



Project uses microphones to detect underwater gas leaks

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Scientists at Southampton University are employing hydrophones to monitor leaks from underwater gas pipelines.

Those working on the project claim that changes in acoustic signals could be used in the future to detect leaks from underwater pipelines and natural methane gas leaks from the seabed.

The technique relies on a network of hydrophones that are able to detect bubbles in the ocean.

Prof Tim Leighton, lead researcher at Southampton University, said: 'If you listen to the sounds of bubbles being generated, and specifically the amplitude and frequency, you can determine the number and size of the bubbles being generated.'

Leighton said: 'We're interested in... important scenarios where gas escapes from the seabed and is injected into the water column.'

'The first is the rupture of gas pipelines set up by the petrochemical industry. Oil companies are continually monitoring the pressure at various points in the pipe to try and work out if any gas is going missing.'

'Petrochemical companies would like to be able to detect any leaks, and triangulate their location at a much earlier stage because little leaks can rapidly grow into big leaks.'

The hydrophones, which Leighton said can be bought for £10,000, are distributed across the seabed. Once in position, they can listen passively over several square kilometres and send an alarm if a gas leak is detected.

It is hoped the technology will enable teams to remotely monitor, and possibly limit, the release of gases from the seabed into the atmosphere.

In addition to monitoring ruptured gas pipelines, the hydrophones could also be used to detect leaks from disused oil wells being used to store carbon dioxide, as well as naturally occurring methane gas leaks.

'The UK seabed capacity for carbon storage is estimated to equate to 100 years of the current power sector output and this is probably why the government has invested £1bn into developing the technology,' said Leighton.

Naturally occurring methane gas leaks are potentially devastating as every molecule of methane contributes 20 times more to the greenhouse effect than a carbon-dioxide molecule.

Leighton added: 'If we could find the methane and collect it then it's a good source of fuel. A hydrophone could tell you if a natural gas leak increases in intensity and you could then potentially tap it off.'

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