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There is a type of rock with a voracious appetite for carbon dioxide

ONE way of helping to reduce emissions of carbon dioxide into the atmosphere is to pump the gas into underground caverns or old oil fields. But there is also a rock that is happy to gobble it up, and according to the latest research its appetite for the greenhouse gas is not only massive but could also be increased by a little human intervention.

The rock is peridotite, which is one of the main rocks in the upper mantle, an area that provides a girth below the Earth's crust. The rock occurs some 20km or more down, although in areas where plate tectonics have forced up some of the mantle, peridotite reaches the surface. This happens in part of the Omani desert which Peter Kelemen and Juerg Matter, both from Columbia University, New York, have studied for years.

Geologists have long known that when peridotite is exposed to the air it can react quickly with carbon dioxide to form carbonates like limestone or marble. Some people have looked at the idea of grinding up peridotite and using it to soak up emissions from power stations, but the process turns out to be expensive, partly because of the costs of transporting all the rock. The transportation would also create emissions. In *Proceedings of the National Academy of Sciences*, Messrs Kelemen and Matter suggest an alternative: pumping the gas from places where it is produced and into underground strata of peridotite.

The team has shown that the Omani peridotite absorbs tens of thousands of tonnes of carbon dioxide a year, far more than anyone had thought. By drilling and fracturing the rock they believe they can start a process to increase the absorption rate by 100,000 times or more. They estimate this would allow the Omani outcrop, which extends down some 5km, alone to absorb some 4 billion tonnes of carbon dioxide a year, which is a substantial part of the annual 30 billion or so tonnes of the gas that humans send into the atmosphere, mostly by burning fossil fuels.

With such rocks situated in an area of the world where an increasing amount of energy is produced and consumed, it potentially provides a convenient carbon sink for the region's energy industry, say the researchers. Peridotite can also be found at the surface in other parts of the world, including some Pacific islands, along the coasts of Greece and Croatia, and in smaller deposits in America. Nor is it the only rock with carbon-eating potential. The researchers are now looking at volcanic basalt in a new project in Iceland.

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