



Technology Available for License

Biological Capping of Geological Formations for Carbon Sequestration and Sealing Well Gases

Bacterial growth in geological formations provides an effective barrier to gas leakage

Montana State University researchers have developed a technology for injecting non-pathogenic, slime-forming bacteria into underground gas storage sites to form a barrier to prevent gas leakage. The technology is adaptable to almost any geological formation, requires no excavation, and requires little or no maintenance.

Bacteria are treated to reduce their size to allow hydraulic injection in a porous media. A subsequent injection of nutrients activates the bacteria to form a slimy biofilm matrix that seals pores to prevent gas leakage. Minimal maintenance is required in the form of an occasional reinjection of nutrients. In many cases, the biological seal can be self-repairing. The bacteria can thrive under high pressure, temperature, and saline conditions enabling capping of practically any formation and at any depth. In carbon sequestration sites, the bacteria can be used to fix CO² and form a calcium carbonate scale to enhance the gas seal.

Applications

- Capping underground carbon sequestration reservoirs
- Capping abandoned gas wells

Benefits

- No excavation or construction required
- Self-repairing and minimal maintenance
- Applicable to almost any geological formation and at any depth
- Non-pathogenic, non-toxic technology

Technology Transfer and Development Status

A patent is pending and research is ongoing.

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