

**Durham Miners Heritage Group
Information and Activities Package**

Teaching Notes

Mine Gasses

One of the great hazards in coal mining is the accumulation of gasses, which may be explosive, poisonous or simply unbreathable. These may seep out of the coal, or be left as the after products of explosions or fires. Miners had their own terms for these, which differed slightly from one coalfield to another. The main explosive gas was known as 'firedamp' and consisted mainly of methane (CH₄, 'natural gas') mixed with air. It is colourless and odourless, but can be detected by flame safety lamps and modern electronic detectors. Firedamp explosions have caused a great many accidents throughout the history of mining.

'Afterdamp' is the gas and depleted air left in a mine following an explosion or fire. Such remaining air often does not contain enough oxygen to be breathable, while still remaining potentially explosive. In addition, afterdamp often contains the highly poisonous 'whitedamp', the miners' name for carbon monoxide. It too is colourless and odourless, but, unlike firedamp, it is

extremely poisonous – of comparable toxicity to cyanide gas and is not detectable by a safety lamp until the concentration is above that fatal to a person. Carbon monoxide can, however, be detected by modern electronic sensors.

'Stinkdamp' is the name the miners give to air containing hydrogen sulphide which, like methane, can be released from certain coal seams. It again is highly poisonous, its toxicity being comparable to that of carbon monoxide but unlike carbon monoxide it has a revolting smell even at very low, sub-lethal concentrations. It used to be sold in joke shops in solution in breakable glass vials known as 'stink bombs'.

'Blackdamp' is any unbreathable air. It usually consists of a mixture of carbon dioxide and nitrogen and can be fatal. Carbon dioxide can be removed by the use of lithium hydroxide respirators – the same technology as used by astronauts in spacesuits and manned spacecraft to recycle their breathed air.