



Quarterly Newsletter

October-December 2024

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Welcome

End of a Successful 2024

Last year was an incredible journey for the Texas Louisiana Carbon Management Community.

From K-12 and university level educational initiatives (through programs at Louisiana State University, Lamar University, Texas A&M University-Kingsville, and the University of Houston), to engaging in a spectrum of community events. Amidst the evolving the changes at this time, our six universities remain committed to engaging with communities and sharing information.

Thank you for your continued interest and support. Your engagement and interest helps drive our mission forward.

In this newsletter, we're excited to share one of the short stories we've designed as a part of our

Stay in Touch

ongoing efforts to introduce CCS topics to K-12 audiences in a creative and engaging way.

If you have any questions for our group regarding CCS, please contact us at txlacmc@beg.utexas.edu.

This project is funded for 2024–2026 by Department of Energy's (DOE's) National Energy Technology Laboratory (NETL) project DE-FE32361.

Join our Phonebook



Our phonebook connects you to others in the CCS community, enabling meaningful outreach and collaboration. Please feel free to share our newsletter with anyone interested in joining the directory to foster connections.

TXLACMC Universities

Lamar University

Louisiana State University

Texas A&M University-Corpus Christi

Texas A&M University-Kingsville

The University of Texas at Austin

University of Houston





It sure does! Earth naturally absorbs CO₂ through processes like photosynthesis and ocean uptake, keeping a balance between CO₂ producers and absorbers. But now, the cycle is out of balance.

> It's kind of like... eating a donut! Eating one occasionally isn't a big deal, but if you ate one everyday for a year, ten years, or twenty years, you're definitely gonna feel it!





It's the same with CO_2 emissions.

The amounts released everyday is small compared to the total amount. Overtime however, the impacts accumulate, and now we're starting to feel it.



Oh, so instead of gaining weight because of excess energy, the Earth is just getting warmer?







RECENT EVENTS

This quarter, the TXLA CMC team continued their outreach and engagement across Texas and Louisiana. Those offering coursework, ranging from chemistry, to chemical engineering, to petroleum engineering, and to CCUS, wrapped up their required classes and certificate programs, contributing to the broader educational mission. Additionally, K-12 and community-focused initiatives advanced through workshops, conferences, and resource sharing. Further, our team across the program remained active in community engagement by attending events, presenting, and fostering discussions about CCS.

THE UNIVERSITY OF TEXAS AT AUSTIN

In November, the Gulf Coast Carbon Center made significant strides in educational outreach efforts. At the three-day Conference for the Advancement of Science Teaching (CAST24), the GCCC team hosted a workshop guided by the Carbon-not Ambassadors, managed an interactive booth with giveaways and educational materials, and participated in a Share-a-Thon to distribute CCS resources.

The event was a success, and we're thrilled to share that 21 teachers signed up to participate in future CCS-related initiatives. If you're interested in connecting with these educators or learning more about these efforts, please don't hesitate to reach out to us!

Additionally, the GCCC team actively participated in a variety of community and professional engagement opportunities, serving as speakers, experts, and booth representatives. This included community events organized by Climate Now in Beaumont, Pasadena, and Texas City, Texas, connecting with local community members. The team delivered presentations to HalfMoon Education Inc., the Texas A&M SPE CCUS Symposium, Indiana University, and the National Association of Royalty Owners, among others, to educate on various CCS topics. Community engagement efforts through TXLA CMC were also highlighted during GHGT-17 in Calgary.



During CAST24, Cynthia Hopkins and Stephanie Hurst presented the workshop 'Safe to Drink? Groundwater and Carbon Capture' to over 40 K-12 educators, using materials developed by GCCC.



Dr. Susan Hovorka demonstrates and explains the subsurface model to community members in Beaumont, Texas during the Climate Now community meetings.

RECENT EVENTS

LOUISIANA STATE UNIVERSITY

Dr. Mehdi Zeidouni's pilot PETE S-L course at LSU, co-delivered with Dr. Sarah Becker, integrated service learning (S-L) with the petroleum engineering course, offering students an opportunity to participate in service projects that benefit both the community and their own knowledge development. The course allowed students to design and deliver CCS-related information to community partners, with the aim of increasing awareness about the technologies and science behind carbon capture and storage.

Enrollment in the class included a mix of students who opted into the S-L project, resulting in the creation of two distinct projects: one individual and one group. Dr. Becker supported students in designing their projects, choosing community partners, and engaging in the CCS field.

One student designed an outreach service project, delivering a CCS lesson to elementary school students at a Korean language school. The lesson used a heat-trapping blanket metaphor and a hands-on balloon project to demonstrate CCS storage practices and the need for CCS due to global warming. The group project involved collaboration with "Geaux Green," where students planned and delivered a listening session on CCS.

The class emphasized project design, community partner engagement, and field outreach, providing students with practical experience and valuable skills for their future careers.

STRATEGIC ADVISORY COMMITTEE

Dr. Becker attended the GeoDura SAC (Strategic Advisory Committee) meeting in Cameron Parish, Louisiana, where she engaged with various committee members and stakeholders. The meeting included a networking lunch and discussions with administrators, communications officers, researchers, and contractors involved in the GeoDura collaboration. Among the contractors were the owner and employees of the drilling team for the test site, including high-level supervisory teams and skilled workers at the drill site.

The meeting was an important opportunity to connect with professionals in the field and to deepen engagement with the CCS community.



Dr. Becker and GeoDura SAC committee members and stakeholders tour a drilling test site in Cameron Parish, Louisiana.

RECENT EVENTS

TEXAS A&M UNIVERSITY-KINGSVILLE

Dr. Jingbo Louise Liu, from the Department of Chemistry, completed teaching undergraduate and graduate courses this semester on carbon management solutions and technologies, as well as the energy materials needed to foster carbon neutrality, with success.

Moving forward, faculty members will revise the graduate-level "Environmental Chemistry" course curriculum to include advanced topics like carbon capture using porous materials and the conversion of carbon into value-added products. Graduate students will be guided to deliver presentations on carbon management and document their findings in lecture notes.

Additionally, in technical research, microbial electrolysis cells are being explored to convert CO₂ into liquid fuels like methanol, supporting DOE's sustainable energy goals. Additionally, molecular dynamics simulations will assess CO₂ absorption in Na-rich and Mg-rich clays, predicting absorption limits without causing geomechanical issues.

LAMAR UNIVERSITY

Dr. Tracy Benson, from the Dan F. Smith Department of Chemical and Biomolecular Engineering, also completed teaching the course "Introduction to CCUS, Environment & Industry, and Why CCUS?" This course provided students with foundational knowledge of Carbon Capture, Utilization, and Storage (CCUS) technologies and processes.

Furthermore, Dr. Daniel Chen has made significant progress in Computational Fluid Dynamics (CFD) modeling. Graduate students are actively involved in the CO₂ Leaks project, participating in weekly meetings focused on CFD modeling, and the team is preparing a manuscript on CFD modeling of CO₂ pipeline leaks into seawater. Additionally, they are collaborating with the Energy & Environmental Research Center (EERC) on the specification of CO₂ impurities, contributing to the development of effective CO₂ management solutions.

UNIVERSITY OF HOUSTON

Dr. Ramanan Krishnamoorti successfully wrapped up the latest cohort of an online executive education course that focuses on the technology, economics, and challenges of Carbon Capture, Utilization, and Storage (CCUS).

In public engagement, information about CCUS and pipelines was shared with over 1,500 attendees at Energy Day at Sam Houston Park in Houston. Additionally, participation in over 15 community engagement meetings took place across various locations, including Houston, Woodlands, Tomball, Baytown, Channel View, Pasadena, Missouri City, Clear Lake, Katy, Chambers County, and Galveston County, where valuable insights on CCUS were provided to local communities.

OPPORTUNITIES



During the CAST24 workshop, 21 teachers expressed interest in further collaboration and learning more about CCS. Many of these educators taught at the high school level and were interested not only in educational resources but also in industry contacts for further connections.

We hope to help bridge connections between project developers or other stakeholders with local teachers to build symbiotic relationships. Please reach out to <u>txlacmc@beg.utexas.edu</u> for more information.

RESOURCES/LINKS

As part of our K-12 outreach efforts, our team has developed a variety of resources to help educators and students learn more about CCS. These materials include comic books, hands-on activities, short videos, and other hand-outs. We have integration guides that align specific themes with Texas Essential Knowledge and Skills (TEKS) standards, making it easier for teachers to incorporate CCS into their science curricula.



Questions/Comments

REACH US AT THE GULF COAST CARBON CENTER -BUREAU OF ECONOMIC GEOLOGY

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