

Cyanide Management

Approach

Cyanidation – the process of using a sodium cyanide solution to separate gold from ore – is the safest and most effective and economical metallurgical technique to recover gold currently available. However, in large doses and when not safely contained, cyanide can pose serious health risks to human health and the environment. Demonstrating our ability to effectively manage the risks associated with our use of cyanide is critical to the sustainability of our business.

Our Hazardous Materials Management Standard requires sites to manage cyanide in accordance with the **International Cyanide Management Code** (ICMC or “the Cyanide Code”), a voluntary industry program that promotes best practices that safeguard workers, communities and the environment. In 2005, Newmont became one of the 14 initial signatories to the Cyanide Code, which focuses on the responsible management of cyanide and cyanide solutions during every stage of the mining process. The International Cyanide Management Institute (ICMI) administers the Cyanide Code, and the ICMI’s Industry Advisory Group (IAG) – of which we are an active participant – serves as a forum for signatory companies to ensure technical and industry perspectives are incorporated into the Cyanide Code’s implementation.

Audits and certifications

All our gold processing facilities that use cyanide must have a cyanide management plan, be certified to the Cyanide Code, and comply with the requirement to conduct independent third-party audits and recertification every three years. We also require new operations that use cyanide to carry out an initial certification audit within 12 months of commercial production. This requirement is more stringent than the Cyanide Code’s requirement for new sites and facilities to achieve certification within three years. Between formal audits, sites engage internal and external auditing teams to review compliance. Newmont requires all suppliers and transporters of cyanide products to our mines to comply with the Cyanide Code.

Audit documents and details for each of our mines that use cyanide for processing can be found on the [ICMC website](#).

Performance management

Through our IMS, we track cyanide-related events and rate the actual and potential consequences on a severity scale of zero to five. “Level 0” events are near misses that did not result in injury or damage but had the potential to do so. Level 1 and 2 events have insignificant or minor impacts, and level 3 to 5 events are those that can result in more significant impacts. When reviewing events, we focus on potential consequences and require investigation on all events with a potential consequence level of 3 or higher. All events are continuously tracked, and significant events are reviewed and discussed on a quarterly basis during a CEO-led call with executive, regional and functional leaders, and publicly disclosed in this report.

When we are out of compliance or when a significant event occurs, we commit to transparently disclose and fully mitigate any impacts.

We engage with industry organizations such as the International Council on Mining and Metals (ICMM), Euromines and the Cyanide Council – an organization of cyanide manufacturers – to maintain high standards and effectively manage the social, political and regulatory risks related to cyanide’s use in gold mining.

Performance

In 2018, Newmont operations used 59.1 thousand tonnes of sodium cyanide. Quantities vary each year due to mineral variations in our ore bodies as well as processing variables.

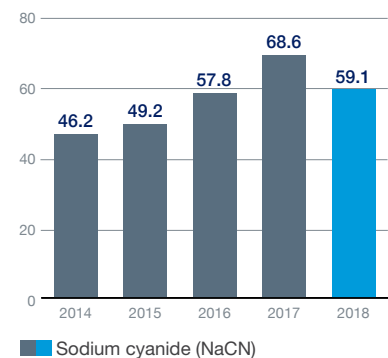
All our sites that use cyanide are certified with the Cyanide Code. In 2018, Long Canyon in Nevada and Merian in Suriname received their initial certification, and seven sites – Ahafo and Akyem in Ghana, Boddington and KCGM in Australia, Carlin and Phoenix in Nevada and Yanacocha in Peru – went through the recertification process and are now in full compliance with the Cyanide Code. We will conduct a recertification audit at Tanami in Australia in 2019.

In 2018, we experienced two cyanide-related events at a level 3 or higher that both occurred at the Carlin operation in Nevada:

- An estimated 13.5 pounds of cyanide were released when a pregnant process solution flowed from the solution ponds to stormwater ponds and out of containment to the adjacent landscape.
- A tailings pipeline, buried unprotected under a light vehicle road crossing, ruptured and released an estimated 26,300 gallons of low concentration slurry. Most of the slurry was contained, but approximately 9.2 pounds of cyanide and 25 pounds of sodium cyanide were released outside of containment onto the road.

During the events, the solution did not leave the property, and there was no threat to human health, communities or wildlife. The event was reported to the appropriate regulatory authorities and the spill was cleaned up and remediated.

SODIUM CYANIDE USE
(THOUSAND TONNES)



Activities in 2018 to improve the effectiveness of our cyanide management approach included the following:

- A Newmont representative was elected to chair the International Cyanide Management Institute's (ICMI) Industry Advisory Group (IAG), which serves as a forum for signatories to improve the validity and strength of the Cyanide Code and communicate these efforts. In 2018, the IAG formed a working group to examine how a critical controls management approach might prevent worker fatalities in cyanide-related operations. This work is discussed in the **featured case study**.
- The ICMI finalized revisions to the Cyanide Code to include the use of dyes in all sodium cyanide reagents to aid in leak detection. Newmont is committed to operating in full compliance with the new requirements, which will go into effect in 2019.
- We reviewed and updated our consequence severity scale to provide greater consistency across our operations in evaluating potential and actual environmental events, assessing trends and supporting discussions on lessons learned.

Cyanide Management Case Study

Protecting Workers from Exposures to Cyanide

When the International Cyanide Management Code (the Cyanide Code) was implemented in 2005, the International Cyanide Management Institute (ICMI) was formed to administer the Cyanide Code through a multi-stakeholder Board of Directors. The ICMI's Industry Advisory Group (IAG) was established to provide a forum for participating signatory gold companies and cyanide producers to advance the education, communication and discussion about the Cyanide Code. In 2018, Scott Miller, Newmont's Group Executive of Environment, was elected Chair of the IAG.

An important body of work the IAG embarked on in 2018 was examining how a **critical control risk management** approach can be applied to protecting workers who transport cyanide or work at operations that use cyanide.

Cyanide in any form can be hazardous to human health and the environment. When cyanide is delivered to a mine site that uses a cyanide solution in the processing phase, it is in a higher concentration, and in this form, it is even more dangerous.

An IAG working group, composed of representatives from eight signatory gold mining companies and cyanide producers, held a workshop at Newmont's office where they conducted a bow-tie risk analysis and identified the top six critical controls to prevent a catastrophic reagent-grade cyanide spill.

A set of verifications for each critical control – which include the questions one must ask – was developed to ensure the control is in place and effective.



We hosted a workshop where representatives from eight signatory gold mining companies and cyanide producers came together to identify critical, preventative controls.

Following the workshop, we piloted the critical controls at our Yanacocha operation in Peru, and another working group participant conducted a similar pilot. The pilot tested the applicability, ease of use and verification process. Findings from the pilot were shared with the IAG, including the recommendation to add a critical control on non-destructive testing and improvements to the verification process.

In 2019, we plan to implement the critical controls at all our sites. To share the learnings more broadly, once all pilots are completed, the ICMI will publish the critical controls study, and the IAG and ICMI will work together to determine if there should be any changes to the Cyanide Code.

The IAG will also begin looking at opportunities to apply the critical control risk management approach to other catastrophic risks, such as spills and/or leaks that occur offsite.