International Cyanide Management Code

Re-Certification Audit of:

The Chemours Company Argentina Supply Chain
Sodium Cyanide Solution Transportation Operations

Summary Audit Report

Submitted to:
The International Cyanide Management Institute
1400 I Street, NW – Suite 550
Washington, DC 20005
USA

2016 Audit Cycle
Chemours Argentina Supply Chain

**Company Names & Contact Information**

| Name and Location of Operation: | The Chemours Company Argentina Supply Chain  
Avda. Apoquindo 5400 | Of. 1401 Piso 14 | Las Condes, Santiago, Chile |
|--------------------------------|--------------------------------------------------|
| Name and contact information for Company Contact: | Rodrigo González A.  
Country Leader Chile – Sales &  
Product Stewardship Manager  
Cyanides South America  
The Chemours Company  
rodrigo-eduardo.gonzalez@chemours.com  
(+56 2 3213-0810 | È +56 9 9539-3346 |

**Operational Overview**

The Consignor for The Chemours Argentina Supply Chain (Chemours Argentina) is The Chemours Company Chile Limitada (Chemours Chile) headquartered in Santiago, Chile, South America. The cyanide business is one of the Chemours businesses that operates globally. Chemours (formerly DuPont) was one of the original 14 International Cyanide Management Code (ICMC) signatory companies announced in 2005. As such, Chemours made the commitment to obtain ICMC certification for its global operations and supply chains. Chemours was the first cyanide producer in the world to achieve certification in June 2006 and the operation was re-certified in 2009 and in 2012. Chemours produces sodium cyanide for use in the gold mining sector at their Memphis, Tennessee plant in the United States. The company maintains several cyanide distribution terminals and delivers cyanide to mining customers throughout the world. Cyanide that is distributed through the Argentina Supply Chain is brought into Argentina from Memphis. The sodium cyanide that is sold to gold mining customers is packaged in 1 ton bag-boxes.

Cyanide is transported to Argentina by ship and is delivered by the Ocean Carrier to the Buenos Aires Port. Ship unloading operations are performed by the Port Authority, which releases the container by placing it on a truck’s platform. At this point, the cyanide becomes the responsibility of Chemours. Currently, the cyanide is transported directly to the mine without stopping at or use of secondary storage facilities. The transport route operated from Buenos Aires Port to Gualcamayo mine is 1,404 km long.
The Argentina Supply Chain scope does not include the ocean transport or the ports. This audit includes the land transportation of the product from ports in the region to the mines. This supply chain was first certified under the Cyanide Code principles in 2010, re-certified in 2013, and was evaluated again during this audit at the end of 2016.

Chemours maintains a separate ICMC certification for its Global Ocean Supply Chain which includes several Latin America ports. Chemours performs a due diligence review of each port, including those in Argentina to ensure that acceptable safety measures for the handling of cyanide and emergency response are in place (see Chemours Global Ocean Supply Chain report for details).

Cyanide is packaged by Chemours in a poly propylene super-sack filled up to 1 ton. The super-sack is then placed in a polyethylene bag to protect the material from water and humidity; finally, the packaged material is placed in a wooden box (package type I). No less than 20 boxes are placed in standard 20-foot shipping containers (the containers); the number of boxes used prevents lateral movement within the container. To further prevent movement a block and brace is applied. Wood beams are placed between the last box and the container’s door. Prior to shipping, the manufacturer seals the container with a tag and serial number at the production facility to prevent material losses. These seals are only removed at the mine.

Chemours subcontracts Victor Masson Transportes Chemours Argentina S.A. (CDS) to transport sodium cyanide in Argentina. Chemours provides training to the CDS drivers and convoy leaders, approves the crew used for each transport operation, and audits CDS on an annual basis to ensure compliance with their procedures. Additionally, Chemours has trained the CDS Cyanide Transport Coordinator and convoy leaders to train the operators and to assess the routes used. This ensures that these activities are performed even if Chemours personnel are not readily available. CDS has its own system in place to comply with the code. The training received from Chemours is redundant to the training provided in house. CDS was first ICMI Code certified in 2010, then re-certified in 2013. Their last recertification report states the company will be recertified as soon as its audit documents are finalized.
Audit Implementation and Conclusions

The audit was conducted through a review of procedures and records, and interviews with personnel from Chemours Country Leader Chile – Sales & Product Stewardship Manager Cyanides South America. The auditor used the ICMI Cyanide Transportation Protocol to evaluate the Chemours Argentina Supply Chain (Chemours Argentina) compliance.

The audit was based on a sampling of information and therefore deficiencies may exist which have not been identified. The audit was performed by an independent third-party auditor who was pre-approved by the ICMI as a Lead Auditor for all types of International Cyanide Management Code (ICMC) audits and as a technical expert for ICMC audits of cyanide transportation, production plants and mining operations. All supply chain components noted above were included in this ICMC Certification Audit. Each organization noted in this report was found to be in FULL COMPLIANCE with ICMC requirements.

This operation is in FULL COMPLIANCE with the International Cyanide Management Code.
Auditor’s Finding

The cyanide management practices for Chemours Argentina Supply Chain were evaluated for ICMC compliance using the ICMI Cyanide Transportation Verification Protocol. Chemours Argentina internal standards, policies, practices, and procedures regarding the transportation of cyanide were reviewed.

The auditor found that the overall level of preparedness and understanding of ICMI Cyanide Code requirements was excellent. Management systems upon which the operation is based were found to be very mature and personnel demonstrated excellent operational discipline. This operation has not experienced any cyanide incidents or compliance problems during the previous three-year audit cycle.

The results of this operational certification audit demonstrate that Chemours Argentina supply chain is in FULL COMPLIANCE with International Cyanide Management Code operational requirements.

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<th>Audit Company:</th>
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<td>Audit Team Leader and Technical Expert:</td>
<td>Bruno Pizzorni</td>
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<td>Date(s) of Audit:</td>
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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 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.

The Chemours Company Supply Chain at Argentina
Name of Operation
Signature of Lead Auditor
Date

The Chemours Company Argentina Supply Chain
Name of Operation
Lead Auditor
Date

Page 4 of 13
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 Transport Practice 1.1

Summarize the basis for this Finding:

Chemours Argentina as the cyanide Consignor, requires that the transporter Víctor Masson Transportes Cruz del Sur (CDS) implement route selection procedures for routes that minimize the potential for accidents and releases and the potential impacts of accidents and releases. Chemours Argentina together with its cyanide transporter CDS, uses a documented route selection process that considers population density, infrastructure, pitch & grade, proximity to water bodies, and the prevalence and likelihood of poor weather and resulting poor driving conditions. Chemours Argentina and CDS work together with customers to determine the safest and best route for transport.

Chemours Argentina policies and procedures require that the transportation company must have a process to evaluate the risks of selected cyanide transport routes and take the measures necessary to manage these risks. Risk mitigation measures have been taken in the development and implementation of an improved tracking process, the revision of the Emergency Response Procedures, and the coordination of additional emergency response resources to accompany shipments to mine sites.

Chemours Argentina solicits feedback regarding the routes and other supply chain topics from its transportation partner every year as part of its partner re-evaluation process. Recurring route evaluations are performed by the trucking company and were audited during their re-certification audit in November 2016. Chemours Argentina documents the measures taken to address risks
identified with the selected routes. Chemours Argentina maintains records of transportation routes and associated risks and mitigation measure deployed.

The ICMC re-certification audit of Chemours Argentina confirmed that the Consignor has engaged its local community and emergency response centers and advised local agencies effectively. Records of how communities are involved in the route planning process were observed. Transport procedures establish the additional safety and security measures that are to be used for all shipments from the port to the mines. Confirmation was made through interview that employees were very aware of the additional security requirements for these routes and that additional security measures are consistently used.

Chemours, together with CDS, advises local external responders, medical facilities and communities of their roles and/or mutual aid during an emergency response. This was confirmed during the Chemours Argentina Supply Chain re-certification audit in 2013 and again during this audit. Only a ICMC-certified transportation company is hired to transport cyanide. CDS does not sub-contract cyanide transport 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.

☑️ in full compliance with

The operation is

☐ in substantial compliance with Transport Practice 1.2
☐ not in compliance with

*Summarize the basis for this Finding:*

Chemours only uses trained, qualified and licensed operators to transport its products and performs periodically evaluations to ensure that its transporter CDS, operates per recognized EHS standards and are experienced in the handling of hazardous goods. Chemours performs periodic evaluations to ensure that its transporter CDS operates with cyanide trained personnel, adequate equipment and are experienced in the handling of hazardous goods.

*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
Summarize the basis for this Finding:

Chemours Argentina only uses a supply chain partner with equipment designed and maintained to operate within the loads it is transporting. Chemours performs periodic evaluations to ensure that its transporter CDS operates per recognized EHS standards and operators are experienced in the handling of hazardous goods. The CDS trucking company performs regular inspections and preventive maintenance to its vehicles to ensure that the equipment is safe to operate and that it can continue to carry the loads for which is it designated.

Per interviews with Chemours personnel, the shipments are of standard weights. The Chemours Company ICMC-certified producer is responsible for blocking and bracing of the shipments leaving the plant. The cargo is sealed when it is packed into the sea containers. The sea containers are not opened until they arrive at the mine site. Personnel use formal procedures and checklists to ensure that trailers are loaded evenly and that the trailer is not overloaded.

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
☐ not in compliance with

Transport Practice 1.4

Summarize the basis for this Finding:

Chemours ensures that cyanide is transported in a manner that maintains the integrity of its packaging. Sea containers are packed, blocked, and braced by Chemours at the point of manufacture. The sea containers are sealed and remain unopened until arrival at the mines. Packaging is preserved and load shifting is prevented through the use of the blocking and bracing in the sea container and the use of pins that secure the sea container to the truck chassis. The trucking company involved in this supply chain has established a safe method for transportation which describes the administrative, operational and safety measures for the proper transportation of sodium cyanide. CDS was found to be compliant with this requirement during their ICMC certification audits.

Chemours and CDS ensure that signage is in place to identify the shipment as cyanide. Signage and placards that conform to local regulations and international standards are used. Cyanide intermodal containers are transported with placards and signage to identify the shipment as cyanide and informing of toxic chemical presence. Appropriate placards showing UN 1689 (solid cyanide) are displayed on all four sides of the sea containers.
Chemours is not directly responsible for pre-trip inspections of any vehicles. It does, however, require that transporters follow ICMC requirements, including the need for pre-trip inspections. Adherence to this requirement was confirmed during a review of completed CDS pre-trip checklists. The checklists are used to ensure that the escort and transport vehicles are in optimal condition. Load capacity, characteristics of the transport unit, lights, brakes, chassis, and integrity of the container, are among the items checked.

Chemours is not directly responsible for maintenance of the vehicles. It does, however, require that transporters follow ICMC requirements, including the need for a formal preventive maintenance program. Adherence to this requirement was confirmed through the review of the CDS maintenance plan, maintenance records and during interviews with the H&S Supervisors.

CDS safety program includes limitations on drivers’ hours in accordance with local regulations and states that drivers transporting cyanide only drive during day light hours. Drivers are informed of the legal requirements regarding limits on driving hours. Operators must rest at least 8 hrs. prior to a trip, should not drive for over 12 consecutive hours, and take a 10-minute break approximately every two hours. Breaks are at pre-selected stop points where the risk has been assessed and ranked as low. The convoy leader ensures that these are the only pre-established stops.

CDS personnel use formal procedures and checklists to ensure that trailers are loaded evenly and that the trailer is not overloaded. CDS personnel, use standard instructions to ensure proper loading and blocking and bracing of vehicles and containers. Chemours policies and procedures were reviewed and CDS trucking personnel were interviewed to confirm that appropriate practices are used. Chemours procedures require that the transporter has a procedure which describes the administrative, operational and safety measures used to suspend a trip, if necessary. The CDS H&S Supervisor stated, when interviewed, that the convoy leader is empowered to suspend a trip in the event that the load, drivers, or the environment, are at risk. The convoy leaders also decide when conditions are safe and is responsible for giving the order to resume the trip.

The Chemours policies and procedures require that the transportation company must have a drug abuse prevention program. CDS has each driver perform an alcohol test prior to the departure of every cyanide shipment (blow tests are documented in the convoy leader report). Drug tests are not allowed by local regulations in Argentina, except in the case of an accident, and then only by a court order. The auditor reviewed several alcohol testing registers for the re-certification audit period. The records were found to be acceptable. CDS, the transporter of this supply chain, maintains records with details of route incidents, sensitive areas found and relevant information. CDS inspection, preventive maintenance, and driver’s instruction records, among others.
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

Summarize the basis for this Finding:

Chemours does not ship cyanide by sea or by air. This section of the ICMC does not apply to the operation

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

Summarize the basis for this Finding:

Cyanide shipments are tracked using a GPS tracking system that is monitored by CDS and reported periodically to Chemours Argentina. Drivers log into the system to communicate the status of the delivery. The convoy leader is provided with a cellular phone and a satellite phone. The convoy leader also has a radio and he is responsible for communicating with CDS in case of an emergency. CDS drivers also have cell phones as a back-up means of communication.

Testing of the communication and tracking equipment is part of the pre-trip inspection and is maintained as part of the formal preventive maintenance program for each tractor. According to the interview with the convoy leader, there are areas with no cellular coverage; however, the convoy leader carries a satellite phone which has coverage all along the route.

CDS sends information to Chemours regarding the shipment location using the GPS tracking system, which allows continuous monitoring of the location of the convoy. The convoy leader communicates with Chemours upon dispatch, daily departures, stops and upon arrival at the customer sites, and after unloading is complete. Personnel responsible for tracking the shipment status from Chemours and CDS were interviewed, the GPS system was demonstrated, and logs showing that shipment status was being recorded were reviewed and were found to be complete.

A transport document (like a bill of lading) issued by the cyanide provider is carried by each driver and a copy is carried by the convoy leader. The transport document includes the number of the
container and net weight. The mine stamps the transport document as received when the shipment arrives. This document is used for invoicing. The amount of cyanide carried is indicated on the transport document which, along with the MSDS and the emergency response information, are carried by each driver. The drivers have an on-board file that includes copies of his/her training, licenses, and the cyanide MSDS.

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 ☐ not in compliance with Transport Practice 2.1

Summarize the basis for this Finding:

Chemours does not have any interim storage responsibilities. Additionally, no trucks containing cyanide can be stored at the terminal. If a delivery is interrupted, loaded cyanide trucks would be stored in a secure location. The scope of this audit is for the ground transportation operations performed by Chemours from ocean ports to mines in Argentina.

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 ☐ not in compliance with Transport Practice 3.1

Summarize the basis for this Finding:

Chemours, as the cyanide consigner, has an Emergency Response Plan (ERP) that addresses all the Code requirements for the transportation of cyanide and requires that the transporter have a coordinated ERP implemented against potential accidents and releases. Chemours and CDS ERPs were reviewed and personnel from both companies were interviewed. Leadership’s understanding of Consignor ICMC responsibilities was excellent. Chemours and CDS ERPs are appropriate for
the selected transportation route and include information specific to responding to emergencies within the supply chain.

Both ERPs pertain to solid cyanide, the only form of cyanide transported. The more detailed information regarding the chemical form of the solid cyanide is on the material data safety sheets (MSDS). The data sheets are always kept in the trucks. Both ERPs pertain to the only mode of transportation: by truck. All emergency scenarios that appear in the ERPs are related to ground transportation of cyanide.

The differences in infrastructure for the defined routes are addressed in the ERPs. As there are not multiple modes of transportation, the different road types such as highway, public, private, and rugged mine site were considered. The ERPs does not specifically mention the design of the transport vehicle. The emergency response actions outlined in the ERPs are primarily notification actions. Professional emergency responders together with technical guidance from Chemours would be responsible for addressing issues involving the way in which the structure of the container should be managed after an emergency.

The role of the driver is described in the CDS ERP. The driver is responsible for securing the scene and making necessary notifications. CDS is responsible for directing emergency responders in coordination with Chemours Argentina. The role of this external partner is clearly stated in the ERP. Both ERPs identify the roles of outside responders, medical facilities and communities along the transportation route. Combined emergency response drills are held with mine sites, local emergency responders, and Chemours personnel to ensure that all parties understand their roles and responsibilities in the event of an incident or 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

☐ not in compliance with Transport Practice 3.2

Summarize the basis for this Finding:

Training on the emergency response plan is given periodically to all CDS employees related to cyanide management, including drivers and the convoy leader. Both Chemours and CDS describe in their ERPs the emergency response duties and responsibilities of the participants in this supply chain. The roles and responsibilities of relevant internal and external personnel are clearly described, as well as the roles and responsibilities of the Emergency Response Team.
Chemours ensures through contractual terms and periodic review that the emergency response equipment maintained by its partners in the supply chain is always available. CDS has defined the materials required for emergency response during transportation along the route including spill response equipment in the ERP.

The convoy leader transports a box with all the emergency equipment listed. The contents of the emergency equipment box are listed on a checklist. CDS drivers receive an appropriate level of training to enable them to fulfill their role in emergency response, which is limited to notification. Formal training in cyanide is given periodically.

The CDS ERP defines what equipment must be available in the convoy leader vehicle and extra personal protective equipment in the trucks. A procedure is used to inspect emergency equipment boxes on a regular basis when trucks are brought in for maintenance and inspections.

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

- ☑ in full compliance with
- □ in substantial compliance with
- □ not in compliance with  

**Transport Practice 3.3:**

*Summarize the basis for this Finding:*

Both Chemours and the transporter CDS, have developed procedures and maintain current contact information for notifying regulatory agencies, outside response providers, medical facilities and potentially affected communities of an emergency. The ERPs are reviewed and tested (by means of a drill and/or table top exercise) once each year. During this activity, the phone numbers are checked for accuracy.

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

- ☑ in full compliance with
- □ in substantial compliance with
- □ not in compliance with  

**Transport Practice 3.4:**

*Summarize the basis for this Finding:*

Specific details regarding the remediation, neutralization, decontamination, and disposal of clean-up debris are contained within Chemours emergency response procedures. Both ERPs, address the
requirement that no chemicals such as sodium hypochlorite, ferrous sulfate, or hydrogen peroxide be used to treat a release to surface water.

**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

**Summarize the basis for this Finding:**

Both ERPs establish that they must be reviewed whenever modifications are required or, at least, once a year. The ERPs establish that at least one emergency drill must be performed every year, together or not with the client and/or the mine site. Cyanide related emergency drills have been held at CDS annually during the re-certification audit period. As stated in the ERPs, the response performance will be reviewed after any emergency and after annual drills.