Dangers of mine waste highlighted in U.N. report

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A new United Nations (U.N.) Environment report that calls for international action to make the storage of mine waste more secure, has been lead-edited by a Murdoch University researcher.

Charles Roche from the Centre for Responsible Citizenship and Sustainability also contributed to the report, which highlights several recent mining waste disasters resulting in dozens of deaths and long-lasting environmental destruction.

The report, "Mine Tailings Storage: Safety Is No Accident," co-published by the U.N. Environment Programme and GRID-Arendal, calls for a 'safety first' approach to mine waste storage that should be evaluated separately from economic considerations. Cost should not be a determining factor, it says.

"When mine waste dams fail the consequences for local communities and the environment are devastating," said Mr Roche, who is currently a PhD student at Murdoch.

"The case studies in the report demonstrate the severity and the long-lived nature of impacts of tailings dam failure."

The report also recommends establishing a U.N. Environment stakeholder forum to help strengthen tailing dam regulation. The report will inform the U.N. Environment Assembly to be held in Nairobi, Kenya between 4-6 December, 2017.

To reduce the number, scale and impact of failures, the report identifies that improvements are essential in failure prevention, crisis response and in knowledge, technology, innovation and people.

The report also found that although the number of dam failures had declined over many years, the number of serious failures had increased. These were caused by management failures rather than from a lack of technical knowledge. The report lists 40 incidents in the past decade alone.

"Regulations should be expanded to include, for instance, independent monitoring of waste dams and the enforcement of financial and criminal sanctions for non-compliance," Mr Roche said.

"The assessment also discusses how mining firms can adopt cleaner processes, new technologies and re-use materials in order to reduce waste."

Mr Roche said tailings dams in Australia tended to seep into the surrounding environment rather than fail completely. The report highlights the McArthur River mine in the Northern Territory, as having poor assessment processes, with its tailings dam and waste dump impacting the environment.

Another example highlighted by the report is the collapse of a waste dam at an iron ore mine in southeastern Brazil in November 2015.

"This unleashed a tide of slurry that killed 19 people, displaced hundreds more and polluted 620 kilometres of fertile valleys and estuaries before spewing into the ocean," Mr Roche said.

BACKGROUND

Mine tailings are the materials left over after the process of separating the desired product from an ore. They often consist of fine particles suspended in water, which have the potential to damage the environment by releasing toxic metals, causing erosion and sinkholes, and contaminating soil and water supplies.

Mine tailings are frequently stored in tailings dams, also known as tailings storage facilities. While the precise number of global tailings dams is not known, if poorly designed, constructed or managed, they represent a significant risk to local communities and ecosystems, especially in downstream environments.

Mr Roche has been working on the impacts of mining on local communities for 20 years in the civil society sector. He is currently the executive director of the Perth-based Mineral Policy Institute.

His PhD at Murdoch is investigating the impact of extractive industries on nearby communities.

He was asked to edit and contribute to the report based on his experience, previous work and publications. The project was conducted in 2017 and involved coordinating 16 contributing authors, a range of stakeholders and 11 reviewers from across the world.

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