

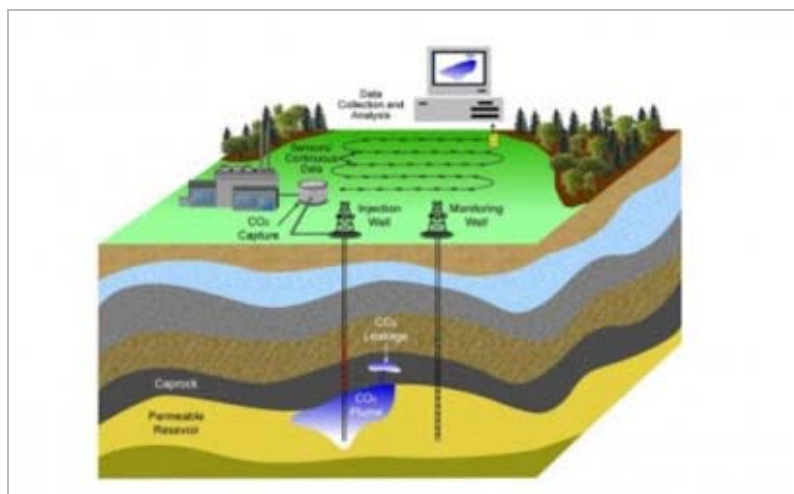
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TUESDAY, APRIL 3, 2018

Penn State Underground Carbon Sequestration Research Receives \$2.5 Million DOE Grant



The U.S. Department of Energy has awarded a \$2.5 million grant to researchers at Penn State, Lawrence Berkeley Laboratory, and the University of Texas at Austin to study what happens when carbon dioxide (CO2) is stored underground by using a real-time seismic monitoring system to track CO2 movement.

Carbon sequestration occurs to help reduce CO2 in the atmosphere. It is sequestered under high pressure into a saltwater aquifer or mineral deposit for long-term storage. There is no clear picture of how the CO2 migrates in the reservoir and if leakage can occur.

In 2007, Lawrence Berkeley National Laboratory scientist Tom Daley developed real-time monitoring equipment that is installed during construction of an injection well and emits an energy pulse that vibrates through material.

These vibrations are analyzed to help create a picture of the subsurface. CO2 affects seismic waves, and there was no reliable way to track CO2 volume – until Tiejuan Zhu with [Penn State Institute of Natural Gas Research](#) discovered the relationship of seismic wave energy loss and CO2 saturation.

This knowledge combined with the seismic analysis technique known as waveform inversion will help to accurately mapping underground CO2.

"This new technology that we're developing is something we couldn't even imagine five or 10 years ago," said Zhu, principal investigator on the project. "Our goal is to develop new data-processing

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About Me

[David E. Hess](#)

This Blog is a companion to [www.PaEnvironmentDigest.com](#), the weekly online newsletter published by Crisci Associates, Harrisburg, PA. I can be contacted at 717-576-0420 or by sending email to: DHess@CrisciAssociates.com. I served as Secretary of the Pennsylvania Department of Environmental Protection from 2001 to 2003, Executive Deputy at DEP from 1995 to 2001, as staff to the PA Senate Environmental Committee and various positions in the former Department of Environmental Resources, working on environmental issues for over 40 years.

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industry and seismic data, the team will be able to use the continual addition of data to further verify their underground CO2 storage picture.

A 3-D picture of the reservoir can be updated with near real-time CO2 saturation over a period of time.

Sanjay Srinivasan, head of Penn State's [John and Willie Leone Family department of Energy and Mineral Engineering](#) and Eugene Morgan with [Penn State's Petroleum and Natural Gas Engineering](#), are co-investigators on the project, along with Jonathan Ajo-Franklin, head of the geophysics department at Lawrence Berkeley National Laboratory, and Alexander Sun, senior research scientist, Bureau of Economic Geology, University of Texas at Austin.

"We are at the cusp of implementing some large-scale carbon-sequestration projects, but what is stopping federal agencies from moving forward is an uncertainty of where the injected carbon dioxide goes," said Srinivasan. "Our project will go a long way toward developing technologies to not only figure out where the carbon dioxide is going but also to identify potential issues that might arise during the process so that they can be mitigated."



Posted by [David E. Hess](#) at [1:15 PM](#)

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