

What To Do With All That Carbon?

Carbon capture technology gives reason for optimism, even if the politics surrounding it don't.

Emilene Ostlind, High Country News (Paonia, CO), 11-30-10

Capturing carbon dioxide emitted by power plants and factories and storing it in deep geologic formations could prove a critical arrow in the quiver of efforts to combat climate change. Plus there's a bonus: it makes coal and natural gas—and the reliable energy they produce—a whole lot cleaner, protecting them from pending greenhouse gas regulations. On November 22 the Environmental Protection Agency finalized two new rules to “reduce barriers” for carbon capture and sequestration. The first regulates carbon dioxide injection wells to protect groundwater under the Safe Drinking Water Act. The second requires sequestration facilities to report how much carbon they emit and store. The rules are meant to guide development of new technology and help America lead the way to “a clean energy economy,” but the American Petroleum Institute calls them costly and burdensome.

Underground carbon sequestration has its risks as well as its benefits. It does, after all, involve large-scale tinkering with geology and hydrology. If big a CO₂ deposit leaks suddenly from underground it “can kill by asphyxiation,” reports the Washington Post. “In 1986, 1,700 people died when a cloud of carbon dioxide escaped from a volcanic lake in Cameroon.” And a Duke study published on October 26 found that when carbon dioxide bubbles through aquifers, it can release minerals like manganese, cobalt, nickel, iron and even uranium from the rock into the water.

The University of Wyoming's School of Energy Resources is in the midst of a three-year study to investigate whether the Rock Springs Uplift, a geologic formation with saline aquifers about 12,000 feet underground in southwest Wyoming, can store as much as 750 million tons of carbon dioxide from the nearby Jim Bridger Power Plant over the span of 50 years. Here, geologists are confident that thousands of feet of impermeable rock will keep the CO₂ in place. However, to vacate space for the carbon, briny water will have to be pumped out. “The biggest challenge ... will be to construct a customized system that can treat that brine and solve that displaced water problem,” institute director Ron Surdam told the Casper Star Tribune.

If we're going to stick CO₂ underground, why not displace something we want to bring to the surface instead? Industry has been pumping carbon dioxide underground since 1972 to force out hidden pockets of oil. Most of the CO₂ used for enhanced oil recovery over the last 38 years is mined from underground reserves. While researchers look into storing carbon in southwest Wyoming, energy company Kinder Morgan is actually extracting pure CO₂ from underground formations in southwest Colorado and piping it to Utah, Texas, and Oklahoma for enhanced oil recovery. The trick now is to figure out how to capture CO₂ emissions from industrial sources like power plants or factories and pipe it to oil fields to put it underground.

One demonstration project fits all the pieces together. The Dakota Gasification Company's synfuel plant, which converts coal into synthetic natural gas, captures about 50 percent of its CO₂ emissions—one of the world's biggest carbon capturers—and pipes the carbon 205 miles from North Dakota to Saskatchewan for enhanced oil recovery. Expanding that technology to more stationary sources could help reduce U.S. greenhouse gas emissions.

But don't hold your breath for big new carbon capture and storage projects; more obstacles exist starting with the—shall we say—climate in Congress. National Public Radio reports that House Republicans want to derail

the discussion about ways to slow greenhouse gas emissions by calling for investigations into the validity of climate science. A bill to limit carbon emissions and create a market where pollution credits can be bought and sold has “almost no chance” of getting through Congress in the next two years, Eileen Claussen, executive director of the Pew Center on Global Climate Change told NPR. Until regulation is in place, industry has little incentive to keep carbon dioxide out of the atmosphere.