

Can injecting carbon emissions underground really be safe?

Will Evans, California Watch, 8-6-10

In Kern County, a joint venture with energy giant BP is getting federal stimulus money to build a power plant that will bury millions of tons of carbon dioxide emissions underground.

Which leads to a natural question: Is that even safe?

Supporters of the "carbon capture and sequestration" technology – including many scientists, the government, and some environmentalists – insist that it is. They point to several projects around the world that are doing it successfully.

California Watch wrote about the BP joint venture this week.

Tim O'Connor, a lawyer with the Environmental Defense Fund who is monitoring the Kern County project, said, "Nothing is absolutely safe – you have a big industrial facility that's being built. But it's being built out in a rural area where not many people are living, so that is not necessarily a concern."

That can't be very reassuring to the 200-some residents of Tupman, who live a mile and a half from the proposed plant. However, O'Connor added, "We have enough assurance that we believe this project to be safe when managed appropriately and as proposed."

"When managed appropriately."

That's crucial.

Dan Farber, director of UC Berkeley School of Law's Environmental Law Program, draws a comparison between the BP oil spill in the Gulf of Mexico and carbon capture and storage projects.

"Systems don't always work the way they're supposed to, in part because people make mistakes," Farber said. "If we start doing this on a major scale we shouldn't just accept assertions that this is perfectly safe and there's nothing to worry about. We've been doing offshore drilling for a long time, too, and we thought we knew how to do that."

Farber said tougher government scrutiny is key. "I think we need to take those risks into account and not just do what the government appears to have done with BP, which is to say, 'OK, we trust you guys.' "

The carbon dioxide is stored in geological formations like underground oil reservoirs that have trapped gasses and oil for millions of years. A 2005 report by the Intergovernmental Panel on Climate Change found that while large leaks of carbon dioxide could harm humans and contaminate groundwater, the risks are reasonable.

"With appropriate site selection based on available subsurface information, a monitoring programme to detect problems, a regulatory system and the appropriate use of remediation methods to stop or control CO₂ releases if they arise, the local health, safety and environment risks of geological storage would be comparable to the risks of current activities such as natural gas storage, EOR (Enhanced Oil Recovery) and deep underground disposal of acid gas," the report stated.

Research suggests there's a 90 to 99 percent probability that at least 99 percent of carbon dioxide in well-managed sequestration projects will stay underground over 100 years. The probability goes down to between 66 and 90 percent for 1,000 years. "For well-selected, designed and managed geological storage sites, the vast majority of the CO₂ will gradually be immobilized by various trapping mechanisms and, in that case, could be retained for up to millions of years," the report found.

The government is still trying to figure out how to regulate these so-called clean-coal projects to ensure the gases stay underground forever. The injection of gas underground for oil recovery is usually regulated by the California Department of Conservation's Division of Oil, Gas and Geothermal Resources. But permanent storage of carbon dioxide is different.

"It's an emerging technology and no one has regulations in place to deal with that technology," said Don Drysdale, department spokesman. "It's such a new thing that we're all scrambling to figure out what to do with it."

The department's director wrote to Gov. Arnold Schwarzenegger's office in March that it "currently has neither the statutory authority nor the technical staff on hand to regulate pure CCS (carbon capture and sequestration) projects."

That could pose a problem for the Kern County project proposed by BP's joint venture, Hydrogen Energy California, or HECA. In March, California Energy Commission staff noted that, unless the state can figure out how to regulate storage of carbon emissions underground, "staff may not be able to conclude that a long-term monitoring and mitigation program can be enforced ... to ensure that HECA's carbon emissions are permanently sequestered."

In that case, commission staff wrote that they may have to assume that much of the carbon dioxide would be released back into the atmosphere.

Adam Gottlieb, spokesman for the Energy Commission, assured me that carbon capture and storage projects will be regulated adequately. "Suffice it to say there are regulations in place," he said.