



Cyanide management: Ten years since Baia Mare

A decade after the Baia Mare tailing disaster, it is time to reflect on development of the International Cyanide Management Code and its future

IN JANUARY 2000, the Aural gold mine in Baia Mare, Romania, released approximately 100,000m³ of gold mill tailings into the Tiza River, a tributary to the Danube River.

While it was fortunate that no human lives were lost, the spill resulted in a massive loss of fish, and focused the world's attention on the risks of cyanide use in the gold-mining industry.

The ensuing public outcry called for banning the gold industry's use of cyanide. Such a ban would have been disastrous for the global gold industry because cyanide is the only chemical capable of economically recovering the great majority of the world's gold.

In response to the Baia Mare spill and public demand for prohibitions on the use of cyanide, the United Nations Environment Programme (UNEP) and the International Council on Metals and the Environment (ICME; the predecessor to the International Council on Metal and Mining) organised an effort to develop a code of best practice to improve the handling of this toxic chemical and reduce the frequency and severity of future releases.

An international multi-stakeholder steering committee was appointed that represented a diverse set of views and constituencies, including governments, non-governmental organisations (NGO), labour, financial institutions, gold-mining companies and cyanide producers. UNEP and the ICME served as secretariat, and the Gold Institute convened the Industry Advisory Group (IAG), a group of leading gold companies and cyanide producers, to fund the project and provide technical input and industry perspective.

This initiative resulted in the creation of the 'International Cyanide Management Code for the Manufacture, Transport and Use of Cyanide in the Production of Gold'. In the nine years since the steering committee completed its work, the code has evolved from a set of guiding principles, performance standards and guidelines into an operating voluntary global programme covering the production, transportation, use and disposal of cyanide used the global gold industry.

Ten years after Baia Mare the programme nears the certification of its 100th operation.

BY PAUL BATEMAN

CODE DEVELOPMENT

After its initial organisational meeting in Washington DC in December 2000, the steering committee engaged a code manager and held four working sessions during 2001.

In addition to input from the IAG, an extensive consultation process was undertaken to solicit the perspectives of a wide range of stakeholders. Working drafts of the code were posted on the UNEP website and distributed directly to 140 groups and individuals, soliciting comments from governments, NGOs, academics, consultants, industry, and financial institutions. The steering committee heard presentations from 15 stakeholders and groups from Australia, Canada, Eastern Europe, Papua New Guinea, South Africa and the US, and received 68 written submissions.

The steering committee conceived the code as a voluntary programme for companies involved in the production of gold by the cyanidation process, which would also address the production of the cyanide used and its transport to gold-mining operations.

The code drafter's agreed that it should focus exclusively on the management of cyanide and cyanidation mill tailings and leach solutions, and not address other safety or environmental issues such as the design and construction of tailings impoundments or long-term closure and rehabilitation of mining operations.

The steering committee further agreed that the code would complement, but not supersede, an operation's existing regulatory requirements. This relatively narrow focus was critical in allowing the steering committee to reach consensus within the 13 months it took to complete the code.

The code consists of nine principles, which broadly state the commitments that companies make to manage cyanide in a responsible manner. The principles address the production of cyanide and its transport to the mine site, unloading and handing of reagent-strength cyanide at the mine, its operational use in the production of gold, the decommissioning of cyanide facilities upon cessation of mine operations, programmes to ensure worker safety,

emergency response planning, training of mine personnel and dialogue with stakeholders.

One or more standards of practice are included under each principle identifying the performance goals and objectives that must be met to achieve compliance with the principle.

A separate implementation guidelines document was also prepared describing the controls, procedures and other measures that are typically used to comply with the code's principles and standards of practice.

The guidelines also describe how operations can meet a standard of practice using alternative means to those typically used, and in this way provide flexibility for mines to tailor their operations to their site-specific circumstances as well as establish innovative means of compliance which may become the industry standard in the future.

The steering committee process also produced a draft audit questionnaire for gold mines. Although this document was not finalised at the time the committee concluded its work, it was sufficiently advanced to demonstrate that compliance with the code would be assessed using a detailed and comprehensive protocol to document how the operation compared to the code's expectations.

The steering committee concluded its work at the end of 2001, having fulfilled its mission of developing a code of best practice for management of cyanide used in gold mining.

The completion of the code was formally announced at the World Mine Ministries Forum in Toronto, Canada, in March 2002 by John Carrington, then the vice-chairman of Barrick Gold Corp. In his remarks, Mr Carrington observed that "producing the code showed us that the industry, working together with a broad range of stakeholders, could develop a consensus on common issues. With its implementation, we will see fewer cyanide incidents, and should one occur, improved responsiveness and less impact."

However, while its goals and performance objectives were now available for the gold-mining industry and other stakeholders to evaluate, many of the elements needed to implement the programme at gold mines around the world, and to verify that implementation in a credible and transparent manner were lacking. Until the various administrative gaps were filled, the code existed only on paper.

The steering committee's work marked the first time that a multi-stakeholder group co-operatively developed a voluntary initiative for improvement of a global industry.

Considering the diverse make-up of the steering committee, the extensive consultation with other stakeholders, and the complexity of the issues it faced, reaching consensus on the code and completing the project in 13 months was a success in itself.

The fact that the initial best-practices guide has evolved into a functioning programme with strong industry support and wide acceptance by other stakeholders is a testament to the combination of vision and pragmatism that marked the steering committee's deliberations.

"The code consists of nine principles, which broadly state the commitments that companies make to manage cyanide in a responsible manner"



→ CONTINUING DEVELOPMENT

Once the steering committee completed its work, the task of turning the code into a working programme was left to the gold industry.

Using the funds remaining from the code development process and continued support from the IAG, former steering committee chairman Harold Barnes, Gold Institute president Paul Bateman and former code manager Norm Greenwald kept the process moving forward.

Their first priority was placing the code within an existing organisation or creating a new one to continue the development of the various administrative procedures and verification structure that would allow gold mines to formally commit to its implementation and demonstrate their compliance with its principles and standards of practice.

Although the steering committee had hoped that the code could be housed within UNEP or ICME, neither of these organisations were prepared to take on this unproven programme. It was therefore necessary to establish a new organisation, the International Cyanide Management Institute (ICMI), to oversee and administer the code, which was done in 2003.

Development of the code's administrative elements continued over the course of 2003 and 2004 with the recognition that all new code documents and revisions to existing documents would require formal adoption by ICMI's board of directors.

One significant proposed code revision was to allow cyanide producers and transporters to become signatories; they had been limited to the status of 'Code Supporters' in the draft completed by the steering committee, with certified mines being responsible for ensuring that the producers and transporters managed cyanide responsibly. The majority of the procedural documentation needed for code implementation also was developed over this period for the board's consideration.

In February 2005, after reviewing the documentation developed since the steering committee completed its work and making a number of revisions, the board adopted these additional procedures.

Companies were then able to determine the potential impacts of the programme on their operations and decide whether they would sign the code.

In early November 2005, ICMI announced the first 14 code signatory companies, which represented 81 gold mines and cyanide production facilities in 19 countries that would implement the code with the goal of becoming certified.

CODE IMPLEMENTATION

In the four-and-a-half years since then, the code has grown to a total of 70 signatories (21 gold-mining companies, 13 cyanide producers, and 36 cyanide transporters) with operations in 36 countries on six continents.

As of June 14, 2010, a total of 99 operations have been certified in compliance with the code, and 80 more have yet to undergo their certification audits. The list of certified operations includes mines producing less than 100,000oz/y as well as one producing over 1.5Moz/y.

It is important to acknowledge that the code's success primarily is due to the commitment of human and financial resources by its signatory companies. The code exists today as a model of a successful voluntary industry initiative because of its diligent implementation by these companies and their continuing commitment to maintain their compliance and to further expand its reach.

Had the industry not embraced it and devoted the resources necessary to implement it at their operations, the code would be yet another intellectual exercise gathering dust on a bookshelf.

Over the past several years, the code has added a process for resolution of disputes and guidance documents on auditing of mines and cyanide transporters. Additional guidance on recertification audits was recently issued, as 13 operations have already completed their initial three-year audit cycle and have been recertified in continuing compliance with the code.

Code documentation has also been revised to better address cyanide production and transport, as well as clarify various procedures and guidance on a number of topics.

The code's audit process and the transparency of audit results are two hallmarks of the code which set it apart from most voluntary industry programmes.

Independent third-party professional auditors meeting ICMI criteria conduct comprehensive site inspections and evaluate a facility's cyanide management systems and their implementation to verify and certify code compliance.

A summary report of the audit findings, as well as the auditor's credentials and a Corrective Action Plan (if necessary to bring the operation into full compliance) are posted on the code website for public review.

ICMI is not aware of any other global programme that evaluates an industry's health, safety and environmental management systems and the on-the-ground implementation of these systems using independent third-party professional auditors, and then makes the audit results available to the public.

Consistent with its written Code Review and Revision Policy, ICMI in 2009 commissioned a study to ensure that the evaluations of operations during code verification audits, and the resulting certification decisions made by the auditors, were being done consistently around the world.

The report, available for public review on the code website, concluded that there was no indication of significant deficiencies in the audit programme and no materials flaws in the process that called into question the validity of code audits or certifications.

The study found that code auditors displayed a consistent understanding of code provisions, and

that revisions to the code's Verification Protocols, guidance documents and training programmes were not necessary.

Training programmes for companies and auditors on code implementation and auditing have been an important tool for ICMI in educating its stakeholders on the administrative and substantive elements of the code and assisting signatories and potential signatories in understanding the code's expectations.

INTERNATIONAL SUPPORT

The code has earned the support of several prominent organisations. The G8 nations, an international forum for the governments of Canada, France, Germany, Italy, Japan, Russia, the UK and the US, in 2007 recognised the code as one of several certification systems that are suitable instruments for "increasing transparency and good governance in the extraction and processing of mineral raw materials".

The World Bank's International Finance Corporation (IFC), which provides financial backing for mine development projects, requires mines seeking its financial assistance to operate in a manner "consistent with the principles and standards of practice of code".

The Responsible Jewellery Council, an international non-profit organisation, has developed a certification system for the jewellery supply chain, which incorporates code compliance for its gold mining participants, while the World Gold Council, the gold industry's key market development body whose members produce 60% of the world's annual gold production, has also voiced support of the code.

A recent statement made by Bill Williams, Barrick's vice-president for environment, indicates the perspective of the world's largest gold-mining company with respect to the code. In the April issue of Barrick's publication 'Beyond Borders', Mr Williams commented that "the bar has been raised".

"We are seeing an international consensus emerge in which so-called voluntary initiatives to protect the environment are now becoming a requirement of doing business."

He further noted that "today, the cyanide code is the new normal. If an operation isn't code-certified, stakeholders want to know why not".

The gold industry has changed over the past ten years in many respects. Mergers and acquisition activity early in the decade consolidated a significant proportion of production in the top-tier companies. Furthermore, with gold prices having soared in recent years, the industry has seen the emergence of many new companies. Currently, over 80 companies worldwide produce over 100,000oz/y of gold.

SUCCESSSES

ICMI estimates that half of the world's current gold production is from the primary gold mines of its signatory mining companies. However, there is still more work to be done.

Australia offers an interesting example, where,



published figures indicate that 68% of primary gold production in 2009 using cyanide extraction came from just five code signatory companies, leaving nearly 30 companies not participating in the code.

The ongoing challenge is to continue encouraging companies to become signatories.

In the years since the Baia Mare spill, the frequency and severity of cyanide-related accidents appears to have diminished.

Although some incidents have occurred, including some at certified operations, they have been relatively minor in scope and impact.

Whether due, in part, to the code, or whether the advent of the code simply coincided with an increasing awareness of the need to improve cyanide management practices in the wake of Baia Mare cannot be determined.

However, the code's emphasis on emergency response planning has resulted in the strengthening of these programmes at many operations.

Additionally, ICMI has been told by a number of gold-mining companies that implementation of the code has helped change their corporate culture by demonstrating the company's commitment to protecting its workforce, the community and the environment from adverse impacts of the use of cyanide.

Seeing a company's commitment has reportedly improved the level of job satisfaction among its employees and subsequently their overall productivity.

Government regulatory personnel have also remarked that as cyanide management practices improve at operations implementing the code, management of other hazardous chemicals has improved as well.

Governments in several countries are also using or considering using the code in lieu of or as part of their own regulatory programmes. Australian hazardous materials regulators acknowledge that certification under the code can demonstrate an operation's compliance with some regulatory provisions, while the government of Ghana uses code certification as a factor in its AKOBEN programme, which ranks the performance of its gold-mining operations.

Meanwhile, the Peruvian government is including a number of the code's provisions in draft regulations that are currently under review.

EVOLUTION

The work of the steering committee set the code on a firm footing. Its continuing evolution has been a process of refining the understanding of the measures needed to implement best cyanide management practice at operations around the world, and how to make the programme function with maximum efficiency.

Moving forward, the challenge continues to be balancing the rigour needed to protect employees, communities and the environment with the

flexibility necessary for a voluntary global programme which addresses risks at large and small operations in diverse environmental settings, while simultaneously limiting associated cost and minimising needed resources.

Within these constraints, the code must continue to evolve if it is to remain current and credible, while the technologies needed for code compliance must also evolve with the state-of-the-art best practices.

The code's administrative elements will likely change too in ways that enhance its credibility and acceptance with its stakeholders.

In May this year, ICMI re-convened the steering committee to update them on how the code has grown since they completed their development work, solicit their views on the programme it has become, and seek their input on how the code should evolve in the future.

The participants were unanimous in the view that the industry's commitment to code

implementation, and the code's acceptance by a broad range of stakeholders as a credible and independent measure of best cyanide management practices in the gold-mining industry, had exceeded their expectations.

Improved cyanide management during transportation resulting from the code was also seen as a significant success since the steering committee had considered cyanide transport to be the weakest element in the cyanide life-cycle and the most difficult to control.

Given the success the code has had in improving the management of cyanide used in gold mining, the meeting participants generally believed that the code should retain this focus rather than seeking to expand to other cyanide users.

The steering committee suggested that ICMI's biggest challenges were to engage more mid-tier and smaller mining companies in the code, and to seek greater recognition of the code and its accomplishments.

Paul Bateman is president of the International Cyanide Management Institute

closed for business

"The ongoing challenge is to continue encouraging companies to become signatories"

Planned closure reduces costs and avoids nasty surprises! We help our clients show healthy balance sheets after their mines close.

Tap our global experience

Over 900 professionals in 36 offices on 6 continents.
Expert independent advice.

SRK Consulting
Engineers and Scientists

www.srk.co.uk

Our global experience is your global experience