

The Aberfan disaster and its continuing relevance 50 years on

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50 years ago, Aberfan tip 7 collapsed, forming a flow slide which demolished a school and twenty houses, seriously damaged another school and sixteen houses. In all 144 people died, 116 of them children. The disaster had a traumatic effect on the country and the significance of the name is still recognised by most people in this country, even those born long after the event.

The inquiry into the disaster exposed a lamentable lack of attention to the stability of mine waste and failure to appreciate the consequences in spite of there having been a number of earlier non-fatal occurrences. The immediate result was the passing of the Mines and Quarries (Tips) Act, 1969, followed by the Mines and Quarries (Tips) Regulations, 1971, setting out the rules to be followed. Geometrical guidelines defined whether or not tips needed to be designed by suitably competent people – small tips on flat lying ground were not considered to need rigorous analysis.

The regulations applied to all waste tips from mineral operations, whether underground or opencast (although many quarry operators ignored them). The 1971 regulations still apply to mine tips, but in 1999 more exacting rules were introduced for quarries. The geometrical rules remained as before, but reporting requirements were tightened up. In particular a loophole that omitted stockpiles from the 1971 regulations was removed.

The inquiry also revealed that little information actually existed on the short and long term behaviour of colliery waste materials. Major engineering structures over 70m high were being erected in a very casual manner. As a consequence, the National Coal Board (NCB) undertook a comprehensive research programme into the properties of colliery waste, which resulted in the properties becoming very well known.

Whilst the Aberfan disaster made a deep impression in the UK, other nations sadly did not learn from our experience. Only 5½ years later there was a disaster in West Virginia when a coal refuse dam gave way, killing 125 people. This disaster would not have occurred had the UK regulations been in force in West Virginia. The investigations undertaken in the USA showed that colliery waste in the USA behaved much the same as it did in the UK and everywhere else. The data is still relevant, as although no large deep mines remain in the UK, the waste tips they produced are still very much present. The waste is also a useful source of fill provided proper precautions are taken when using it.

In spite of the 1999 Quarries regulations, a number of spectacular failures have occurred in quarry lagoons, although fortunately none have been fatal. Until February, 2013, there were no major failures of a colliery waste heap when one of the Hatfield colliery waste heaps slid, pushing aside and blocking the 4 track main line railway beside it. Investigations showed that the basic provisions of the Mines and Quarries (Tips) Regulations, 1971 had not been followed. What was more alarming is that information critical to the tips stability was available in the Regulation 12 reports for the tips predecessors that had been ignored at the time and ever after. The failure was a disaster waiting to happen.