

# THE CYANCO STANDARD

**cyanco**  
*Your Mining Solution*

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At Cyanco, we believe that being a Tier 1+ supplier starts with quality products alongside safe and reliable delivery – but that’s not where it ends!

We also recognize that miners need more support than ever from their key suppliers, which is why we take a full lifecycle view of our products, helping to enhance safety and sustainability – as well as operational efficiency – related to dissolving, detox, and optimizing the cyanide circuit at each mine. Read on to see all the ways that Cyanco can help you improve your operational performance, ESG goals AND bottom line.

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## Being Safe Means Being Ready

The stakes are high in mining AND in the industrial chemicals business. When mistakes are made – or accidents happen – people can be hurt. That’s why Cyanco continues to ensure that every precaution is taken to safely produce, package and deliver our products – every minute of every day.

Being safe also means being ready, because when it comes to sodium cyanide, there’s no room for guesswork. In the event of an emergency, everyone – from the local fire chief to the plant manager to front-line operators – must be on the same page, referencing the same plans, taking coordinated actions.

This past summer, after months of preparation, Cyanco staged an emergency response drill to test our own emergency plans and the preparedness of our team and local first responders. We simulated a full-scale motor vehicle collision between a cyanide tanker truck and an 18-wheeler, representing a real-life scenario that Cyanco’s Emergency Response Team and Humboldt County’s first responders might face. The simulation gave key

personnel the chance to step through spill containment, decontamination, emergency first aid and clean-up under observation by our customers.

The drill followed a full-day Cyanide Safety training workshop, and both events were very well attended. Throughout the two-days, Cyanco hosted over 100 customers from 20 mines – the largest crowd we’ve ever assembled for a customer training. Our customers, vendors and emergency response partners provided positive feedback that showed they highly valued Cyanco’s sharing of industry best practices in safe handling of cyanide.

We designed this exercise for attendees to take their learnings back to their own mines and to improve our mutual safety readiness throughout the industry. It was also a very positive step in our effort to continue building a connected safety network in our industry, where everyone has access to best practices and all stakeholders have the information and training they need to keep everyone safe when it comes to cyanide.

Thanks to everyone who joined us for this important event. Cyanco was proud to host so many of our valued customers and provide support for the health, safety and environmental programs at the mines. Please keep in touch to let us know how Cyanco can help with your current and future safety needs.

# Strong Progress on Alternative 'Green' Technology to Recover Gold and Silver

## Technology focuses on improving recovery from refractory ores and tailings



In March of 2021, Cyanco entered a strategic alliance with Cycladex, Inc., the developer of an alternative lixiviant for rapid gold and silver recovery. The Cycladex technology is especially well suited to treating refractory ore, which is more difficult to process with traditional oxidation processes, such as those utilizing sodium cyanide.

Approximately 22% of the world's current gold reserves are encapsulated in refractory ore. Historical mine sites and abandoned tailings are largely comprised of refractory ore, which was untreatable given the technology available at the time. The tailings that remain at these sites may still contain large amounts of gold and silver. The

Cycladex technology makes it possible to take out the heavy metals, wash the ore and extract the gold.

Using this sustainable method, some modern mines can drastically reduce operating and capex costs – by 30-50% on certain types of ore and tailings – while achieving significant environmental benefits.

Certain mines can also lower their water usage, improve recovery times and reduce their operational carbon footprint.

The partnership has expanded Cyanco's current product offerings and is aimed at helping its customers to safely and efficiently recover more precious metals. Cycladex, in turn, has benefited from Cyanco's expanded infrastructure and customer base, enabling it to grow its presence in the precious metal mining industry. As the partnership moves toward the year-and-a-half point, Cycladex and Cyanco continue to make strong progress in the commercialization of its alternative mineral recovery technology in the precious metals sector.

"From September 2021 to today, we have successfully demonstrated the ability to process and recover precious minerals from 20 different ores from around the world," said Roger Pettman, Executive Chairman of Cycladex.

"We have proven the kinetics of the technology with rapid leach times." He added that the company's Arizona facility is currently processing up to 75 metric tons of ore per run. "With successful demonstration and scale-up, we are now able to transfer the

technology to mine customers for use in applications where traditional cyanide processing doesn't work very well."

According to Pettman, some mines are leveraging this new technology to run their ores and tailings at scale.

"We have been very pleased with the results of our collaborative partnership with Cycladex and consider the last 18 months a tremendous success," said Hartono Wijaya, Senior Vice President of Business Development and Strategy. "Each mine is different, and every customer has unique needs. This complementary technology enables Cyanco to offer our customers a new solution to process different types of ore and mine tailings. Combining Cycladex technology with Cyanco's sodium cyanide and technical services portfolio gives mines a broader range of options from which to choose from their most trusted supplier."



# Helping Mines Improve ESG Performance

While Cyanco is laser-focused on the quality and safety of our products, we also recognize that miners need more support than ever from their key suppliers – especially as mining continues to become increasingly advanced and complex.

That's what makes us different. At Cyanco, we take an end-to-end product lifecycle approach with our customers, working with them to enhance safety and sustainability – as well as operational efficiency – as it relates to dissolving, detox, and optimizing the cyanide circuit throughout the mine site.

How do we do this? **Cyanco's highly trained technical service reps are on-hand to assist mines with everything from NaCN usage studies to the implementation of analyzers, control equipment and/or detoxification of their waste streams.**

Cyanco also regularly helps our customers achieve their International Cyanide Management Code (ICMC) certification and implement consistent standards related to the safe use and handling of cyanide. These safety and efficiency improvements help drive sustainability strategies that contribute to improved ESG outcomes for our customers.

As mines measure their ESG performance, they must also factor in the performance of the vendors within their supply chain. Those who partner with Cyanco get the benefit of our own environmental, health and safety record, which continues to augment that of our customers. This includes our zero-emission manufacturing facility, with its focus on operational efficiencies, waste reduction and energy savings – alongside broad optionality in the packaging and delivery of our products. We're also proud to announce that Cyanco just successfully completed our ICMC Recertification for our Global Ocean and North American Rail Truck supply chains!

Cyanco remains committed to helping mines navigate to a more sustainable future. Contact us to find out more about our offerings and how adopting safer and more predictable cyanide protocols can help improve not only your ESG performance, but also your bottom line!

# Cyanco Invests in the 'E' of EHSS

According to Cyanco's Director of Regulatory Affairs and Compliance, Scott Williams, standardization and consistency are critical elements of a strong and compliant environmental program at any chemical production facility.

"At any industrial organization – especially those with multiple sites – everyone should be referencing a standardized set of Environmental, Health, Safety and Security (EHSS) materials," said Scott, who has held previous roles as a regulatory compliance officer at both the State and Federal levels.

"I recommend creating a Written Corporate EHS Manual which is a federal requirement for all employers with 10 or more employees. It can be housed electronically, and easily navigated by chapter and subject. This helps employees easily access the information they need, when they need it, ranging from Standard Operating Procedures (SOPs) to proper permitting to environmental reporting responsibilities."

Scott, who joined the Cyanco ranks in May of 2022, stated that environmental excellence also requires a strong EHSS team, with great talent in the right roles, to enact its policies. As such, he has made two strategic hires in recent weeks to round out Cyanco's EHSS capabilities: Environmental Engineer, Gabriela Quiles and Process Safety Management (PSM) Manager, Safia Cisse.

In her new role, Gabby is responsible for: carrying out Cyanco site assessments; conducting technical audits for our sites; evaluating the environmental impact of our operations and processes; making recommendations on Cyanco's waste management activities; and ensuring our company complies with all environmental regulations.

Safia oversees all PSM procedures, systems, initiatives and internal audit programs for each of Cyanco's facilities, working closely with site personnel to continue building a world-class PSM program across Cyanco's global footprint.

Augmenting Cyanco's team of veteran EHSS experts, these new positions will help round out the 'E' in the company's EHSS program, according to Scott. "We've got a great team in place that just got stronger. I'm really looking forward to building our new team dynamic that will boost our own environmental outcomes, while enhancing Cyanco's ability to help improve our clients' EHSS programs too!" he said.



## Being Prepared Means Having an Emergency Action Plan

Emergencies often occur unexpectedly, so it's important to develop an emergency action plan for your workplace before an emergency happens. A formal plan helps prepare employees for emergency events and ensure a more organized response. Being prepared ahead of time can also help employees feel more comfortable in the workplace – every day – and potentially avoid further issues or mistakes during emergencies.

Companies develop these plans for many types of emergencies, often directly related to their line of work or location, as various emergencies require different plans. Here are some examples of the emergencies workplaces may encounter:

- Hazardous material spills
- Fires
- Tornados
- Floods
- Hurricanes
- Severe weather/power loss
- Active shooter
- Medical emergencies

## October is National Protect Your Hearing Month

Occupational hearing loss (OHL) is one of the most common work-related illnesses in the United States. According to the CDC (Centers for Disease Control and Prevention), approximately 22 million U.S. workers are exposed every year to hazardous noise levels at work.

Statistics from the National Institute for Occupational Safety and Health (NIOSH) show the numbers are especially concentrated in the Mining sector, with one out of every four mine workers experiencing a problem with their hearing. That number increases by retirement age, with four out of five mine workers reporting a hearing impairment by the time they reach their mid-60's. Hazardous noise is the primary culprit – 76% of mine workers are exposed to hazardous noise, the highest prevalence of all major industries.

No matter the industry, nearly all work-related hearing loss is permanent, and it can have a profound impact on quality of life. Fortunately, with today's hearing loss prevention strategies and technologies, work-related hearing loss can be nearly always prevented.

### How to reduce noise exposure in the workplace:

- » Reduce noise at the source of the noise. Use quieter equipment and keep equipment well maintained and lubricated.
- » Enclose the source of the noise or place a barrier between you and the source.
- » Increase the distance between you and the source of the noise.
- » Reduce your time in noisy areas.
- » Always wear hearing protection in noisy areas, and if using foam plugs, insert them correctly.
- » If you are listening to music or something else, keep the volume at a safe level and only listen in areas that are not noisy.

For more information on protecting your hearing, check out these tools on the [CDC website](#).

# Cyanco's Technical Team presents at the 2022 Heap Leach Conference

## Utilizing Online Cyanide Analyzers in Heap Leach Operations

Cyanide is one of the major operational costs in heap leaching for gold extraction. To maximize leach efficiency and save on costs, it is important to effectively control cyanide addition to the heap.

A technique that has been widely and successfully used to control cyanide addition and improve cyanide efficiency - especially in milling operations - is the use of online cyanide analyzers.

Analyzers such as Cyanco's CCS® Cyanide Control System have garnered cyanide savings of over 10% in most mills. Mines using online cyanide analyzers can also expect a reduction of approximately 10% in detox costs.

Cyanco's CCS® units accurately control leaching processes by analyzing free cyanide minimizing interference from other cyanide complexes. The unit enables continuous adjusting and monitoring of cyanide levels during leaching.

Automated monitoring and control of cyanide levels means more predictable results, more accurate forecasts and better use of resources.

To date, the application of online cyanide analyzers has not been as widely adopted in heap operations as in mills. However, at Cyanco we believe there is a strong cost/benefit argument for porting this technology

over to the heap environment – making the costs involved and the dedication of time well worth the investment.

If you're headed to Sparks, NV next week, be sure to catch the Cyanco presentation and learn how best to leverage this in heaps, including control strategies most suitable for

heap leach applications. Cyanco engineers will also share new features that can increase the operational availability of these systems.

If you're not going the show, please be sure to connect with Cyanco to learn more about this cost-saving opportunity, which will also benefit your ESG performance!



CYANCO VALUES AT WORK



# ONE TEAM. ONE GOAL. SAFE PRODUCTION.



Look for Cyanco at these upcoming events:

**OCT** **Heap Leach Conference**  
16-18 Sparks, NV

Cyanco's Advanced Technology Group will be presenting at the upcoming Heap Leach Conference (Sparks, NV 10/16-10/18) talking about best practices associated with online cyanide analyzer installation, maintenance, and operational practices.

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Certified according to  
the International Cyanide  
Management Code