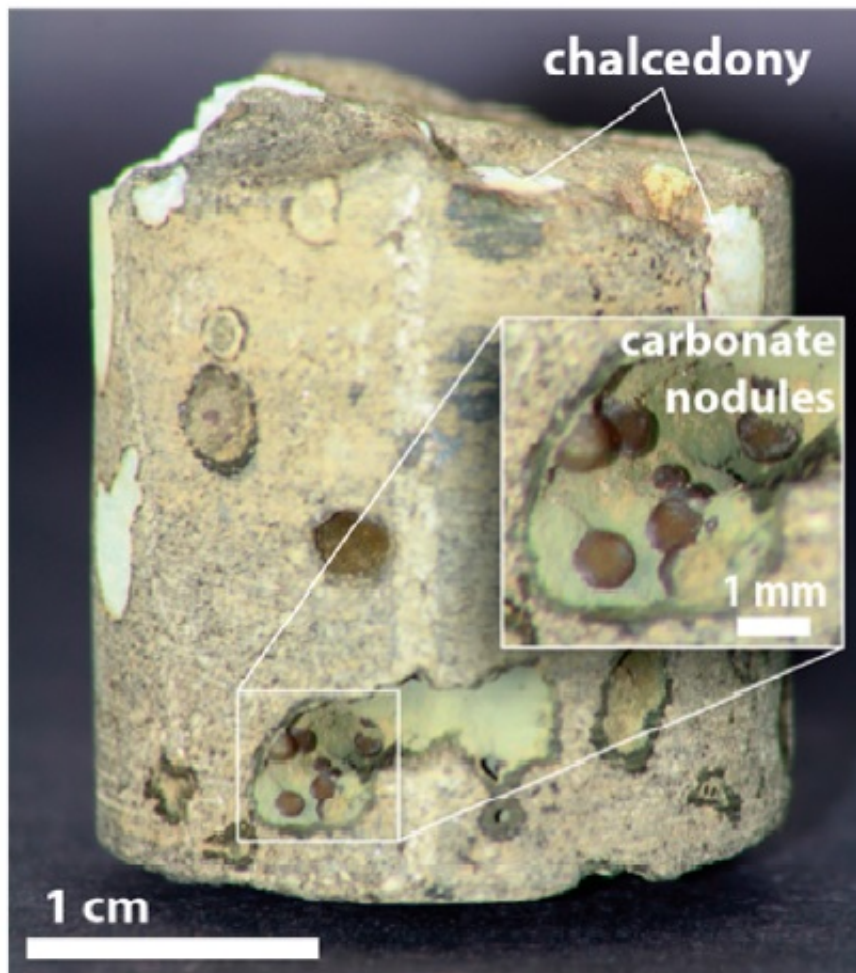


# Storing carbon dioxide underground by turning it into rock

November 18 2016

---



A core sample from a carbon storage project in Washington state showed that carbon dioxide injected deep underground into basalt rock turned into the carbonate mineral ankerite in less than two years (inset). Credit: American Chemical Society

In November, the Paris Climate Agreement goes into effect to reduce global carbon emissions. To achieve the set targets, experts say capturing and storing carbon must be part of the solution. Several projects throughout the world are trying to make that happen. Now, a study on one of those endeavors, reported in the ACS journal *Environmental Science & Technology Letters*, has found that within two years, carbon dioxide (CO<sub>2</sub>) injected into basalt transformed into solid rock.

Lab studies on basalt have shown that the rock, which formed from lava millions of years ago and is found throughout the world, can rapidly convert CO<sub>2</sub> into stable carbonate minerals. This evidence suggests that if CO<sub>2</sub> could be locked into this solid form, it would be stowed away for good, unable to escape into the atmosphere. But what happens in the lab doesn't always reflect what happens in the field. One field project in Iceland injected CO<sub>2</sub> pre-dissolved in water into a basalt formation, where it was successfully stored. And starting in 2009, researchers with Pacific Northwest National Laboratory and the Montana-based Big Sky Carbon Sequestration Partnership undertook a pilot project in eastern Washington to inject 1,000 tons of pressurized liquid CO<sub>2</sub> into a basalt formation.

After drilling a well in the Columbia River Basalt formation and testing its properties, the team injected CO<sub>2</sub> into it in 2013. Core samples were extracted from the well two years later, and Pete McGrail and colleagues confirmed that the CO<sub>2</sub> had indeed converted into the carbonate mineral ankerite, as the lab experiments had predicted. And because basalts are widely found in North America and throughout the world, the researchers suggest that the formations could help permanently sequester [carbon](#) on a large scale.

**More information:** *Environmental Science & Technology Letters*, [pubs.acs.org/doi/abs/10.1021/acs.estlett.6b00387](https://pubs.acs.org/doi/abs/10.1021/acs.estlett.6b00387)

Provided by American Chemical Society

Citation: Storing carbon dioxide underground by turning it into rock (2016, November 18)  
retrieved 27 April 2024 from <https://phys.org/news/2016-11-carbon-dioxide-underground.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.