide from one vehicle or vessel to another or a change of vehicle operator should utilize a chain of custody procedure with a sign-off at each transfer. Shipments with overnight stops may require interim inventorying of material. Inspection of locks on valves or doors may be appropriate in many situations.

The transporter should specify whatever program is required in a written procedure and the auditor should review its implementation in inspection records and/or other documentation completed during the course of a shipment and through interviews with operators.

6. Are shipping records indicating the amount of cyanide in transit and Material Safety Data Sheets available during transport?

In addition to an inventory control or chain of custody program, all shipments of cyanide should be accompanied by shipping papers including the amount of cyanide in the load and by Material Safety Data Sheets that identify the presence of cyanide and that describe the necessary handling precautions. The transporter's procedures should require that this information be available and the auditor should confirm implementation by inspecting a shipment and interviewing operators.

7. If the transport company subcontracts any of the cyanide handling or transport, does the transport company have a procedure to ensure its subcontractors meet elements 1 thru 6 of this Transport Practice 1.6?

See discussion under question 8, Transport Practice 1.1.

**2. INTERIM STORAGE: Design, construct and operate cyanide trans-shipping depots and interim storage sites to prevent releases and exposures.**

For purposes of the audit, “trans-shipping depots and interim storage sites” refers to facilities where cyanide is held temporarily when changing carriers or transport modes. Truck and rail terminals and port facilities are examples of trans-shipping depots and interim storage sites. Activities such as parking a cyanide transport vehicle for the night while en route do not involve interim storage. However, parking a truck carrying a cyanide load at a truck or rail terminal or a port for transfer to another truck, train or ship would constitute interim storage unless such a transfer took place within a short period of time (hours as opposed to a day or more). Storage in a warehouse, as defined in the Code’s Definitions and Acronyms document, is a production activity and must be evaluated as such using the Cyanide Production Verification Protocol.

Transport Practice 2.1: Store cyanide in a manner that minimizes the potential for accidental releases.

**When rail or ship transport involves trans-shipping depots or interim storage sites, the questions under Transport Practice 2.1 should be addressed to the extent practical by the consignor’s due diligence investigation.**

1. Are warning signs posted alerting workers 1) that cyanide is present; 2) that smoking, open flames, eating and drinking are not allowed and 3) what personal protective equipment must be worn?

Workers should be alerted to the presence of cyanide and reminded of the various prohibitions regarding its use and the personal protective equipment needed for its handling. The specific location, size and number of signs should be evaluated in conjunction with the overall safety program at the interim storage facility and the training that the workforce receives.

The auditor’s observation of signage around the facility would be the primary means of verification. Interviews with site personnel and review of the overall safety and training programs with respect to cyanide safety may also be important in determining how the workforce has been alerted to the presence and risks of cyanide

2. Are there security measures in place to prevent unauthorized access to cyanide, such as lockouts on valves and fenced and locked storage of solids?

Cyanide should be stored to prevent access by the public. This could be within its own fenced and locked area or within the boundary of the interim storage area if it is fenced and access is controlled. Where liquid cyanide is stored, valves should be locked or otherwise properly sealed. The auditor should evaluate the adequacy of security measures through a site inspection.

3. Is cyanide separated from incompatible materials such as acids, strong oxidizers and explosives with berms, bunds, walls or other appropriate barriers to prevent mixing?

Separation of incompatible materials is a standard practice in the management of hazardous materials, and this obviously applies to cyanide storage. The main materials of concern are acids, strong oxidizers like chlorine, and explosives. The auditor should check the flow path a released material would take because separation of incompatible materials may appear to be acceptable but releases from separate areas may commingle in a drainage ditch common to both storage areas.

4. Is cyanide stored in a manner designed to minimize the potential for contact of solid cyanide with water (e.g., under a roof, off the ground, or in specially designed containers)?

While storage in a closed and secure warehouse provides the greatest assurance that cyanide will not come into contact with water, outdoor storage of containers specifically designed for such storage, such as metal flo-bins, also are adequate for this purpose. Open storage of wooden crates containing bags of cyanide is a borderline situation at best even in very dry climates.

5. Is cyanide stored with adequate ventilation to prevent build-up of hydrogen cyanide gas?

Determining the adequacy of ventilation is not intended to require an engineering-level evaluation, but rather a simple confirmation that enclosed storage areas such as a warehouse filled with crates of solid sodium cyanide are, in fact, ventilated in the event that the cyanide comes in contact with water.

6. Are there systems in place with the capacity to contain any spilled cyanide materials and minimize the extent of a release?

Interim storage areas should have secondary containment systems in place capable of controlling the extent of any released solid cyanide or cyanide solution. At a minimum, these systems should be sized to contain the volume of the largest single container of cyanide in storage as well as any precipitation that would also be collected. Documentation should be available confirming adequate containment capacity. The auditor should ensure that any cyanide released to the secondary containment would not mix with low pH water or other incompatible material.

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

**In evaluating a transporter's emergency response strategies and capabilities, the auditor must recognize that different approaches may be appropriate in different locations. In developed countries with robust emergency response capabilities, transporters of dangerous goods such as cyanide often rely on these in-place services. A single telephone call may trigger a rapid and comprehensive response by prepared and well-trained**

**personnel capable of managing cyanide and other hazardous materials emergencies. This response may even include a pre-planned command structure, with the local fire authorities having designated incident command authority once on the scene. In less developed countries lacking an established response infrastructure, it may be necessary for cyanide transporters, consignors and/or mining operations to have their own emergency response equipment and personnel available with the cyanide shipment, and be more directly responsible for response and remediation actions. The nature of the transporter's emergency response program will be highly dependent on such local circumstances. Auditors must evaluate this element of the Code with an understanding both of what strategies and capabilities are necessary, and what expectations are appropriate, given the site-specific circumstances.**

**The Transport Practices and questions under this principle apply to trans-shipping depots and interim storage sites as well as cyanide in transport. Emergency response elements should be included as practical in a consignor's due diligence investigation of rail and ocean transport.**

**Consignors may have responsibility for some or all aspects of emergency response with respect to their supply chains.**

Transport Practice 3.1: Prepare detailed emergency response plans for potential cyanide releases.

1. Does the transporter have an Emergency Response Plan?

This question simply asks if there is an Emergency Response Plan. Details of the Plan are addressed in subsequent questions and Standards of Practice. As with all the Code provisions regarding management plans, there is no requirement that the necessary information be compiled in a single Emergency Response Plan, a specialized document addressing cyanide only, or in any other specified format.

2. Is the plan appropriate for the selected transportation route or interim storage facility?

To the extent practical, Emergency Response Plans should be developed for the specific circumstances where they will be used, rather than be generic documents suitable for use in any situation or adapted from Plans developed for other situations without the appropriate revisions. This question and those that follow are intended to confirm that the transporter's Emergency Response Plans reflects the specific issues presented by the particular transport route, transport practices and/or interim storage facility.

3. Does the plan consider the physical and chemical form of the cyanide?

One parameter of particular importance in crafting the Emergency Response Plan to fit the actual site circumstances is the physical form of cyanide (solid or liquid) being stored or transported. The auditor should review the Plan to ensure that its procedures are appropriate for the type of cyanide transported.

If the Plan addresses neutralization of released cyanide, then the specific chemical form may have an effect on the amount of the neutralizing agent pre-calculated to be necessary for a given volume of spilled material.

4. Does the plan consider the method of transport (e.g., rail, truck) or storage?

The release and remedial scenarios that should be addressed in the Emergency Response Plan will depend to a degree on the method of transport. For example, the procedure to halt a release from a rail car will be significantly different from those to stop a release from a tanker truck. The auditor should consider whether this is addressed appropriately in the Plan. The auditor must recognize, however, that management of cyanide at ports of entry may be subject to specific governmental requirements with which the transporter may have little or no control.

5. Does the plan consider all aspects of the transport infrastructure (e.g., condition of the road, railway, port)?

The transporter's Emergency Response Plan should take into account the actual conditions of roadways, rail lines, etc, in situations where they may affect the potential for and response to cyanide releases. Consideration of these factors should be part of the evaluation of likely release scenarios and planned responses that the transporter uses in developing a Plan. However, as noted above with respect to the previous question, the management of cyanide at ports of entry may be subject to specific governmental requirements with which the transporter may have little or no control.

6. Does the plan consider the design of the transport vehicle (e.g., single or double walled, top or bottom unloading) or storage facility?

In some cases, the design of storage facilities and transport vehicles are additional site-specific factors that may affect the nature of the Emergency Response Plan. Where these designs affect release and response scenarios, the auditor should review the Plan to confirm that they have been considered appropriately.

7. Does the plan include descriptions of response actions, as appropriate for the anticipated emergency situation?

The Plan should describe the nature of the response actions to be taken for the types of potential release scenarios identified. The level of detail will depend on the various considerations included in the previous questions under this Transport Practice, as well as any other site-specific conditions that affect releases and responses. While it is typically impossible to pre-plan a response to a release during transport with great specificity, transporters should include as much detail as they reasonably can, particularly for potential releases in locations along the route that have been identified as presenting increased risks. For example, the response for a release that occurs as cyanide is transported along a river

used as a source of drinking water would likely involve notification to downstream users that would not be applicable to releases at other locations.

In countries with in-place response infrastructures, emergency response may be conducted by personnel trained to respond to a variety of hazardous materials incidents. These highly trained responders may rely on generic response manuals rather than specific cyanide transport Emergency Response Plans. This is also an acceptable option where it is available and effective. In such cases, the auditor is not expected to evaluate the training or credentials of the outside responders.

8. Does the plan identify the roles of outside responders, medical facilities or communities in emergency response procedures?

Outside responders will typically be involved with releases occurring during cyanide transport because the transporter cannot have its own response capability available throughout a transport route. A transporter's Emergency Response Plan may therefore include such entities as private or municipal hazardous materials responders, local police or fire departments and/or medical facilities located along the route. Additionally, communities may need to take their own actions in response to cyanide releases, such as closing intakes to water supply systems or evacuating an area where cyanide has been released. To the extent that these or other outside entities have assigned roles in a transporter's Emergency Response Plan, documentation advising them of their role should be available for the auditor's review.

Transport Practice 3.2: Designate appropriate response personnel and commit necessary resources for emergency response.

1. Does the transporter provide emergency response training of appropriate personnel?

The transporter must provide training to its personnel with designated responsibility for responding to emergencies during transport of cyanide. The training should address all anticipated response activities such as calling for assistance, use of personal protective equipment, first aid for cyanide exposure and measures to halt the flow of cyanide from the transport vehicle. At a minimum, the elements of this training should be documented in training materials, and records should be retained demonstrating that transport personnel have received the necessary training. The auditor should review this documentation and interview designated response personnel to determine compliance with this provision.

2. Are there descriptions of the specific emergency response duties and responsibilities of personnel?

The specific duties and responsibilities of response personnel should be identified in the Emergency Response Plan or otherwise documented so that expectations are clear and there is a basis for training of these personnel.

3. Is there a list of all emergency response equipment that should be available during transport or along the transportation route?

Transporters should maintain a list of the emergency response equipment that must accompany the cyanide load and/or available along the transport route. The list can be within the Emergency Response Plan, maintained separately as a check sheet for inventorying the equipment, or otherwise be available for the auditor's review.

4. Does the transporter have available the necessary emergency response and health and safety equipment, including personal protective equipment during transport?

The equipment list noted in the preceding question can be used to confirm and document that the necessary equipment is present for each cyanide shipment. The auditor should review completed emergency equipment checklists, observe shipments, and/or interview appropriate personnel to confirm compliance with this provision.

5. Do transport vehicle operators receive initial and periodic refresher training in emergency response procedures including implementation of the Emergency Response Plan?

Transport vehicle operators or other transport personnel with assigned emergency response roles should receive both initial and periodic refresher training regarding their responsibilities in the event of a cyanide release or exposure, including their role as designated in the Emergency Response Plan. Documentation should be available for the auditor's review identifying the individuals trained and indicating the nature and date(s) of the training.

6. Are there procedures to inspect emergency response equipment and assure its availability when required?

All emergency response equipment identified in the transporter's documentation should be inspected and/or tested regularly so that they will be available in good working order if required. Inspections or tests should be focused on the serviceability of the equipment as well as its presence. The transporter should organize this program in a manner that ensures the inspections and/or tests will be performed as scheduled and should retain records for the auditor's review.

7. If the transport company subcontracts any of the cyanide handling or transport, has the transporter clearly delineated its roles and the responsibilities of the subcontractor during an emergency response?

See discussion under question 8, Transport Practice 1.1.

Transport Practice 3.3: Develop procedures for internal and external emergency notification and reporting.

1. Are there procedures and current contact information for notifying the shipper, the receiver/consignee, regulatory agencies, outside response providers, medical facilities and potentially affected communities of an emergency?

Procedures should be in place for notification of appropriate parties in the event of a cyanide release or exposure during transport. These procedures should be available to all entities that may need to use them, and therefore may need to be included in the Emergency Response Plan as well as be carried in the transport vehicle and otherwise be available as needed. At a minimum, the entities requiring notification should be the ones identified in the Emergency Response Plan as having designated roles in the response.

2. Are systems in place to ensure that internal and external emergency notification and reporting procedures are kept current?

The transporter should have a system in place to ensure that emergency contact information is kept current. This may be a provision in the Emergency Response Plan for annual or more frequent review of the entire plan, a procedure focused on the periodic updating of contact information specifically, a procedure to test each contact number on a regular basis, or other means that accomplish this same goal. The auditor should review the procedure and confirm its implementation through documentation and/or interviews.

Transport Practice 3.4:            Develop procedures for remediation of releases that recognize the additional hazards of cyanide treatment chemicals.

1. Are there procedures for remediation, such as recovery or neutralization of solutions or solids, decontamination of soils or other contaminated media and management and/or disposal of spill clean-up debris?

In many cases, a transporter will not be directly involved with remediation of a cyanide spill. Ultimate clean-up of releases that occur during transport would likely be contracted out to commercial chemical remediation companies, and those occurring once the load reaches a mine site would likely be conducted by the mine itself. However, if not injured in the incident, the driver of a cyanide transport vehicle would probably provide the initial response to a transport-related release. Where the release involves only a small amount of material or can be easily contained, the driver may be able to remediate the spill immediately and prevent more extensive contamination. If the transporter expects the driver to initiate remediation actions, the Emergency Response Plan should address this possibility to the extent it can be safely accomplished. Where commercial chemical remediation companies or other outside responders are expected to provide this service to the transporter, they should be identified in the transporter's Emergency Response Plan or other documentation so they can be activated as soon as practical.

The auditor should review any remediation elements included in the Plan or other documentation and evaluate their implementation through records of previous releases and responses and/or interviews with personnel. However, the auditor must recognize that transporters will not typically be involved directly in remediation actions or management and disposal of contaminated media and soil.

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

Use of chemicals such as sodium hypochlorite, ferrous sulfate and hydrogen peroxide to treat cyanide once it has entered surface waters is both counter-productive and of limited effectiveness. If such materials are available during transport, either carried with the load or stored at locations along the route for potential use, the Emergency Response Plan or other documentation should specifically prohibit their use in surface water (where the potential exists for releases to reach surface water). The auditor should review the documentation and interview vehicle operators to confirm compliance with this provision.

Transport Practice 3.5: Periodically evaluate response procedures and capabilities and revise them as needed.

1. Are there provisions for periodically reviewing and evaluating the Plan's adequacy and are they being implemented?

Potential release scenarios and necessary response actions can vary over time for a variety of reasons, including changes to conditions along a transportation route, changes to the transport equipment used, and lessons learned from accidents, incidents and other responses. The transporter should have a process to ensure that the Emergency Response Plan is reviewed, evaluated and updated as necessary to account for such changes. The auditor should evaluate the process and its implementation by reviewing documentation of any changes to the Plan and through interviews with appropriate personnel.

2. Are there provisions for periodically conducting mock emergency drills and are they being implemented?

There is no substitute for hands-on response training to familiarize personnel with the necessary procedures. Transporters should conduct or otherwise be involved in mock emergency drills that simulate transport-related exposures and releases so they are better prepared in the event that actual exposures and releases occur. The drills should be evaluated to determine if response procedures are adequate, equipment is appropriate and personnel are properly trained. Written documentation of these evaluations should be retained and used as a basis for whatever changes to procedures, equipment or training is necessary. The auditor should review this documentation and interview applicable personnel as evidence of compliance with this provision. Response actions for actual releases can be considered as emergency drills if the Emergency Response Plan has been activated.

3. Is there a procedure to evaluate the Plan's performance after its implementation and revise it as needed, and have they been implemented?

Response procedures should be reviewed and evaluated following any incident that triggers implementation of the Emergency Response Plan. The Plan or other policy documents should include a commitment for such review, and the evaluation and any recommendations for Plan revision should be documented for the auditor's review.