

Pollution from Minewater

What is the issue?

- **Heavy metals** - Heavy metals such as lead, manganese, iron, copper, cadmium and zinc can enter our watercourses from abandoned mines. In high concentrations these metals are poisonous to both aquatic animals and humans and make the water more acidic.
- Heavy metals leach into the water course either from groundwater filling up the mine and draining into surface water or from the waste materials spread on the ground surface.
- Metal contaminated sediments from waste material and dissolved metals can cause pollution for many kilometres downstream of the mine workings. There is also a risk of metal pollution entering aquifers and affecting drinking water supplies.



Force Crag mine near Keswick. Image courtesy of the Coal Authority www2.groundstability.com

What locations are affected?

Pollution from minewater has been identified as the reason why 25 % of the waterbodies in the Derwent catchment are not in good condition.

Why should this concern me?

► Harms ecosystems, sensitive plants and animals.

- Metal pollution and increased acidity can lead to the loss of aquatic plants and animals, including fish.
- Most heavy metals bioaccumulate, meaning they can't be broken down naturally and are passed up the food chain.

► The quality of our water environments for human uses

- Poor water quality in our rivers, lakes and estuaries affects people's opportunity to use them for leisure activities. Exposure to heavy metals through water can pose health risks to humans.
- These losses can mean that the value of tourism and properties decreases.
- Heavy metals need to be removed from drinking water supplies which is costly for water companies. This cost may be passed on to the customers.

What can be done about this issue?

► Stabilising waste material

Geomembranes can be used to hold spoil heaps of mineworking waste in place to prevent them eroding into the river.

► Treating minewater

There are various ways of treating minewater before it joins a watercourse. At Force Crag mine near Keswick a mine water remediation scheme has been successfully implemented by the Coal Authority and Environment Agency. Minewater is directed into treatment ponds lined with a geomembrane and filled with a compost treatment mix. The water then passes into a wetland of rushes which filter any remaining solids and oxygenate the water before it rejoins Coledale beck. Find out more [here](#).