BBC NEWS

Sea-bed plan to store carbon

Storing carbon dioxide under the sea-bed could help to reduce global warming, according to US scientists.

The proposals involve pumping the gas miles underground then injecting it under the sea floor.

There is enough space for almost unlimited carbon emissions, a US team reports in the Proceedings of the National Academy of Sciences.

Previous plans to store carbon under the sea have drawn criticism because of concerns over leakage and safety.

Supporters of the latest idea say that it overcomes these drawbacks and can be done with existing technology.

Previous suggestions for tackling rising carbon emissions by removing the gas from the atmosphere and storing it underground include:

* Storing carbon dioxide in oil and gas fields, or coal beds
* Injecting CO2 into the deep ocean
* Chemically transforming CO2 into solids or liquids that are thermodynamically stable

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But these methods have raised concerns, notably the risk of leakage from geological storage sites, and fears that C02 dissolved in large quantities in the ocean might harm marine ecosystems.

CO2 'cage'

The latest idea involves pumping carbon dioxide gas down to a depth of 3,000m (1.86miles) and injecting it below the sea floor.

The high pressure and the low temperatures would turn the carbon gas into a liquid that is denser than the water around it, says a joint Harvard University, Massachusetts Institute of Technology and Columbia University team.

Experiments suggest that ice-like compounds would be formed in which the water molecules act like cages, trapping the carbon dioxide molecules within.

According to the researchers, this would ensure that the gas remains trapped in the sediment and would be secure enough to withstand even the most severe earthquakes.

"Deep-sea sediments at high pressure and low temperature provide a virtually unlimited and permanent reservoir for carbon dioxide captured from fossil fuel combustion," they write in The Proceedings of the National Academy of Sciences (PNAS).

"...We propose that CO2 storage in deep-sea sediments at high temperatures and low temperatures be considered along with other options."

The storage capacity is enormous, they add. In the US alone, annual emissions of carbon dioxide could be contained in just 80 square kilometres (31 square miles) of seafloor.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/5255444.stm

Published: 2006/08/08 11:35:54 GMT