INDIANA GEOLOGICAL & WATER SURVEY
INDIANA UNIVERSITY

Updates to Indiana CCUS activities

Indiana House Bill 1209

Enacted 3/18/22

“Carbon sequestration projects. Provides for the mechanism for underground storage of carbon dioxide in Indiana. Provides that the new chapter does not apply to the carbon sequestration pilot project established pursuant to IC 14-39-1. Makes conforming changes.” *Indiana General Assembly website*

- Establishes the surface owner as the pore space owner; mineral owners are grandfathered in if specified before 7/1/2022.
- Pooled rights with a minimum of two pore space owners, covering at least 70% of the proposed storage reservoir.
- Storage operator pays $0.08 per ton of carbon dioxide estimated to be injected
    - The money goes into a trust fund that defrays the costs incurred by the state for long term monitoring and management of the project.

United States

Advancing CCUS in Illinois, Indiana, and Texas

Illinois and Indiana are well positioned to attract the investment needed to deploy CCUS commercially and at scale. Both states have the geological capability to safely store carbon dioxide underground. This provides the state with the opportunity to reduce its carbon emissions, support jobs and promote statewide economic growth.

An existing energy hub for the US, Texas already has the infrastructure in place to transport carbon from production source to storage as well as the technical and industrial know-how to tackle the hurdles of capturing and storing carbon underground.

But all three states need a legal and regulatory framework that provides clarity on key issues that are absent from existing state and federal regulations – yet critical to the commercial development of CCUS projects.

Effective legislation can create a framework to accelerate activity by:

- Creating a clear permitting process for CCUS projects.
- Clarifying who owns the rights to pore space – the small spaces within underground rocks where carbon can be stored – which is essential for advancing CCUS.
- Setting clear guidelines that allow for CCUS project development if a majority of owners on a block of land agree.
- Establishing rules for transfer of ownership to the state for long-time stewardship once federal and state regulatory agencies verify storage is secured.

We're engaging with local stakeholders and state policymakers to help bring this important technology to the Prairie, Hoosier and Lone Star states.

https://www.bp.com/en_us/united-states/home/who-we-are/advocating-for-net-zero-in-the-us/ccus-and-hydrogen.html#accordion_ccus-and-hydrogen-advocacy-activities

What is the IGWS doing to support these activities?

- Updating PDMS (Petroleum Data Management System) to reflect industry needs
  - Digital logs and maps
  - Incorporating User Survey results
- Working to increase in-house capabilities
  - pXRF for geochemistry and petrophysical applications
  - Re-boxing of old core to preserve it and standardize boxes
  - Core photography for archival and sample selection purposes
  - Working to purchase a core gamma ray logger for depth matching with well logs
- Continued focus on characterization of:
  - Shale to determine sealing qualities
    - MICP capabilities
    - Organic matter characterization
    - Facies characterization and mapping
  - Saline aquifers with regard to porosity and storage capacities
  - Research on enhanced oil recovery combined with CO_2 storage

Selected IGWS publications on CCUS-related issues

Medina, C., Mastalerz, M., Lahann, R., Rupp, J., 2020. A novel multi-technique approach used in petrophysical characterization of the Maquoketa Group (Ordovician) in the southeastern portion of the Illinois basin: Implications for seal efficiency for the geologic sequestration of CO_2. *International Journal of Greenhouse Gas Control* 93, 102883 https://doi.org/10.1016/j.ijggc.2019.102883

Medina, C., Mastalerz, M., Rupp, J.A., 2018. Pore system characterization of Cambrian-Ordovician carbonates using a new mercury porosimetry-based petrofacies classification system: Application to carbon sequestration reservoirs. *Greenhouse Gases: Science and Technology* 8: 932-953. https://doi.org/10.1002/ghg.1806

Medina, C., Mastalerz, M., Rupp, J.A., 2017. Characterization of porosity and pore-size distribution using multiple analytical tools: Implications for carbonate reservoir characterization in geologic storage of CO2. *Environmental Geosciences* 24, 1, 1-22. http://www.mdpi.com/2076-3263/7/2/26/pdf

Mastalerz, M., Rupp, J., Drobniak, A., Harpalani, S., Anderson, A., Korose, K., Frailey, S., and Morse, D., 2009. Assessment of CO_2 sequestration and enhanced coalbed methane potential in unminable coal seams of the Illinois Basin. In: M. Grobe, J.C. Pashin, and R.L. Dodge (Eds) Carbon Dioxide Sequestration in Geological Media – State of the Art, *AAPG Studies in Geology* 59, 149-171.

Zhang, Q., Ellett, K.M., Rupp, J.A., Mastalerz, M., Karacan, C.O., 2017. Regional- to reservoir-scale evaluation of CO2 storage resource estimates of coal seams. *Energy Procedia* 114, 5346-5355. https://doi.org/10.1016/j.egypro.2017.03.1661.

Liu, F., Ellett, K., Xiao, Y., Rupp, J.A., 2013. Assessing the feasibility of CO2 storage in the New Albany Shale (Devonian-Mississippian) with potential enhanced gas recovery using reservoir simulation. *International Journal of Greenhouse Gas Control* 17, 111-126