



STRATEGIZING SOURCING OF SODIUM CYANIDE FOR A MINING CLIENT



Sodium cyanide is a widely used reagent in processing metals including gold and silver. The demand for this toxic reagent has grown steadily, owing to strong demand for gold across the globe.

Mining corporations across the globe source sodium cyanide for their ore

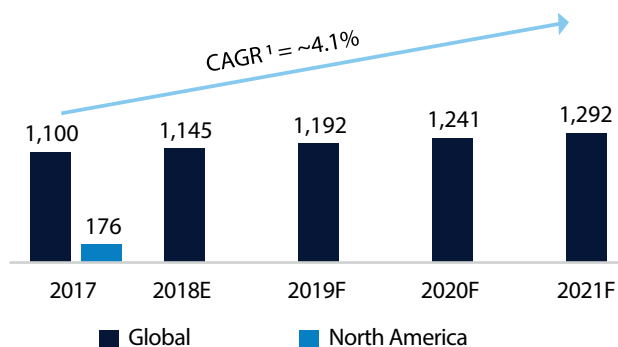
processing. It remains one of the most important reagents sourced by mining organizations and most are faced with challenges including a localized buying, supplier capacity constraints, mounting environmental concerns and a growing need to obtain transparency in commercial models and underlying risks.

This MI article provides a peek into the sodium cyanide market.

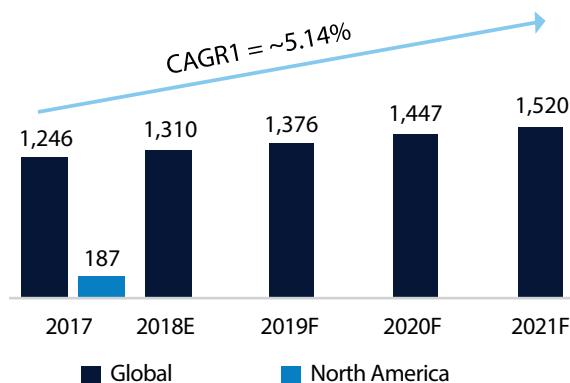
Sodium Cyanide: Demand and Supply Outlook

Global demand for Sodium cyanide is expected to witness a steady growth and is likely to increase at a CAGR of 4.1% during 2017-2021. The growth is attributed to the degrading quality of gold and silver ores and an increase in mining activity globally. North America contributes ~16% while Mexico contributes ~6.5% of the Global Demand of sodium cyanide. The global supply of Sodium Cyanide is expected to reach ~1.5 Million MT by 2021 growing at CAGR of 5.1 during 2017-2021. The Asia Pacific dominated the market with China and Australia leading as top producers of sodium cyanide, while North America accounts for 15%-20% of the Global supply.

Sodium Cyanide Global Demand
(2017-2021F, '000 MT)



Sodium Cynaide Global Supply
(2017-2021, '000 MT)



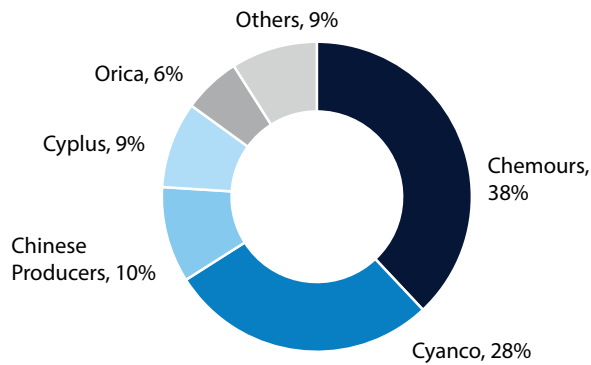
- While the demand for sodium cyanide has been steadily increasing globally due to recovery in the mining sector, the supply side (particularly caustic soda) has witnessed environmental inspections, several plant closures and lower operating rate especially in China had led to supply pressure in recent times. The current supply pressure

is considered temporary in nature, however, is expected to have an impact on the prices of sodium cyanide.

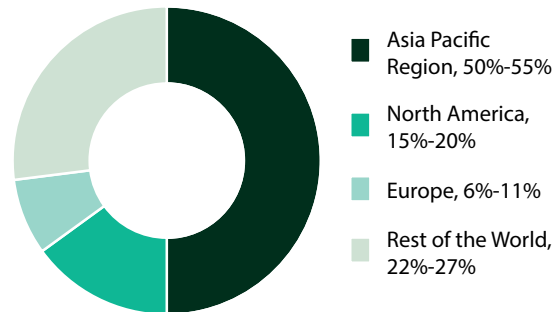
- In North America, demand supply gap (currently ~10,000 MT) is expected to narrow down by 2020, with demand expected to grow at a constant rate and supply expected to remain flat with no

major capacity additions coming up in near future. This contrasts with the scenario in the European and Asia Pacific markets where major capacity additions are expected to come online in future. Therefore, a majority of the large mining companies in America's are currently focusing on securing their cyanide supplies.

Top America's Suppliers Market Share – Sodium Cyanide



Sodium Cyanide Supply Market Share – By Region



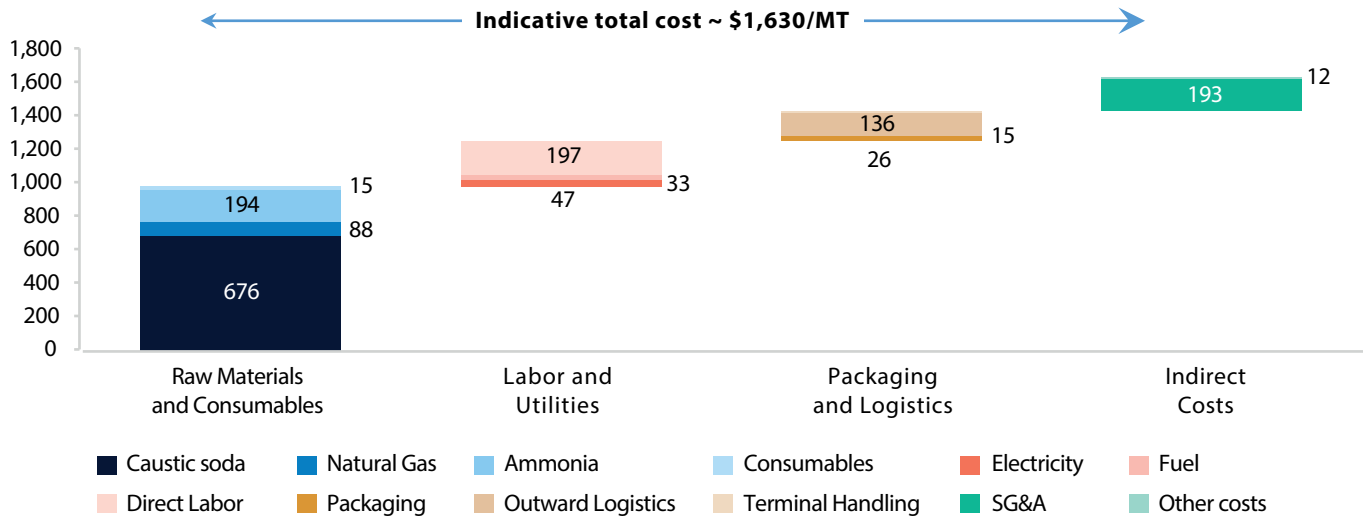
American sodium cyanide market is consolidated with TOP 4 players contributing to ~80% of the market share.

| Sodium Cyanide Manufacturers | Headquarters | Product Portfolio - Cyanide Form | | Regional Footprint | | | Key Countries/Region Served | Key Clients |
|--|---------------|----------------------------------|--------|--------------------|------|------|--------------------------------------|---------------------------------|
| | | Solid | Liquid | Americas | APAC | EMEA | | |
| Cyanco International, LLC | United States | Yes | Yes | ✓ | × | ✓ | US | Kinross Gold |
| The Chemours Company (Dupont) | United States | Yes | No | ✓ | ✓ | × | Americas | Yamana Gold, Minoras (Honduras) |
| Orica Chemicals Pty. | Australia | Yes | Yes | ✓ | ✓ | ✓ | Global | Barrick Gold |
| Australia Gold Reagents | Australia | Yes | Yes | ✓ | ✓ | ✓ | Global | AngloGold Ashanti |
| Tongsuh Petrochemical | South Korea | Yes | No | ✓ | ✓ | ✓ | West Africa, South America | N/A |
| TaeKwang Industry Co, Ltd. | South Korea | Yes | No | ✓ | ✓ | ✓ | Africa, South America, China, Russia | AngloGold, Randgold |
| Anhui Shuguang Chemical Group | China | Yes | No | ✓ | ✓ | ✓ | China, Turkey, Kazakhstan, Mongolia | N/A |
| Hebei Chengxin | China | Yes | No | ✓ | ✓ | ✓ | West Africa, Argentina | N/A |
| Korund | Russia | Yes | No | ✓ | ✓ | ✓ | Russia | N/A |
| CyPlus Idesa S.A.P.I. de C.V. | Mexico | Yes | No | ✓ | × | × | Mexico | N/A |
| Proquigel Quimica S/A (Unigel Minería) | Brazil | Yes | Yes | ✓ | × | × | Brazil | Kinross Gold Corporation |
| CyPlus GmbH (Evonik) | Germany | Yes | Yes | ✓ | × | ✓ | European countries | N/A |
| Sasol | South Africa | No | Yes | ✓ | N/A | ✓ | South Africa | Anglo-gold Ashanti |

Challenges faced by many Mining companies in America's

- High logistics cost and additional investments required to adopt transportation by ISO containers instead of using Excel II containers.
- High disposition cost due to the hazardous nature of the product and very stringent regulatory norms for handling and safety.
- High Commodity price fluctuations.
- No plans for future capacity additions by suppliers with the trend in increasing demand.
- High Supplier switching cost

Cost Assessment for Sodium Cyanide (FOB US)



Sourcing of Sodium Cyanide

Supplier Engagement:

Large mining companies engage with 2-3 suppliers for their cyanide supplies. They typically engage at the regional level and establish a 2-3-year contract with a six-month advance notice to increase the contract period by 1-2 years due to high logistics cost, stringent regulatory norms and safety requirements. Considering the ongoing supply for sodium cyanide, most buyers are extending existing contracts as it is observed that the suppliers are quoting relatively higher prices for new business accounts.

Competitive Bidding:

Competitive bidding is one of the widely used strategies for supplier selection, globally. In recent years, Korean producers have gained significant new businesses (primarily in Africa and Latin America) as a result of their lower prices. However,

the ongoing supply pressure has enabled these suppliers to increase their prices. Consequently, the price gap between Korean producers and the producers located elsewhere, especially in Australia, has shrunk. It should be noted that the producers located in China are also cost competitive, however, most of these producers are already running at full capacity and might not be able to serve a new customer. Hence, it is recommended for buyers to consider suppliers based out of Australia in their RFP process.

Criteria designed by large mining companies to shortlist their suppliers

- The proximity of warehouses to the client's location and trans-loading facility operations.
- Signatories to the International Cyanide Management Code.

- Reliability of supply and Experience in supplying to mining companies.
- Sodium cyanide product form (dry/liquid) and packaging.
- Product pricing & price revision.

Factors Considered in Quarterly Price recalculation equations.

- Base price revision by the inflation rate.
- Raw material (Natural gas, Ammonia and caustic soda) price fluctuations revised every quarter based on last three months' average prices.
- Currency conversion for international supplier
- Freight component

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