

Scientist warns of quake risk from 'carbon capture'

David Perlman, San Francisco Chronicle, 12-14-10

Efforts to stem global warming by pumping emissions of carbon dioxide deep into the Earth's crust could trigger widespread earthquakes, a Stanford geophysicist warned Monday.

Although those quakes would not be particularly destructive, they would be widely felt and disruptive - and it would also cost billions of dollars to create thousands of disposal sites for the greenhouse gas, said Mark Zoback, one of the country's leading seismic experts.

His conclusion could have repercussions for research projects backed by the U.S. Department of Energy. So-called "carbon sequestration" or "carbon capture and storage" projects have focused on what could be done in regions of the country where coal-fired power plants emit billions of tons of carbon dioxide every year.

"The issue is whether we can ever store those quantities of a major greenhouse gas permanently and safely in underground sites," Zoback said.

He described the problem at the opening of the American Geophysical Union's annual meeting at Moscone Center, which is expected to draw more than 18,000 scientists who specialize in fields such as seismology, atmospheric physics, space exploration and climatology.

The Energy Department has estimated that deep underground formations in this country and parts of Canada could store all the carbon dioxide emitted by American industries - primarily coal - for the next 5,700 years.

That deeply concerns Zoback, a geophysicist.

Although California, with its San Andreas Fault Zone, is the most seismically active region of the country, "earthquakes are everywhere," Zoback said. There are an unknown number of faults, many existing in "a state of failure equilibrium," he said.

Injecting carbon dioxide into thousands of sites in mid-America, he said, would increase the pressure along those faults and inevitably push many into abrupt failure. The result would be quakes with magnitudes of up to 4, he said.

Another serious problem with the sequestration proposals is that many injection wells would be drilled deep into rock and sand formations that are not impermeable, raising the possibility that much if not all of the carbon dioxide could escape into the atmosphere and start the greenhouse problem once again, Zoback said.

The Geophysical Union meeting will continue through Friday.