


THE AUSTRALIAN

Tailings dam sludge could come back to bite mining

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By **ROBERT GOTTLIEBSEN**, BUSINESS COLUMNIST6:57AM JANUARY 30, 2019 •  1 COMMENT

When the second of Vale's Brazilian mine waste storage dams — called tailings dams — [collapsed](#) a shudder went through many of the worlds' mining companies. It was not just that the tragic loss of life was repeated. There are thousands of tailings dams around the world. They represent one of the great weaknesses in the production of many minerals. While there is a special situation in Brazilian tailings dams, there is often the danger of collapse. And the cost of eventually eliminating these waste dams and restoring the environment is prohibitive. In many cases no substantive contingency has been made by miners to undertake the task.

If the world clamps down on these waste dams then the cost of metals like copper, gold, nickel and zinc will rise and prices will need to increase to make mining economic.

In Australia, we are fortunate that the bulk of our iron ore production comes from ore than can be quarried and does not require a processing operation which creates a tailings dam. But that is not the case for Vale in Brazil, where iron ore production and treatment produces a waste tailings dam in the same way as other metals. Vale has substantial borrowings and its assets have been frozen by the Brazilian government. Not only will all its tailings dams be investigated much more closely than they have in the past, but it is possible that Vale will have to provide for long-term rectification.

The problem with the tailings dams is that unless the tailings are treated or put back in the mine the dam exists in perpetuity. Accordingly, they are a perpetual blight on the landscape. In Brazil the high rainfall means that in many areas the volume of material in a tailings dam keeps rising because of the increased water, even when production ceases. In some areas the dam wall needs to be made higher so that the increased volume can be

held. The alternative of putting the materials back into the mine and separating the water is beyond the resources of Vale, given its borrowing.

In the slump in the mining industry some years ago a large number of miners including Vale were cash strapped and there is great fear around the world that tailings dam shortcuts were taken to maintain production and defer any major rectification projects. In Australia a lot of our tailings dams are in areas of Queensland, Northern Territory and WA, where there is substantial evaporation and low rainfall. Moreover they are not on a hillsides but rather are large ponds of semi-solidified sludge that are no threat to human life even if they burst. But they still have an environmental impact.

The number of dam failures is not rising but the latest Brazilian failure follows the [Samarco disaster where BHP was a partner with Vale](#). In Canada in 2014, a tailings dam belonging to the Mount Polley mine failed, causing an estimated 25 million cubic metres of waste to follow into nearby creeks and lakes. It was a major global and Canadian environmental disaster.

Last year Newcrest's Cadia tailings dam in NSW burst but the waste material from gold mining was contained within the tailings dam complex and did not escape into the wider landscape. Nevertheless Newcrest shares fell and it was an alert that there was a long term problem in tailings. So globally although there are thousands of dams we are still looking at least four tailing dam failures in four years, albeit two from one company.

Where there are requirements for rectification, those demands can be incentive for companies to continue to mine so deferring the expenditure required in a closed mine. When the mine is closed the company may simply not have the funds to undertake the required work. Basically the world is still producing minerals using the same flotation style process that Australia developed early in the 20th century at Broken Hill. It is surprising that processing techniques that do not produce a perpetual tailings waste have not been developed.

Much of the tailings waste is innocuous but in some cases nasty materials are contained within the tailings dam solids. Sometimes the solids can be actually treated again to produce valuable material but on most occasions, the miners are going to be required to put the solids back into the mine and fill the hole. This can create a water management problem. The cost returning the waste material to the mine represents a substantial portion of the cost of mining the material which does not appear on the profit and loss account. It may well be that the Brazilian government will simply not be able to afford a

massive closure of its iron ore mines to overcome Vale's tailings problem so it will be back to business as usual.

The question of tailings dams around the world, including Australia, may not come into focus given that the circumstances in Brazil were special.

But the danger for miners is that the world may look at the tailings in a different light in the wake of this latest failure. That will certainly happen if the current failure rate continues, and there is a danger that during the tough times miners took short cuts that now pose long term dangers. Longer term I am not sure that having whole areas of water or sludge will be a viable way of disposing of mining waste.

If the world clamps down on these waste dams then the cost of metals like copper, gold, nickel and zinc will rise and prices will need to increase to make mining economic. It was therefore no surprise that the gold and iron ore price increased as an immediate reaction to the Vale tailings dam failure. In Australia we are fortunate that the bulk of our iron ore production comes from ore that can be quarried and does not require a processing operation which creates a tailings dam. But that is not the case for Vale in Brazil where iron ore production and treatment produces a waste tailings dam in the same way as other metals. Vale has substantial borrowings and its assets have been frozen by the Brazilian government. Not only will all its tailings dams be investigated much more closely than they have in the past but it is possible that Vale will have to provide for long term rectification.

The problem with the tailings dams is that unless the tailings are treated or put back in the mine the dam exists in perpetuity. Accordingly they are a perpetual blight on the landscape. In Brazil the high rainfall means that in many areas even when production ceases the volume of material in a tailings dam keeps rising because of the increased water. In some areas the dam wall needs to be made higher so that the increased volume can be held. The alternative of putting the materials back into the mine and separating the water is beyond the resources of Vale given its borrowing.

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Robert Gottliebsen has spent more than 50 years writing and commentating about business and investment in Australia. He has won the Walkley award and Australian Journalist of the Year award. He has a place in t... [Read more](#)

