

Defusing the tailings time-bomb

Miners that approach standards as a tick-box exercise are inviting disaster



The clock is ticking for mining companies

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If the Mt Polley tailings disaster of 2014 was a warning shot for the mining industry to begin to address the tailings issue, the dual tailings disasters in Brazil in 2019 and 2020 were a shattering bolt that could not be ignored.

The Brumadinho disaster "is proving to be a gamechanger in the world of tailings that we haven't seen before," said Charles Dumaresq, VP of Science and Environmental Management at the Mining Association of Canada.

The disasters directly led to the creation, by the International Council of Mining and Metals and the UN Environmental Program (UNEP), of new standards of tailings management in August 2020, Dumaresq said.

The new standards "will help get companies work through a bigger picture of tailings management, and hopefully get those companies in a better place in terms of their overall governance structures, and how they make decisions," Dumaresq said.

So much of what happens in tailings depends on decisions, how they communicate, and the information they need to make those decisions," he said. The new standard goes a long way helping companies create these structures and methods of working to better address tailings issues, he said.

The clock is ticking on mining companies, and particularly member companies of ICMM, to implement the standards. What this requires,

Dumaresq said, is for the issue to get on the agenda of boards of directors of these mining companies, which has not happened before, he said. While some companies have boards which are clued into the threat, others are lagging.

To ensure compliance with the new global standards, a consortium of organisations announced the creation of the Global Tailings Management Institute. The institute will oversee adherence to and independent verification of adoption of the standard. It may also host the global portal which will contain the necessary disclosures of activities from adherents to the standard.

The new institute was set up by the UNEP, the Church of England Pensions Board, and the Council on Ethics of the Swedish National Pension Funds. Its advisory panel will include stakeholders from industry, civil society, finance and academia, and will hold meetings in the fourth quarter of this year and the first quarter of next. David Cooling, who formerly was a senior tailings manager at ALCOA, will facilitate the creation of the institute.

Critiques of new standards

While industry players are generally comfortable with the new standards, some civil society groups see it as a missed opportunity which did not do enough to ensure safety of future tailings mines.

Jan Morrill, who leads the tailings response at community activist group Earthworks, said the new standards do not do enough to ensure community engagement and buy-in.

"Collaboration between companies and affected communities is important," she said. "Communities have a say, whether that be consent for a new facility, free, prior or informed consent (FPIC), and involvement in emergency preparedness plans."

Morrill is disappointed that the new standards don't go as far as she would like in ensuring community collaboration.

Earthworks published a report prior to the unveiling of the new standard detailing what they view as the optimal approach to tailings management. In their June 2020 report, they call for mining companies to make safety their first and most important priority, as well as committing to substantially scaling back the amount of tonnes mined. Earthworks also called for the complete ban of upstream dams.

Earthworks also calls for the creation of an international inventory of the thousands of existing tailings storage facilities, which does not currently exist.

Changes happening in the industry

There has already been changes in the past year to how mining industry professionals are going about their jobs in the space of tailings management, one industry player told *Mining Magazine*.

"There's a lot of activity in the industry networks to share lessons and see how each other are doing things to fast forward the process" of compliance with the new standards, said Karen Chovan, founder and chief executive of Saskatoon-based Enviro Integration Strategies.

Many of the discussions underway involve how to better evaluate tailings dams and the critical data around the structures, but also how companies are going to report their findings to oversight boards, she said.

There is also a proliferation of technology companies trying to address this need, Chovan said.

"These tech providers are trying to consolidate satellite imagery and combine it with onsite automatic data collection," Chovan said. K2Fly, an Australia-based mining software company, are one of the tech firms which have been active in this space, she said.

Tailings professionals are also eager to collaborate on aligning processes on how dam breaks are analysed. There are many different ways to meet the ICMM/UNEP global tailings standards, Chovan said, and the industry network is working on finding a strategy which applies to most tailings projects.

There has been a shift to how the industry is perceiving tailings jobs as well, Chovan said.

It used to be that mining companies would just assign unspecialised people to oversee tailings processes, Chovan said. Increasingly, mining companies are now beginning to understand tailings management as a career path, and are understanding the necessity for having the right people in the right positions to oversee these systems, she said.

In the last year and a half, "we've had the appearance of a number of certification programs and advanced training for technical folk who want to go into this area," Chovan said. "We're also working with the global action on tailings to consolidate information on these programs into one platform, where all the training and standards and guidance would be held."

Many mining companies - large and small - have been active in updating their tailings management practices and trying new approaches.

Canada-based Yamana Gold places particular evidence on corporate accountability and responsibility, emphasising the importance of senior management working closely with tailings staff. The company stresses that tailings managers have direct access to the CEO and Executive Chairman. Yamana also commits to monthly tailings reports and regular third-party assessments of tailings facilities.

On a smaller scale, minnow Glen Eagle Resources has opted to test-drive new technology from Cycladex, which removes cyanide from mineral ore processing and enables the residual waste to be reused in bricks and or to build roads.

"It's green, and it also accelerates the leach time by a factor of four to six times, depending on the ore," Glen Eagle Resources chief executive Jacques Labrecque said. Glen Eagles spent C\$130,000 on the technology, he said.

Future developments

It may be the time for the industry and society as a whole to have a pointed conversation about industrial-scale extraction and how it can be better managed to protect the environment and prevent human-rights abuses, Aimee Boulanger, executive director of the Initiative for Responsible Mining Assurance, said.

She would like to see a more nuanced conversation in all sectors, which acknowledges how our industrialised society depends upon these metals, while also acknowledging that these mining activities have a significant impact on the environment.

"We're having a global conversation about the climate crisis and the public health crisis," she said. "We should also be having conversations about whether we can create market value, financial value, and moral reputational value from extraction in a different way."

Boulanger would like for a completely new approach to tailings design to come out of the recent disasters. In regards to designing new tailings facilities, Boulanger would like companies to design for "safety first and no failure," emphasising that the industry needs to reduce its tolerance for mass failures.

Where existing tailings facilities are concerned, she would like mining companies to have an "honest accounting" of the risks at these structures.

Current and future tailings facilities must also take into account the changing climate, she added. "This is essentially a conversation about the overlap of waste and water," she said. "We have drought in places that we used to have precipitation falling, and flooding where there used to be a healthier balance and more predictability."

Boulanger believes newly instated ICMM CEO Rohitesh Dhawan will face pressure to improve its standards in the coming year, as civil society groups and even some mining industry insiders have been very critical of the standards.

"There are also investors flagging this as well as a significant risk, all of these things will continue to push change in the space," she said,

For Chovan, it's important that mining companies stop treating tailings dams as an afterthought.

"We need to decide what we want that facility to look like first, what the objective is, and then design the entire mining process around that to make sure it happens."

She hopes the new standards become more than a box-ticking exercise for mining companies.

"There's a push right now for companies to say, 'We want to meet this standard, so we're putting bodies and titles in place, and create documents that cover the basics,'" she said. Companies need to ensure they have the follow-through so that everybody understands those documents and why they exist, she added.



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