

1 Is CO₂ hazardous?

CO₂ is hazardous in the same way that water is hazardous.

Just like water, CO₂ is in your body all the time. You exhale both CO₂ and water with every breath.

Just like water, the problem is not with the presence of CO₂, but with its concentration. If you are surrounded by water you can drown. Similarly, if you are surrounded by too much CO₂, for example in an unventilated or confined space, you won't be able to breathe.

The bottom line: Like water, CO₂ is not hazardous except in unusual circumstances.

Feel free to keep breathing.

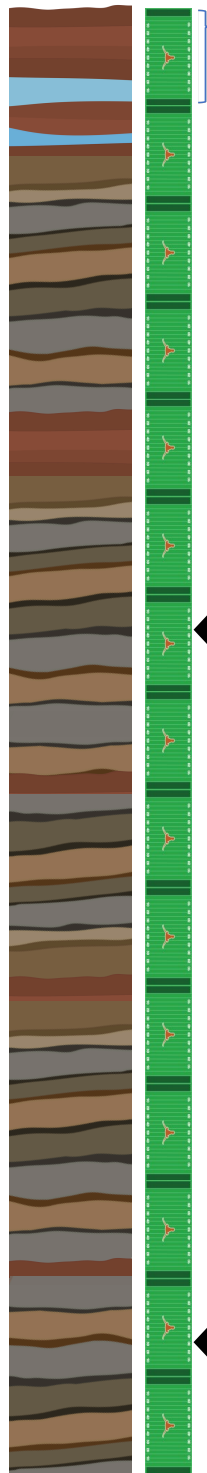
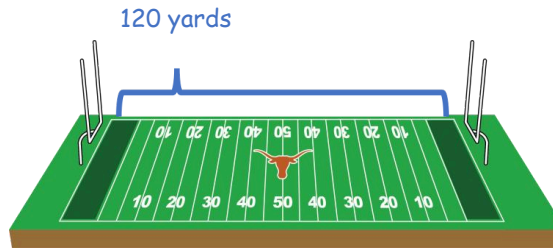
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In Italy, CO₂ naturally seeping out of the ground can accumulate in high enough concentrations to pose a health hazard.

Click "LEARN MORE" above to read an assessment of Italian seeps.

<https://doi.org/10.1073/pnas.1018590108> (2011).

2 How far underground will CO₂ be stored?



Really far.

The geologic reservoirs where CO₂ will be stored are nearly a mile below the surface. That's really deep. To give you some perspective, a mile is:

- 5,280 feet
- or
- 1.6 kilometers
- or
- over 7 and ½ football fields
- or
- over 500 times deeper than an average swimming pool

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The major reason for storing CO₂ so deep is that it's required by law. The U.S. Safe Drinking Water Act (SDWA) requires that underground injection is below and isolated from freshwater aquifers. So, CO₂ is stored much deeper than most aquifers.

Additionally, CO₂ is most efficiently stored underground in a dense phase (supercritical CO₂). In this dense phase CO₂ has properties of both a liquid and a gas: it is easier to inject into the reservoir than a liquid and once in the reservoir it takes up less space than a gas.

[Safe Drinking Water Act, §300f et seq. \(1974\)](#)

[National Energy Technology Laboratory, Carbon Storage FAQs](#)

3 What could go wrong if carbon dioxide leaks into my water?

Adding CO₂ to water does not make it unsafe to drink. CO₂ bubbled into water is a beverage: club soda. In the Perrier region of France and other places where CO₂ naturally mixes with water, it is bottled and sold. Besides making water bubbly, when CO₂ mixes with water a small percentage of the CO₂ dissolves and forms a weak acid called carbonic acid. You can taste this acid as the tang in carbonated drinks.

However, this is only part of the story. When CO₂ and water are in an aquifer, they interact with the minerals that make up the aquifer rock. Some rocks contain minerals called carbonates. These carbonates dissolve quickly in acidic water. Rocks are made up of many different chemical compounds, so when the carbonate minerals dissolve, other compounds also dissolve. When studying the risks of CO₂ leaking into water, it's important to determine what these compounds are, and if they could be released in amounts large enough to degrade water quality.

Protection of groundwater is the most important objective of the EPA's Underground Injection Control Program which has regulated all underground injections in the United States since 1980. To develop the most effective regulations, researchers are studying the effects of CO₂ leaks in many ways: lab experiments, field controlled releases, and investigations in places where CO₂ is naturally concentrated or released from the earth.

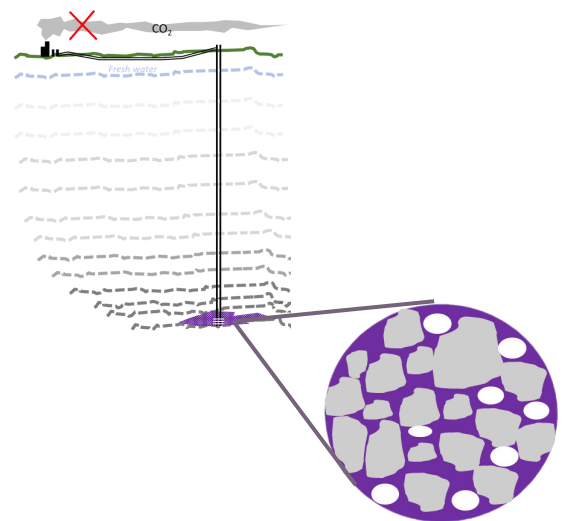
So far, these investigations are converging on similar results. They show that while CO₂ reacts with typical aquifer rocks, the changes in the concentrations of compounds dissolved in the water remain small, similar to natural variation in water composition, and they are temporary.

4 How can there be space for so much CO₂ underground?

Trillions of tiny holes make a big space—like a rock-hard sponge.

The underground space for CO₂ storage is not hollow like a cave or balloon. It is made up of layers of different types of rocks that is porous. This means the rock is made up of small grains stuck together, and between those grains are tiny spaces.

Think about a jar packed full of marbles. There is space between the marbles. If you had a liquid, you could pour the liquid into the jar and it would fill the space between the marbles.



5 Can CO₂ blow up?

No, CO₂ is not explosive! Just the opposite, it cannot burn!

Carbon dioxide is compressed and put into fire extinguishers designed to put out fires, and is especially good at putting out electrical fires. Fire extinguishers that contain CO₂ have an advantage over chemical extinguishers because they don't leave any residue. In fact, OSHA lists carbon dioxide as one of the most fire-extinguishing agents.

After its release, the CO₂ dissipates.

<https://www.oshaoutreachcourses.com/blog/how-to-choose-the-right-fire-extinguisher/>

