

ICMC PRE-OPERATIONAL TRANSPORT AUDIT

SUMMARY REPORT

TRANSPORTES ÁLVAREZ E HIJOS S.R.L. CYANIDE TRANSPORTER

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IRCA CERTIFICATED AUDITOR
OCCUPATIONAL HEALTH AND
SAFETY MANAGEMENT SYSTEMS

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Name of Cyanide Transportation Facility:	Transportes Álvarez e Hijos S.R.L.	
Name of Facility Owner:	Transportes Álvarez e Hijos S.R.L.	
Name of Facility Operator:	Transportes Álvarez e Hijos S.R.L.	
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Location Detail and Description of Operation:

Transportes Álvarez e Hijos S.R.L. (Transportes Álvarez) is a trucking company with headquarters in Puerto San Julián, Santa Cruz, Argentina. Transportes Álvarez is planning to transport solid sodium cyanide in 20 feet containers from Punta Arenas Port, Chile, to different mining operations within Argentina.

The scope of this ICMC pre-operational certification audit comprises the future cyanide trucking transport operations from Punta Arenas to the mine sites in Argentina. No interim storage is considered in this transport operation.

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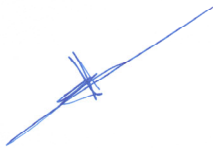
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Auditor's Finding

This operation is

- in full compliance**
- in substantial compliance
- not in compliance


with the International Cyanide Management Code.

Audit Company:	Golder Associates	
Lead Auditor & Transport Technical Auditor:	Bruno Pizzorni	bpizzorni73@gmail.com
Names and Signatures of another auditor:	Sergio Gonzalez	
Date(s) of Audit	June 27 and 28, 2018	

I attest that I meet the criteria for knowledge, experience and conflict of interest for Code Verification Audit Team Leader established by the International Cyanide Management Institute and that all members of the audit team meet the applicable criteria established by the International Cyanide Management Institute for Code Verification Auditors.

I attest that this Summary Audit Report accurately describes the findings of the verification audit. I further attest that the verification audit was conducted in a professional manner in accordance with the International Cyanide Management Code Verification Protocol for Cyanide Transportation Operations and using standard and accepted practices for health, safety and environmental audits.

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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.

in full compliance with

The operation is

in substantial compliance with Transport Practice 1.1

not in compliance with

Summary basis for this Findings:

Transportes Álvarez has developed and implemented the procedure *Routes Selection and Risk Analysis* for selecting transport routes that minimizes the potential for accidents and releases. The procedure requires to evaluate any route previous to the first cyanide shipment. This includes evaluating the population density, existing infrastructure conditions of the roads, pitch and grade and presence of water bodies and visibility due to weather conditions.


The procedure establishes to perform a risk analysis and the steps to follow for the preparation of roadmaps for all routes covered by the organization during the execution of the transport service. Once identified the risks is required to establish the necessary control measures to manage these risks.

Transportes Álvarez requires in this procedure, to periodically reevaluate their routes used for cyanide deliveries or when road conditions require an update. Also, require the drivers to provide feedback on the route conditions.

Transportes Álvarez management members were interviewed, and confirmation was made that risks and risk mitigation measures are detailed, route by route. The company use a formally documented procedure to determine routes. Route evaluations for the transportation routes that Transportes Álvarez will for the cyanide shipments were complete and records were available for review.

The procedure *Routes Selection and Risk Analysis* requires to interact with communities, governmental agencies and emergency responders in the development of risk management measures. In most cases there is only one route to access to the mine sites. The procedure states to communicate of its cyanide carriers to hospitals and firefighters along the transport routes. Letters have been already sent to civil defense, firefighters, police and medical centers to communicate their roles in case of any emergency and to open communication channels between the transporter and the emergency support providers.

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As stated in his *Cyanide Transport Safety Program*, and in the *Cyanide Contingency and Emergency Plan*, Transportes Álvarez will use convoys and escorts or other safety and security measures to control and mitigate identified risks along the route, and according to the mine's client requirements.

Transportes Álvarez has already provided external responders with cyanide safety Data Sheets (SDS), and emergency information to support emergency centers (emergency responders, medical centers, and fire fighters) along the routes, according to the established in their Cyanide Transport Safety Program.

The company do not subcontract any portion of their cyanide transportation operations. Tractors and trailers are owned by Transportes Álvarez. ICMC requirements pertaining to subcontractors are, therefore, not applicable to the organization.

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.

in full compliance with

The operation is

in substantial compliance with Transport Practice 1.2

not in compliance with

Summary basis for this Findings:

Transportes Álvarez maintains a policy to only work with drivers that are qualified and trained to operate its transport vehicles and trained in the operation. For each driver, information is kept on their driving experience, municipal license to drive, and if they are authorized to transport dangerous loads and cargo in general. Through this database they have control over the expiration dates of driver's licenses.

All drivers and personnel will be trained to perform their jobs in a manner that minimizes the potential for cyanide releases and exposures prior to being dispatched for the first time. Training is scheduled to be refreshed annually, and testing is performed to confirm competency. The company added into its Annual Training Program training modules related to cyanide emergency response, routes section, and cyanide tracking, among others.

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

in full compliance with

The operation is

in substantial compliance with Transport Practice 1.3

not in compliance with

Summary basis for this Findings:

Transportes Álvarez only uses equipment designed and maintained to operate within the loads it will be handling. They use trailer loading checklists to ensure that trailers are suitable for transportation prior to loading any cargo and to ensure that loads are evenly loaded as well as blocked and braced.

Fleet specification files were available for review during the Transportes Álvarez audit. The tractors and trailers were found to be capable of carrying the loads for which they were being used. Tractor and loaded trailer weights are carefully monitored to ensure that trucks are not overweight. The transporter has a formal preventive maintenance program to ensure that its tractors and trailers are safe for transport.

Transportes Álvarez has developed and is in process to implement the procedure *Transport Equipment*, where among others, describes the maximum loads to allowed to transport on each type of truck and trailer, to verify the adequacy of the equipment for the load it must bear.

To prevent overloading of the transport vehicle, Transportes Álvarez has established the procedure *Transport Equipment*, that each platform will be loaded with only one cyanide container and that each truck can only haul one platform trailer. This is consistent with the information included in the inspection checklist and was confirmed during the interviews. The load will pass through a scale to confirm the weight of the shipment. The loads being hauled are standard loads that do not vary in weight.

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

in full compliance with

The operation is

in substantial compliance with Transport Practice 1.4

not in compliance with

Summary basis for this Findings:

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Transportes Álvarez has developed and is implementing a formal safety program for the receipt, load, transport, and unloading of solid cyanide. Procedures and formal checklists were available to ensure that cyanide will be transported in a manner that maintains the integrity of the producer's packaging. The transporter performs pre-trip inspections to ensure that trailers are locked and secured and that placards are on all four sides of the trailers. The transport procedures establishes that the load cannot be altered during the transportation process.

Transportes Álvarez addresses in its *Cyanide Safety Transport Program*, formal safety procedures for the receipt, load, transport, and unloading of solid cyanide to ensure that all 1.4 Transport Practice requirements are fulfilled: vehicle inspections prior to each departure/shipment, a preventive maintenance program, limitations on operator or drivers' hours, procedures to prevent loads from shifting, procedures by which transportation can be modified or suspended if conditions such as severe weather or civil unrest are encountered, a drug abuse prevention program and retention of records documenting that the above activities have been conducted.

Roles and responsibilities are clearly defined. Confirmation was made during interviews to company's drivers and management personnel.

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

in full compliance with

The operation is

in substantial compliance with Transport Practice 1.5

not in compliance with

Summary basis for this Findings:

Transportes Álvarez will only transport cyanide by truck, will not transport cyanide by sea or air.

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

in full compliance with

The operation is

in substantial compliance with Transport Practice 1.6

not in compliance with

Summary basis for this Findings:

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All trucks vehicles have means to communicate with the transport company by radio, cellphones and GPS. According to the procedure developed by Transportes Álvarez, *Tracking of Cyanide Shipments*, cyanide loads will be tracked using the GPS tracking system, which is currently in use for all the cargo transported by the company, monitored directly by Transportes Álvarez personnel. If travelling would be in convoy, the convoy leader will be provided with a cellular phone and a satellite phone. The convoy leader will also have a radio and will be responsible of communications with the transport company, the mine client and emergency responders in case of an emergency.

All communication equipment is confirmed to be operational at the start of each trip. Cell phone blackout areas are identified by the transporters during the route planning process. The dispatcher ensures that the driver has a working satellite phone when driving these routes. Interviews were conducted to confirm that these practices are in place.

Cell phone black-out areas in the different routes from Punta Arenas Port to mine sites have been already identified by the transporter in its cyanide route risk analysis. The auditors reviewed routes description. Transportes Álvarez issues satellite phones on a route with a known cell phone blackout area. A review of procedures and interviews were used to confirm this practice. A communications protocol has been established before entering and on exit from blackout areas.

Transportes Álvarez has developed and is implementing the procedure *Tracking of Cyanide Shipments* to improve communications, control and safety in all stages of circulation of cyanide transport, through the use of information systems and tools that facilitate the monitoring of cyanide transport vehicles. The procedure for tracking of shipment status was reviewed during the audit and found to follow current practices.

As stated by Transportes Álvarez management, the company will adopt the mining client shipping paperwork, including chain of custody requirements. Among others, a waybill will accompany the transportation which includes chain of custody data such as container numbers, the amount of cyanide delivered, waybill numbers, shipping documentation, Safety Data Sheet (SDS), packing list, bill of lading, customs declarations and producer invoice. The amount of cyanide delivered will be carefully monitored by the driver and remotely through the transporter headquarters office.

Transportes Álvarez will have available the shipping records indicating the amount of cyanide in transit and SDS, available during transport. Currently, documentation used to track general cargo and hazardous materials shipments was available during the audit.

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

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

in full compliance with

The operation is

in substantial compliance with Transport Practice 2.1

not in compliance with

Summary basis for this Findings:

Transportes Álvarez, has storage facilities in Puerto San Julián (Santa Cruz province, Argentina) that, if the case requires, can be used as an interim storage according to the Cyanide Code definition.

The facility has a roofed place (at the maintenance shop) for two complete equipment (truck plus semi-trailer) and an open pit for eight complete equipment's. It is fully fenced with controlled access and monitored by closed circuit cameras.

At the occasion of the cyanide pre-operational audit, the site was clearly identified with appropriate warning signs as the requirement to use the personnel protection equipment and prohibition of smoking. Cyanide signage will be installed prior to any transport operation involving cyanide. The place has enough lighting and has a fire protection system through chemical dust extinguishers, type ABC.

To prevent unauthorized access to cyanide, the facility is fully fenced with controlled access and monitored by closed circuit cameras.

As stated by Transportes Álvarez Logistic Manager, prior to cyanide interim storage, the company will develop and implement a procedure to manage safety cyanide interim storage, addressing cyanide must be separated from incompatible materials such as acids, strong oxidizers and explosives with berms, bunds, walls or other appropriate barriers to prevent mixing.

The facility is designed to minimize and avoid contact with water, the structure and metal closure shed is roofed with a concrete surface floor. Cyanide interim storage will be done in a manner designed to minimize the potential for contact of solid cyanide with water as under a roof and in intermodal sea containers.

The truck shop, which can accommodate inside two complete equipment (truck and trailer), has adequate ventilation. The surrounding courtyard has excellent ventilations as since it is outdoors and generally the wind blows strong throughout Patagonia.

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Both the truck shop and the courtyard have a concrete surface floor with the capacity to contain any spilled cyanide materials and minimize the extent of a release. Any spill would be recovered as there are no drains connecting outside the facility.

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

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

in full compliance with

The operation is

in substantial compliance with

Transport Practice 3.1

not in compliance with

Summary basis for this Findings:

Transportes Álvarez has a preliminary emergency response plan (ERP or Plan) *Cyanide Transportation Emergency Plan*, to be confirmed in coordination with the mining clients, before beginning its cyanide transportation operations.

The ERP is appropriate to respond to potential releases of cyanide during transport. It includes details regarding the responsibilities and the communications procedures to be used in case of incidents and an updated list of notification numbers for emergency responders.

The Plan is designed for the required specific circumstances, as Transportes Álvarez has already made route risk analysis and route selection to attend potential mining clients. The document was found to be up-to-date and appropriate for this solid sodium cyanide transportation operation and for interim storage activities, if needed.

The Plan considers the physical and chemical form of the cyanide. The only form of cyanide to be shipped using this transport operation is solid sodium cyanide. Emergency response procedures address actions to be taken in response to a solid sodium cyanide spill.

The Plan reviewed considers the method of transport and trucking to the final destination for different routes. The operations only include truck transport of solid cyanide solution.

The cyanide transport will be carried out in 20 feet intermodal sea containers, 20 boxes per container, transported on trucks with semi-trailers of 45 tons loading capacity by 14.5 meters long.

Transportes Álvarez ERP considers all parts of the transportation infrastructures including the conditions of the roads (mine road versus highway) and urban areas. The Plan considers the conditions of the roads, existing water courses, bridges conditions and danger of landslides on the

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route, among others. The Plan address the emergency response to events that occur in relation to these risks and hazards.

Transportes Álvarez considers the trucks design as the transport vehicles in its ERP. The document define the appropriate trucks and chassis to use to transport cyanide. It states that trailers must be of conventional type or of the low bed type. The Plan indicates cyanide Will be transported in 20' containers. The constructive characteristics of the containers will be requested to the supplier or to the client prior to cyanide transportation operations.

Transportes Álvarez specifically considers in its ERP, response actions that may be needed for emergency situations during transportation. The plan includes detailed response actions for each case, including spills in both current and stander open water bodies and for the other risks identified on the routes. Considers a series of instructions covering the potential hazards that could occur during the loading, transportation and unloading of the cyanide cargo. It includes emergency response actions against collision or rollover, spillage of dry cargo to water sources, on the road and landslides.

The plan also establishes the logical line of actions that the leader and convoy drivers must take when irregularities arise during transport of sodium cyanide, including civil commotion, adverse conditions, bad weather, traffic congestion and unplanned stops.

The ERP reviewed establishes the role of outside responders and medical facilities in emergency response procedures. The police will provide support and safety to the transport units during the passage through cities and towns medical facilities and will take control of traffic routes in case of an accident.

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

in full compliance with

The operation is

in substantial compliance with Transport Practice 3.2

not in compliance with

Summary basis for this Findings:

Transportes Álvarez is providing training on emergency response to all personnel that may be involved in the cyanide transport operation. It is required in its ERP and in the Cyanide Transport Safety Manual, that all personnel must receive emergency response training including drivers, convoy leaders and supervisors. At the time of the audit, its personnel was in the process to progressive train its personnel in appropriate emergency response, in safe cyanide management (spill and intoxication), firefighting, first aid and hazardous materials. Training is provided by external companies as workouts complying with the training plan and verifying compliance with specific skills.

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Specific emergency response duties and responsibilities area described in the ERP, during and after an incident / accident or emergency. The roles and responsibilities of relevant internal and external personnel are clearly described in the ERP for the cyanide vendor, the truck drivers, the convoy leaders, the mining client, Police of Santa Cruz province, and Carabineros (Chilean police) from the Magallanes Region.

A list of all emergency response equipment that should be available during transport is available in Appendices B-5 of the Plan. The convoy escort vehicle is required to have a complete emergency response equipment. The necessary emergency response and health and safety equipment includes personal protective equipment, spills containment kit. It is also required the emergency equipment and materials to be checked prior to each cyanide delivery. A checklist will be is used to verify that it is available.

Among the emergency response equipment listed in the ERP is a portable cyanide gas detector, two self-contained breathing equipment, Tyvek suits, waterproof boots, nitrile gloves and calcium hypochlorite.

Transportes Álvarez is in process to implement all the emergency response equipment required. As stated in the ERP, cyanide transport will be performed in convoy. The convoy escort vehicle is required to have a complete emergency response equipment according to listed in Appendices B-5 of the Plan.

Transportes Álvarez is training his drivers to enable them to fulfill their role in emergency response. Formal training in cyanide will be provided periodically to personnel involved in cyanide activities. Records were checked during the audit and awareness of emergency procedures was appropriate.

The ERP requires to inspect emergency response equipment to assure its availability when required. The plan states to check the emergency equipment as part of the pre-trip inspection process. Among the control measures to adopt for the transportation of hazardous materials, Transportes Álvarez addresses to perform inspections to the emergency equipment before loading the truck. A checklist will be used to verify that it is available prior the convoy's departure and it is kept in the operation file.

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

in full compliance with

The operation is

in substantial compliance with

Transport Practice 3.3

not in compliance with

Summary basis for this Findings:

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The notification procedures, including telephone numbers, are described in the ERP. The shipper, the receiver, regulatory agencies, outside response providers, medical facilities and potentially affected community's information and other emergency contact information is contained in the ERP. There is a list with current emergency numbers for local hospitals, and for ambulance, fire, and environmental responders. Phone lists also include up-to-date contact information for Transportes Álvarez personnel, regulatory agencies, and potentially affected communities.

The ERP states that in case of an emergency, the driver and / or personnel involved in the incident will immediately communicate by radio / cell phone and / or satellite phone the Escort Supervisor of the escort van, who in turn will apply the response to the emergency and communicate to Transportation Álvarez headquarters, who in turn will give notice to the mining company. Likewise, they will communicate the places and telephone numbers of the emergency responders' agencies such as hospitals, police delegations and fire brigade. (Emergency telephones according to route).

According to the requirement in the ERP, internal and external emergency notification and reporting procedures must be reviewed at least every two years. During this activity, the phone numbers will be checked for accuracy to ensure that internal and external emergency notification contacts are kept current.

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

in full compliance with

The operation is

in substantial compliance with Transport Practice 3.4


not in compliance with

Summary basis for this Findings:

Transportes Álvarez ERP describes how the recovery will take or neutralize the solid, the decontamination of soils, or other contaminated media and how these wastes are managed. It addresses the immediately actions to follow in case of spills, preventive measures to avoid, cleaning methods and how to treat waste. Specific details regarding the remediation, neutralization, decontamination, and disposal of clean-up debris are contained within the emergency response procedures. Descriptions of necessary action steps depending on the incident scenario are clearly outlined in the documents.

The Plan prohibits the use of chemicals such as sodium hypochlorite, ferrous sulfate and hydrogen peroxide to treat cyanide that has been released into surface water. The Plan lists of the possible emergencies that could arise during the cyanide transport services, including the necessary action to take in case of cyanide spills into open water.

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

in full compliance with

The operation is

in substantial compliance with

Transport Practice 3.5

not in compliance with


Summary basis for this Findings:

The Plan requires to periodically review and to evaluate its adequacy. States it is the responsibility of the operations and transport safety department to review the plan annually, to train on the ERP all personnel involved in the operation, to carry out periodic practices for emergency response, to deliver all users the latest version of the Plan, and to keep it updated verifying that the information is truthful and is the necessary to respond to an emergency in an effective manner.

The Plan establishes that mock drills must be carried out at least once a year, that the practices will be scheduled in coordination with the client to keep the personnel permanently prepared for an emergency. At the time of the audit, Transportes Álvarez had scheduled to conduct a cyanide mock emergency drill in December 2018.

It is established in the Plan to have annually reviews and to carry out periodic emergency response drills to verify the Plan is effective. Transportes Álvarez will detail the steps to follow in order to evaluate the Plan's performance after its implementation.

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