

# Carbon capture and storage safety investigated

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This image is credited to Henrik Stahl of SAMS

A significant step has been made for potential Carbon Capture and Storage (CCS) deployment, with the publication of the results from the world's first experiment into the realistic simulation of potential environmental impact of a submarine CO<sub>2</sub> leakage. These results were published in a special issue of the International Journal of Greenhouse Gas Control (IJGGC) recently, which featured several studies by scientists from the National Oceanography Centre (NOC) and University of Southampton.

This [innovative research](#) was conducted as part of the QICS project and forms part of a wider programme of UK research into CCS technology.

The research found that, for a leak of this scale, the [environmental impact](#) was limited; restricted to a small area and with a quick recovery of both the marine chemistry and biology.

This ground-breaking experiment involved the injection of 4.2 tonnes of CO<sub>2</sub> into a site 11 meters below the sea bed, and overlying water-column 15 m in depth in Ardmucknish Bay, West Scotland. The injection took place over 37 days via a borehole drilled through the seafloor bedrock. The progress of this injection was then monitored using a combination of geochemical and geophysical sensors and observations from divers.

Scientists from the NOC were able to assess the impact of escaped CO<sub>2</sub> on calcifying organisms, such as sea urchins. This was achieved by monitoring levels of acidity during and after the 'leak'.

Dr Anna Lichtschlag, from the NOC and lead author of one of the studies published in the IJGGC special issue, said "NOC's geochemical tools enabled us to track chemical changes in marine sediment resulting from the CO<sub>2</sub> release. This way we were able to see that the impact was highly localized and recovered back within few weeks to its pre-injection state."

The QICS project has made a series of recommendations for enhancing the safety of CCS, based on the results of this experiment. For example, CCS sites should be below dynamic bodies of water to promote the rapid dispersal of leaked CO<sub>2</sub>.

Provided by National Oceanography Centre, Southampton

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