

THE CARBON SEQUESTRATION NEWSLETTER

<http://www.netl.doe.gov/sequestration>

September 2005

- Sequestration in the News
- Events and Announcements
- Recent Publications
- Legislative Activity

Sequestration in the News

Fuel Processing Technology, Special Issue on CO₂ capture and sequestration. The latest issue of *Fuel Processing Technology* reports on a symposium titled, "Carbon Dioxide Capture and Sequestration," held at the 227th American Chemical Society National Meeting in Anaheim, California, in March 2004. A number of articles are cited in the respective sections of the newsletter (see Geology, Technology, and Ocean sections). The general link is <http://www.sciencedirect.com/science/journal/03783820>. Volume 86, Issues 14-15, Pages 1421-1706, October 2005 (subscription required)

Wall Street Journal, "To Cut Pollution, Dutch Pay a Dump In Brazil to Clean Up; Kyoto Treaty Creates Market In Gas-Emission Credits." This article profiles the Dutch government's investment in a Brazilian landfill that will capture methane emissions and generate credits under the Kyoto Protocol's Clean Development Mechanism (CDM). The article provides background on how the deal was reached, and it highlights some of the setbacks the project is experiencing; mainly, the landfill is not capturing as much methane as expected. August 11, 2005, <http://www.wsj.com> (subscription required)

SRiMedia, "Can the oil barons and big power companies use emission credits from carbon sequestration to finance clean projects?" Article discusses the proposed CO₂ capture project at the Peterhead plant in Scotland and the storage of 1.3 million tonnes per year of CO₂ in the Miller Field. An illustrative schematic of the proposed project is shown. According to a spokesman for one of the project partners, the project does not qualify for emission credits under U.K. Renewable Energy Incentives or for EU Allowances under the European Union Emission Credits Scheme. The project may be financially unviable without such incentives, says the spokesman. August 11, 2005, http://www.srimedia.com/artman/publish/article_904.shtml. Two other articles on the Peterhead project: "BP trumpets Peterhead as beacon for clean energy," *The Scotsman*, August 10, 2005, <http://www.scotsman.com/?id=1755572005>; "Science rises to the challenge of global warming," *Financial Times*, August 22, 2005, <http://news.ft.com/cms/s/a67d43de-132f-11da-beee-0000e2511c8.html> (subscription required)

Cleveland Plain Dealer, "Coal becoming the hot fuel in our energy future." Article discusses the history of coal gas and coal-derived liquid fuels. Highlights an NETL-funded project in Pottsville, Pennsylvania, that will produce about 5,000 gallons per day of diesel fuel from waste coal. Also mentions Syntroleum Corp.'s gas-to-liquids demonstration plant in Oklahoma (200,000 gallons per year of coal-derived diesel fuel) and the Great Plains Synfuels plant (150 million cubic feet per year of coal-derived natural gas). July 31, 2005, <http://www.cleveland.com/energy/plaindealer/index.ssf?/base/isene/112281300730350.xml&coll=2>

Business Wire, "Syntroleum and Linc Energy Plan to Integrate Air-Based Fischer-Tropsch Technology with Underground Coal Gasification." A planned 17,000 bpd coal-to-liquids plant in Queensland, Australia will integrate Syntroleum's air-based Fischer-Tropsch technology with Linc Energy's underground coal gasification expertise. According to a press release announcing a partnering agreement between the two companies, underground sequestration of carbon dioxide is often an important component of commercial designs. August 15, 2005, http://home.businesswire.com/portal/site/google/index.jsp?ndmViewId=news_view&newsId=20050815005646&newsLang=en

MyWestTexas.com, "Upcoming carbon management workshop to focus on activity." Article discusses the upcoming Carbon Management Workshop set for December 6-7 in Midland, Texas (see *Events* section for more information). Michael Moore, director of the workshop, said this year's workshop will focus more on projects and project-oriented activity. "Economic recovery" is the buzzword. August 28, 2005, http://www.mywesttexas.com/site/news.cfm?newsid=15112090&BRD=2288&PAG=461&dept_id=474107&rfi=6

The Oxford Press (Ohio), "Search is on way to trap planet-heating carbon dioxide." According to the article, the need to capture CO₂ and store it in safe places is "becoming urgent – and increasingly feasible." The article describes amine scrubbing and geologic sequestration and highlights analysis by Robert Socolow of Princeton University indicating that carbon dioxide capture and storage may add as little as 25 cents to the cost of a gallon of gasoline or \$40 a month to a typical residential electric bill. August 19, 2005, http://www.oxfordpress.com/news/content/shared/news/nation/stories/08/21COAL_SEQUESTER.html

The Navhind Times (India), "Climate Change Project." Highlight the efforts of the Virginia Centre for Coal and Energy Research at Virginia Tech to develop and test technology to store carbon dioxide in coal beds as part of the South-East Regional Carbon Sequestration Partnership (SECARB). August 2, 2005, http://www.navhindtimes.com/stories.php?part=news&Story_ID=08021

The Australian, "Safe, cheap storage of CO₂ 'some way off'." Article discusses the feasibility of geosequestration in Australia. "All the latest clean-coal technologies being pursued around the world depend on being able to show that the storage of carbon dioxide in the various receiving environments is safe, permanent and cost-effective," says the CSIRO's John Wright. "I think we're still some way from that." August 6, 2005, http://www.theaustralian.news.com.au/common/story_page/0,5744,16168650%25E30417,00.html

The Forum (North Dakota), "Non-CO₂ technologies would be the best option." In this op-ed, Joe Richardson, a wind and renewable energy advocate, argues that the best solution to the global warming problem is to accelerate the commercialization of non-CO₂ emitting energy technologies. On the topic of carbon sequestration Richardson says, "sequestering CO₂ in order to increase production of another product that produces more CO₂ may actually be net-negative with respect to the environment and global warming problem...However, if we are to use sequestration we should at least establish a trust fund for the future expenses associated with monitoring sequestration sites." August 27, 2005, <http://www.in-forum.com/articles/index.cfm?id=101211§ion=Opinion> (registration required)

Announcements

"Designing a Greenhouse Gas Offset System for Canada." On August 11 the Canadian government released for public consultation the document, "Offset System for Greenhouse Gases: Overview Paper and Technical Background Document." The goal of Canada's planned offset system is to enable the country to meet its commitments under the Kyoto Protocol. Written comments are welcome until September 30, 2005 and should be submitted to Judith Hull; Project Manager, Offsets; Environment Canada at offsets-compensations@ec.gc.ca. Government of Canada, <http://www.climatechange.gc.ca/english/offsets/>

Edinburgh Center of Excellence. Edinburgh's top two universities have been awarded a £1.5 million grant from the Scottish Higher Education Funding Council to create a center of excellence to monitor the long-term effects of dissolving carbon dioxide in deep sea reservoirs and in porous rock containing oil. "City experts team up to fight global warming," *The Scotsman*, August 2, 2005, <http://www.scotsman.com/?id=1718252005>

"Errors Cited in Assessing Climate Data." Three papers published in the online edition of the journal *Science* address what has been a lingering source of uncertainty in tropospheric temperature estimates since 1979. That is, records of the atmosphere's lowest layer, the troposphere, had not warmed over the last two decades and had cooled in the tropics. Two independent studies have found errors in the complicated calculations used to generate the old temperature records, which involved stitching together data from thousands of weather balloons lofted around the world and a series of short-lived weather satellites. A third study shows that when the errors are taken into account, the troposphere actually got warmer. Moreover, that warming trend largely agrees with the warmer surface temperatures that have been recorded and conforms to predictions in recent computer models. *New York Times*, August 12, 2005, <http://www.forestrycenter.org/headlines.cfm?RefID=76286>. For a more technical discussion on this topic see, "Some Convergence of Global Warming Estimates," *Tech Central Station*, August 11, 2005, <http://www.techcentralstation.com/081105RS.html>

"Faster CO₂ emissions will overwhelm earth's capacity to absorb carbon." Rising fossil fuel emissions may decrease the Earth's natural capacity to absorb carbon dioxide from the atmosphere, according to a study published August 1 in *Proceedings of the National Academy of Sciences* journal. New computational simulations by Dr. Inez Fung at the University of California at Berkeley and her colleagues at UC Berkeley, Woods Hole, and the National Center for Atmospheric Research found that the faster carbon dioxide is emitted, the less the land and oceans can absorb it. "Our finding implies that carbon storage by the oceans and land will lag farther and farther behind as climate change accelerates with growing carbon dioxide emissions, creating an amplifying loop between the carbon and climate systems," says Dr. Fung. *UC Berkeley News*, August 5, 2005, http://www.berkeley.edu/news/media/releases/2005/08/02_carbon.shtml

Policy

Energy Policy Act of 2005 authorizes suspension of royalty payments for CO₂ EOR. The Energy Policy Act of 2005, recently signed into law by president Bush, authorizes suspension of royalties on up to 5 million bbl of oil equivalent/lease where CO₂ injection is used for enhanced recovery. Royalty suspension could be limited based on market price. The provision, which also is designed to promote carbon sequestration, mandates that the energy secretary establish a CO₂ injection demonstration program for up to \$3 million. The program would involve up to 10 projects in the Williston basin and one project in Alaska's Cook Inlet." *Oil & Gas Journal*, August 3, 2005, <http://ogj.pennnet.com/> (subscription required)

"9 States in Plan to Cut Emissions by Power Plants."

Officials in New York and eight other Northeastern states have come to a preliminary agreement to freeze power plant emissions at their current levels and then reduce them by 10 percent by 2020, according to a draft proposal. Once a final agreement is reached, the legislatures of the nine states will have to enact it, which is considered likely. Enforcement of emission controls could potentially result in higher energy prices in the nine states, which officials hope can be offset by subsidies and support for the development of new technology that would be paid for with the proceeds from the sale of emission allowances to the utility companies. *New York Times*, August 24, 2005,

<http://history.berkeley.edu/faculty/Frydl/emissions.html>.

For additional information visit the Regional Greenhouse Gas Initiative website at <http://www.rggi.org/>

"Governor Announces New Step to Curb Global Warming in Oregon."

Oregon looks set to become the tenth U.S. state to adopt California's strict rules on vehicle emissions, as Governor Ted Kulongoski vetoed a legislative provision that prohibits the state Department of Environmental Quality from adopting the standards. The Governor also announced the formation of a workgroup, The Carbon Allocation Workgroup, charged with developing strategies to reduce carbon emissions in the electric utility sector. *Press Release*, August 29, 2005,

http://governor.oregon.gov/Gov/press_082905.shtml

"Federal Judge OKs Global Warming Lawsuit."

Environmental groups and four U.S. cities can sue federal development agencies on allegations the overseas projects they back financially contribute to global warming, a judge has ruled. A coalition of environmental groups sued two government agencies that provide loans and insure billions of dollars of U.S. investors' money for development projects overseas. Many are power plants that emit greenhouses gases such as carbon dioxide. It is argued that the National Environmental Policy Act, the law requiring environmental assessments of proposed projects in the United States, should apply to the U.S.-backed projects overseas because they contribute to the degradation of the U.S. environment. *Associated Press*, August 25, 2005,

<http://www.commondreams.org/headlines05/0825-09.htm>

"Underground off the ground." The August 2005 edition of Foundation JIN's *Joint Implementation Quarterly* has an article that explores why public awareness and support for CO₂ capture and underground storage has been negligible. The article says "It may be time to get the option 'out of the shadow'." The same edition also contains an article on the Asia-Pacific Partnership and its role in the post-Kyoto Debate. *Jl Quarterly*, August 2005,

<http://jq.wiwo.nl/ejq405.pdf>

"Energy: using our brains and our resources." Article sets forth the recent Asia-Pacific Greenhouse Agreement as an opportunity for Australia to develop GHG mitigation technologies and potentially reap economic benefits.

Advanced coal utilization technology with the possibility of producing transportation fuels is highlighted as an important option for Australia. *On Line Opinion* (Australia), August 25, 2005, <http://www.onlineopinion.com.au/view.asp?article=207>

"World Officials Want Global Warming Action."

From August 16-19, representatives of 23 nations, including the United States, Japan, China, India, Mexico, and the European Union, attended the Greenland Dialogue on Climate Change, hosted by the Danish government in Ilulissat, Greenland. The representatives toured the Sermeq Kujalleq glacier, which has retreated nearly seven miles since 1960. The conference took no decisions on how to fight global warming, but the article does mention the Asia-Pacific Partnership on Clean Development and Climate. According to British environment minister Elliot Morley, participants in the Greenland meeting said that the Kyoto Protocol and the U.S. initiative should be regarded as "complimentary, not in opposition." *Associated Press*, August 19, 2005 <http://abcnews.go.com/Technology/Science/wireStory?id=1050498&CMP=OTC-RSSFeeds0312>

Geology

"IEA GHG Weyburn CO₂ monitoring and storage project."

This paper presents an integrated overview of the results from over 50 individual technical research projects related to the IEA GHG Weyburn CO₂ Monitoring and Storage Project. Research activities in the project were divided into four "themes" that applied leading-edge science and engineering in geophysics, geomechanics, geochemistry, geology, reservoir engineering, risk assessment, and economics. *Fuel Processing Technology*, Volume 86, Issues 14-15, October 2005, Pages 1547-1568, <http://www.sciencedirect.com/science/journal/03783820> (subscription required)

"Experimental investigation of CO₂-brine-rock interactions at elevated temperature and pressure: Implications for CO₂ sequestration in deep-saline aquifers."

This paper explores the reactivity of supercritical CO₂ with host aquifer fluids and formation minerals through experiments reacting supercritical CO₂ with natural and synthetic brines in the presence and absence of limestone and sandstone. *Fuel Processing Technology*, Volume 86, Issues 14-15, October 2005, Pages 1581-1597, <http://www.sciencedirect.com/science/journal/03783820> (subscription required)

"Carbon sequestration using brine of adjusted pH to form mineral carbonates."

The effects of temperature, pressure, and pH on the formation of carbonates, such as calcite, during the reaction of CO₂ with natural gas well brine were investigated. Results show that temperature has a greater control on changes in pH than pressure. However, initial brine pH is the main factor controlling the formation of carbonates. *Fuel Processing Technology*, Volume 86, Issues 14-15, October 2005, Pages 1599-1614, <http://www.sciencedirect.com/science/journal/03783820> (subscription required)

“Modeling carbon dioxide sequestration in saline aquifers: Significance of elevated pressures and salinities.” This study attempts to predict the capacity of saline formations to sequester carbon dioxide by determining solubility and mineral trapping through simulating sequestration with geochemical models. Several models have been used to make estimates of carbon dioxide solubility and mineral formation as a function of pressure and fluid composition. Overall, the paper concludes it is difficult to confidently predict the ultimate sequestration capacity of deep saline aquifers using geochemical models. *Fuel Processing Technology*, Volume 86, Issues 14-15, October 2005, Pages 1569-1580, <http://www.sciencedirect.com/science/journal/03783820> (subscription required)

Technology

“Review of novel methods for carbon dioxide separation from flue and fuel gases.” This paper reviews some of the more novel methods for carbon dioxide separation from flue and fuel gas streams. These methods include electrochemical pumps, membranes, and chemical looping approaches to CO₂ separation. The fundamental mechanisms behind these techniques are explained, and recent advances in these methods are emphasized. Future research directions are suggested and an extensive list of references is provided. *Fuel Processing Technology*, Volume 86, Issues 14-15, October 2005, Pages 1423-1434, <http://www.sciencedirect.com/science/journal/03783820> (subscription required)

“Improved immobilized carbon dioxide capture sorbents.” In this experiment, the capture of carbon dioxide from simulated flue gas streams has been achieved by using immobilized and aminated-SBA-15 solid sorbents. The solid sorbents prepared in this study exhibit similar or improved capacities relative to those already used to control CO₂ concentrations in submarine and spacecraft applications. The results suggest that immobilized secondary amines have a stronger affinity for the capture of carbon dioxide from simulated flue gas streams than primary amines. *Fuel Processing Technology*, Volume 86, Issues 14-15, October 2005, Pages 1449-1455, <http://www.sciencedirect.com/science/journal/03783820> (subscription required)

“Aminopropyl-functionalized mesoporous silicas as CO₂ adsorbents.” A range of mesoporous silica substrates were functionalized with 3-aminopropyltrimethoxysilane to form hybrid products suitable for carbon dioxide adsorption. Substantial reversible CO₂ adsorption capacities were observed under anhydrous conditions (at 20 °C). In the presence of water, CO₂ capacity was enhanced, but the rate of desorption was diminished. *Fuel Processing Technology*, Volume 86, Issues 14-15, October 2005, Pages 1435-1448, <http://www.sciencedirect.com/science/journal/03783820> (subscription required)

“Weyerhaeuser Joins Carbon-Market Alliance.”

Weyerhaeuser has joined the Climate, Community and Biodiversity Alliance (CCBA) “as another way to help promote responsible forest management.” The primary goal of the CCBA is to create a set of standards for evaluating projects that will help mitigate climate change, while benefiting local communities and protecting or restoring biodiversity. In addition to Weyerhaeuser, the members of the CCBA are Conservation International, The Nature Conservancy, Pelangi, the Hamburg Institute of International Economics, British Petroleum, GFA Terra, Intel and SC Johnson. *GreenBiz.com*, August 18, 2005, <http://www.wbcscd.org/plugins/DocSearch/details.asp?type=DocDet&ObjectId=16208>

“Trees don't suck up carbon dioxide as hoped.” Swiss scientists have found that a large patch of deciduous forest near Basel in Switzerland, which has been artificially sprayed with excess carbon dioxide for years, has shown no increase in growth rate compared to other similar stands. *Nature*, August 25, 2005, <http://www.bioedonline.org/news/news.cfm?art=1985>

Ocean

“Process design of a new injection method of liquid CO₂ at the intermediate depths in the ocean using a static mixer.” A static mixer invention for CO₂ injection into ocean water is proposed. By controlling CO₂ drop size and harnessing the forces of buoyancy, the mixer enables complete CO₂ dissolution before any evaporation occurs. The mixer uses very little energy. *Fuel Processing Technology*, Volume 86, Issues 14-15, October 2005, Pages 1667-1678, <http://www.sciencedirect.com/science/journal/03783820> (subscription required)

Trading

Carbon Market Update, August 31, 2005

CCX-CFI 2005 (\$/tCO ₂)	\$2.00
EU ETS-EUA 2005 (\$/tCO ₂)	\$28.59

“AEP Expands CO₂ Reduction Commitment Through 2010.” American Electric Power announced the company will continue its membership in the Chicago Climate Exchange (CCX). As a founding member of CCX, AEP committed in 2003 to reduce or offset its greenhouse gas emissions by 1 percent in 2003, 2 percent in 2004, 3 percent in 2005, and 4 percent in 2006 below a baseline average of 1998 to 2001 emission levels. Phase II of CCX extends AEP's greenhouse gas reduction commitment ultimately to 6 percent below the same baseline by 2010 (4.25 percent in 2007, 4.5 percent in 2008, 5 percent in 2009 and 6 percent in 2010). With this new commitment, AEP expects to reduce or offset approximately 46 million metric tons of carbon dioxide equivalent emissions between 2003 and the end of the decade. *AEP Press Release*, August 10, 2005, <http://biz.yahoo.com/pnews/050810/clw512.html?v=7>

September 13-14, 2005, **'Managing the Carbon Cycle' Forum**, Arimadale, New South Wales, Australia. This 2-day forum will focus on soil carbon management. How can increased soil carbon levels be achieved? How can soil carbon be measured? What is the value of soil carbon as a tradable commodity and how can a 'carbon credits' scheme best be implemented? This forum will address these issues in an interactive format which includes ample time for questions and discussion. Registration deadline is **September 8, 2005**. For further information, registration details or updates on program and speakers, visit <http://www.amazingcarbon.com/>

September 15-16, 2005, **Reduction of Emissions and Geological Storage of CO₂: Innovation and Industrial Stakes**, Paris, France. The symposium intends to bring together researchers, industrialists, economists, and financiers to examine the role the geological storage of CO₂ can play in reducing emissions of greenhouse gases, and the means to be used to finance such operations. For additional information visit <http://www.CO2symposium.com>

September 25-30, 2005, **7th International CO₂ Conference**, Broomfield, CO. The purpose of this conference is to bring together scientists from different disciplines to communicate the most recent results pertinent to the global carbon cycle, with an emphasis on the contemporary increase of atmospheric carbon dioxide. Topics will include atmospheric and oceanic measurements and monitoring networks, terrestrial ecosystems and land use change, carbon cycle process models, source/sink inverse models, the ice core record, new observational techniques, long-term potentials and vulnerabilities of carbon sequestration, and more generally, the human impact on the carbon cycle. For more information visit <http://www.cmdl.noaa.gov/info/icdc7/>

November 13-17, 2005, **Greenhouse 2005: Action on Climate Control**, Melbourne, Australia. There is a clear need for industry, scientists, and government at all levels to work closely together to tackle this significant environmental issue. Demand is strong for the latest information on the science, the likely impacts of climate change, adaptation strategies, and approaches to reducing atmospheric greenhouse gas concentrations. The Conference will cover these themes as well as international issues, policy development, communication and education. For more information: <http://www.greenhouse2005.com> Contact: Paul Holper - paul.holper@csiro.au

CALL FOR POSTER PRESENTATIONS: November 15-17, 2005, **Applied Technology Workshop (ATW) on "CO₂ Sequestration,"** Hilton Galveston Island Resort, Galveston, TX. Hosted by the SPE, the workshop will include plenary sessions on perspectives of private and public organizations and consortia and technical sessions focusing on planned and operating projects. Breakout sessions will address outstanding subsurface, facilities / operations, stakeholder and economic issues. The organizing committee will be issuing a call for poster presentations. Co-Chairs: Scott Imbus (Chevron) and Lynn Orr (Global Climate and Energy Project, Stanford University). Further information: www.spe.org.

FINAL CALL FOR PAPERS: December 5-9, 2005, **American Geophysical Union's (AGU) 2005 Fall Meeting**, San Francisco, CA. You are encouraged to submit an abstract to session B07: Approaches to Stabilizing Atmospheric CO₂ and Climate as part of the AGU 2005 Fall Meeting. This session will provide a forum for discussion of promising CO₂ and climate change mitigation strategies. The deadline for electronic submissions is **September 8, 2005**. See <http://www.agu.org/meetings/fm05> for submission and meeting details.

December 6-9, 2005, **Carbon Management Workshop and 11th Annual CO₂ Flooding Conference**, Midland, Texas. Planned for December 6 and 7, the EOR Carbon Management Workshop will offer an in-depth look at CO₂ geologic storage, its trends, developments and opportunities. Also featured is a field tour on December 7 of Kinder Morgan Production Company's Yates Field where the company conducts a gravity-dominated CO₂ flood. The CO₂ flooding conference, set for December 8 and 9, will focus on the use of carbon dioxide for enhanced oil recovery. The conference features theme sessions that examines current industry best practices in operations and reservoir management. For additional information visit http://www.spe-pb.org/co2_conference/index.asp

January 22-25, 2006, **9th Annual EUEC 2006 Conference on Air Quality, Climate Change & Renewable Energy**, Westin La Paloma Resort, Tucson, AZ. Visit the conference website for more information <http://www.euec.com/default.html>

February 20-21, 2006, **The 2nd Australia–New Zealand Climate Change and Business Conference**, Adelaide, Australia. A conference to explore business opportunities and risks associated with climate change, including emerging technologies and innovative approaches to reducing emissions and adapting to climate change. Please send all enquiries to the Conference Organizer, Jo Hume, at jo.hume@oxbowcurve.com. Visit the conference website to find out more <http://www.climateandbusiness.com>

SECOND CALL FOR PAPERS: May 9-12, 2006, **Engineering Institute of Canada Climate Change Technology Conference**, Ottawa Congress Centre, Ontario, Canada. The Engineering Institute of Canada (EIC) and its member societies are taking the lead to stimulate awareness and action by the Canadian Engineering Community for solutions that mitigate or adapt to climate change. To deal with this need, a Second Call for Papers and Presentations has been issued with a deadline of **September 30, 2005**. See <http://www.CCC2006.ca> for details.

CALL FOR PAPERS: June 19-22, 2006, **GHGT-8**, Trondheim, Norway. The aim of this conference is to provide a forum for the discussion of the latest advances in the field of greenhouse gas control technologies. Abstracts should be received by conference organizers no later than **September 23, 2005**. Details at <http://www.ghgt-8.no>

“Norway study finds CO₂ EOR too expensive, risky.”

Article highlights an April 2005 Norwegian Petroleum Directorate (NPD) study concluding that carbon dioxide injection currently is not a commercial alternative for enhancing oil recovery off Norway. The study – reported in the May 2005 *Carbon Sequestration Newsletter* – found several impediments for injecting CO₂, even though it determined that the technology was feasible and could substantially increase oil recovery. The main impediments were the expense for building a network for delivering CO₂ to the fields and the high estimated \$30-33/bbl cost for oil recovery. *Oil & Gas Journal*, August 8, 2005, <http://ogj.pennnet.com/> (subscription required)

“A New Global Warming Strategy.” According to a report issued by environmental group EarthSave International, cars and power plants will not be a major cause of global warming in our lifetime. Rather, the most significant source of climate change over the next half-century is likely animal agriculture. The report's data analysis, based on the work of leading climate scientists, shows that methane sources - not carbon dioxide sources - are the biggest cause of global warming today, and will continue to be for the next 50 years. “This reveals an untapped opportunity to make serious and rapid progress in reducing dangerous global warming trends,” said Noam Mohr, author of the report. *World-Wire*, August 29, 2005,

<http://www.world-wire.com/news/0829050001.html>

For an online copy of the report visit

<http://www.earthsave.org/globalwarming.htm>.

“CO₂ will probably not help to save Venice from the sea.”

This paper explores the use of CO₂ injection into an aquifer to raise the city of Venice. The paper finds that because of the prevailing ambient conditions in the aquifer phase change of CO₂ cannot be avoided. The ensuing change of specific volume and compressibility will inhibit a uniform uplift pattern which is needed to avoid cracks in historical buildings. This prevents the use of CO₂ in the proposed conditions. *Mechanics Research Communications*, Volume 32, Issue 6, November-December 2005, Pages 617-627, <http://www.sciencedirect.com/science/journal/00936413> (subscription required)

“The impact of carbon sequestration on the production cost of electricity and hydrogen from coal and natural-gas technologies in Europe in the medium term.”

The economic assessment provided in this study shows that the introduction of carbon sequestration technologies in Europe in 2020, will result in an increase in the production cost of electricity by coal and natural gas technologies of 30–55 percent depending on the electricity-generation technology used; gas turbines will remain the most competitive option for generating electricity; and integrated gasification combined cycle technology will become competitive. When carbon sequestration is coupled with natural-gas steam reforming or coal gasification for hydrogen production, the production cost of hydrogen will increase by 14–16 percent. Furthermore, natural-gas steam reforming with carbon sequestration is far more economically competitive than coal gasification. *Energy*, Volume 30, Issue 14, November 2005, Pages 2672-2689, <http://www.sciencedirect.com/science/journal/03605442> (subscription required)

Bush Signs Energy Bill. At a bill-signing ceremony at the Energy Department's Sandia National Laboratories on August 8th, President Bush signed the energy bill into law. Bush said the new energy policy will go a long way toward weaning Americans off imported oil by encouraging the domestic production of oil and natural gas and greater use of cleaner-burning, domestic energy sources, including cleaner burning coal. “Bush Signs Energy Bill, Cheers Steps Toward Self-Sufficiency,” *Washington Post*, August 9, 2005, <http://www.washingtonpost.com/wp-dyn/content/article/2005/08/08/AR2005080800124.html>

“New Rules Could Allow Power Plants to Pollute More.”

The Bush administration has drafted regulations that would fundamentally alter the limits placed on air emissions from older, less efficient coal-fired power plants. The draft rules, obtained by the Washington Post, take the position that decisions on whether a plant complies with the regulations after modernization should be based on how much pollution it could potentially emit per hour, rather than the current standard of how much it pollutes annually. *Washington Post*, August 31, 2005, <http://www.washingtonpost.com/wp-dyn/content/article/2005/08/30/AR2005083001949.html>

This newsletter is produced by the National Energy Technology Laboratory and presents summaries of significant recent events related to carbon sequestration. If you'd like to join the e-mail distribution list, email majordomo@list-manager.netl.doe.gov with "subscribe sequestration" in the body of the message. We encourage you to pass this along to interested persons. Contacts: Sean Plasyński, sean.plasyński@netl.doe.gov or Sarah Forbes, sarah.forbes@netl.doe.gov.