

THE CARBON SEQUESTRATION NEWSLETTER

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June 2003

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

Sequestration in the News

DOE Second Annual Conference on Carbon Sequestration, held in Alexandria, Virginia on May 5-8, included over 125 technical presentations and keynote speeches by Presidential Science Advisor Dr. John Marburger, DOE Under Secretary Bob Card, Under Secretary of State Paula Dobriansky, and EPA Administrator Christine Todd Whitman. The conference drew over 450 participants from 22 countries. <http://www.carbonsq.com/>

FutureGen Alliance forming. Four of the nation's largest coal-burning utilities and five of its biggest coal producers announced the formation of an alliance that may finance 20 percent of the Bush administration's \$1 billion FutureGen project. "Industry Answers Bush's Call On 'FutureGen' Power Plant," New Technology Week, April 28; "Firms join 'zero-emissions' effort," *Casper Star Tribune*, May 1, <http://www.casperstartribune.net/articles/2003/05/01/news/wyoming/6dda4492fccb74ef6e3900ad34cc06b8.txt> Eastern Montana has the natural and human resources needed to attract "FutureGen" initiative, this article says. "Project promoted," *Montana Forum*, May 1, <http://www.montanaforum.com/rednews/2003/04/30/build/energy/gasify-plant.php?nnn=2>

CO₂ captured from new ethanol facility. Utica Energy, LLC, Wisconsin, is the 73rd ethanol plant to begin operating in the U.S. The plant will process 8 million bushels of corn into 20 million gallons of ethanol and 175,000 tons of distillers wet grains annually. And it will also capture 175 tons of CO₂ per day for commercial use. "Wisconsin Ethanol Plant Begins production," *AgWeb*, May 22, http://www.agweb.com/news_show_news_article.asp?file=AgNewsArticle_20035221534_2812&articleID=98055&newscat=GN

Coal industry issues carbon emissions management report. Energy Secretary Spencer Abraham addressed the National Coal Council at a meeting where the Council approved a draft report on managing the coal industry's GHG emissions. The report calls on the DOE to conduct large-scale, long-term field tests of CO₂ sequestration options. According to the report, carbon capture and storage could ultimately account for more than 40% of global CO₂ emission reductions. The report is available at <http://www.nationalcoalcouncil.org/Documents/fpb.pdf>. *Inside Energy*, May 2003.

NASA finds soot has impact on global climate. A team of researchers, led by NASA and Columbia University scientists, found that airborne, microscopic, black-carbon (soot) particles are even more plentiful and absorb two-to-four times more sunlight than previously assumed by the Intergovernmental Panel of Climate Change (IPCC). "NASA finds soot has impact on global climate," NASA, May 14, <http://www.spaceflightnow.com/news/n0305/14soot/>

National Research Council: hydrogen and sequestration. Dr. Lynn Orr of Stanford University's Global Climate and Energy Project, and Gardiner Hill of BP and the CO₂ Capture Project (CCP), told a National Research Council committee that if hydrogen is produced in substantial quantities from fossil fuels, CO₂ sequestration will be required to reduce carbon emissions into the atmosphere. "CO₂ sequestration seen as key to hydrogen energy future," *Inside Energy /with Federal Lands*, April 28, <http://www.platts.com/>

Half of U.S. climate warming results from land use changes. Evidence found by meteorologists Dr. Eugenia Kalnay and Dr. Ming Cai suggests that land use changes have a larger role in the general increase of minimum temperature and slight decrease of maximum temperature than previously expected. These conclusions were reached by comparing urban and rural weather station data and are expected to correspond to the effects of urbanization and the "urban heat island" effect as well as increased agricultural development and irrigation. The study is published in *Nature*. "Half U.S. Climate Warming Due to Land Use Changes," *Environmental News Service*, May 28, <http://ens-news.com/ens/may2003/2003-05-28-01.asp>

Announcements

The DOE seeks 'novel' GHG management projects. The Department of Energy wants proposals for novel approaches to managing GHG emissions from fossil-fuel energy systems, particularly coal-fired power plants. DOE is partnering with the National Academy of Science's National Research Council (NRC) for the first time. As an additional means to encourage more participants, the cost-sharing for these projects is waived. The deadline for proposals will be June 24, 2003. DOE plans to award multiple projects in 2004. "DOE Seeking 'Novel' GHG Management Projects," *AIR Daily* and *Coal Daily*. Solicitation DE-PS26-03NT41777, "Novel Approaches to the Management of Greenhouse Gases from Fossil Fuel Energy Systems," <http://www.netl.doe.gov/business/solicit/index.html>

DOE seeks input on FutureGen plans. The U.S. Department of Energy has published a notice in the Federal Register seeking public comments on its plans to implement FutureGen. <http://www.netl.doe.gov/coalpower/sequestration/futureGen/rfi.html>

Two DOE Solicitations. Carbon sequestration is mentioned in two broad procurement efforts: the DOE Small Business Innovation Research and the solicitation for grants in basic energy, biological and environmental sciences by the DOE Office of Science. <http://sbir.er.doe.gov/sbir> , <http://e-center.doe.gov/>

Capture

Equipment for lowering carbon intensity. Equipment manufacturers in the US, which account for about half the global market for electricity generation systems, are responding to demand for new equipment and upgraded technology to meet carbon emissions standards. They are also exploring renewable energy sources such as solar power, wind energy and fuel cells. "Finding new niches in a saturated market: The US," *Financial Times* (London), April 30.

Geologic Storage

Seismic tests open Mountaineer sequestration study. As part of a \$4.2 million carbon sequestration research project at AEP's Mountaineer Plant in the Ohio River Valley area, Appalachian Geophysical Services will seismically survey a 5-10 mile radius of the plant and Batelle will drill a 10,000-foot borehole. The 18-month study is funded primarily by DOE and led by Battelle. "Seismic Survey To Take Place Near Mountaineer Plant; Drilling at Plant Will Begin Soon," AEP, May 22, <http://www.aep.com/newsroom/newsreleases/default.asp?dbcommand=DisplayRelease&ID=1031&Section=Environmental&colorControl=on>

Terrestrial

Arid lands and CO₂ fertilization. An experimental planting conducted by scientists at the edge of an Israeli desert 35 years ago is expanding at an unexpected rate. The findings, published in the current issue of *Global Change Biology*, suggest that forests in other parts of the globe could also be expanding into arid lands. The Negev Desert research station is the most arid site in a worldwide network (FluxNet) established to investigate terrestrial CO₂ absorption. "Greenhouse gas might green up the desert; Weizmann Institute study suggests that rising carbon dioxide levels might cause forests to spread into dry environments," *Science Daily*, May 8, <http://www.sciencedaily.com/releases/2003/05/030509084556.htm>

Australian soil carbon. Scientists are investigating the capacity of Australian soils to store carbon and other GHGs, such as nitrous oxide and methane. "Soil solution for GHG," *Weekly Times* (Australia), May 14.

Trading and Policy

Maine legislates voluntary CO₂ reductions. Maine Gov. Baldacci signed a bill requiring an inventory of CO₂ and other GHG emissions from state-owned facilities. The bill also requires the state to enter into carbon emission treaties with at least 50 nonprofit organizations and businesses. It is tendered as an initial step to curb greenhouse emissions to pre-1990 levels by 2010. "Law aimed at curbing global warming," *WMTW*, May 22, <http://www.wmtw.com/Global/story.asp?S=1290646&nav=7k6rFz5R>

Post Kyoto Protocol inclusive framework. The Japanese Ministry of Economy, Trade and Industry (METI) submitted an interim report calling for the U.S. and developing countries to join a new framework to curb global warming, planned to launch after the terms of the Kyoto Protocol expire in 2012. "METI asks US to join new framework to curb global warming," *Kyodo News*, May 27, <http://www.co2e.com/News/story.asp?StoryID=1140>

NZ negotiates carbon tax exemptions. The New Zealand Government completed its first Negotiated Greenhouse Agreement with the New Zealand Refining Company. Companies qualify for negotiated agreements if they would be forced to move offshore or go out of business to pay a carbon tax. In return for the tax exemption they minimize GHG emissions through international best practices. Australian companies are taking a close interest. "Carbon credit trades attract interest," *RNZ*, May 6, http://onebusiness.nzzoom.com/onebusiness_detail/0,1245,187931-3-166,00.html

A year in UK CO₂ trades. The first year of the voluntary UK emissions trading scheme saw around 900 companies exchange rights to emit over seven million tonnes worth of CO₂, according to British government figures. The government offered cash incentives to 32 organisations, including Shell, BP, DuPont and British Airways, of which 31 met their targets. Another 5,000 firms slashed emissions of CO₂ by 13.5 million tonnes in 2002, more than three times the target of a 3.5 million tonne cut. "UK emissions scheme sees 7mln t CO₂ change hands," *Planet Ark*, May 14, <http://www.planetark.org/dailynewsstory.cfm/newsid/20785/story.htm>, and "UK 'will make bigger greenhouse cuts'," *BBC*, May 8, <http://news.bbc.co.uk/2/hi/science/nature/3011169.stm>; The transaction log from the first year of UK emissions trading shows that it is possible making money in the carbon market even for companies that are short in the outset. "Carbon market Europe" Point Carbon, May 16, http://www.pointcarbon.com/wimages/Carbon_Market_Europe_16_May_2003.pdf

NY GHG reduction action recommendations. The Center for Clean Air Policy has released a report from the New York GHG Task Force to New York Governor Pataki with 27 major recommendations for GHG reduction actions. The report recommends the investigation of carbon sequestration for long-term emission reduction and the consideration of sequestration via bio-fuels. "NY State GHG task force recommendations," The Center for Clean Air Policy, <http://www.ccap.org/NYGHG.htm>

Voluntary cap and trade in the northeast. Six Northeast states are jointly creating a voluntary GHG registry with an eye toward development of a regional cap-and-trade system for power plant and other industrial emissions. "Northeast States follow California's lead on GHG registry," *Greenwire*, May 12, <http://www.co2e.com/News/story.asp?StoryID=1123>

Events

June 3-6, **Improved Quantification of Terrestrial Global Carbon Fluxes**, Sheffield, UK. Contact: GTOS Secretariat, FAO, SDRN, Rome, Italy. Email: GTOS@fao.org Website: <http://www.fao.org/gtos/meetSHE.html>

June 5-7, **International Conference on Regional Climate Change and Agriculture**, Raipur, India, arranged by the Indira Gandhi Agriculture University. For information e-mail asastr@yahoo.com

June 14-18, **Chapman Conference on Ecosystem Interactions with Land Use Change**, Santa Fe, New Mexico, USA. Contact: AGU Meetings Department, 2000 Florida Avenue, NW, Washington, DC 20009 USA. Tel: 202-462-6900 Email: meetinginfo@agu.org Website: <http://www.agu.org/meetings/cc03acall.html>

June 16-17, **Workshop on Direct and Indirect Human Contributions to Terrestrial GHG Fluxes**, Washington, DC. http://dels.nas.edu/banr/nat_res.html

June 19-20, **CBI's GHG Trading Symposium**, Alexandria VA. <http://www.cbinet.com/events/PB367/index.html>

June 22-26, **Air & Waste Management Association's 96th Annual Conference**, San Diego, CA. Critical Review on Separation and Capture of CO₂ from Large Stationary Sources and Sequestration in Geological Formations-Coalbeds and Saline Aquifers. <http://www.awma.org/ACE2003/tech-program/criticalreview.asp>

June 25-26, **Meeting Kyoto Targets in the EU – Challenges for the Power Sector**, Brussels, Belgium. The conference will be held in the European Parliament and is arranged by WWF. http://www.panda.org/about_wwf/where_we_work/europe/what_we_do/policy_and_events/epo/events.cfm

July 7-10, **Clean Air 2003: 7th International Conference on Energy for a Clean Environment**, Lisbon, Portugal. Contact: Prof. Maria da Graça Carvalho, Instituto Superior Técnico - Mechanical Engineering Department, Av. Rovisco Pais, 1049-001 Lisbon, Portugal. Tel: +351 21 8417378 Fax: +351 21 8475545 Email: cleanair@esoterica.pt Website: <http://navier.ist.utl.pt/cleanair/>

July 21-24, **Global Energy and Water Cycle Experiment (GEWEX) Americas Prediction Project (GAPP) 2003 Pls Meeting**, Seattle, Washington. Contact: Kathy Watson, NOAA Office of Global Programs, Telephone: 301-427-2089 ext. 110. Email: watson@ogp.noaa.gov Website: http://www.joss.ucar.edu/gapp/gapp_pis/

August 19, **The Monitoring, Evaluation, Reporting, Verification and Certification of GHG Emissions: Energy-Efficiency Projects Workshop**, Seattle, Washington. Registrants of the 2003 International Energy Program Evaluation Conference are invited to attend. http://www.iepec.org/workshop_vine.htm

September 7-11, **American Chemical Society National Meeting**, New York, NY. Advanced technical session entitled: "CO₂ sequestration: advanced technologies for predicting and monitoring isolation performance" <http://www.chemistry.org/portal/a/c/s/1/neworleans2003.html?DOC=meetings\newyork2003\03NYearly.html>

September 21-23, **Emissions Marketing Association (EMA) 7th Annual Fall Meeting & International Conference**, Miami, Florida. Poster presenters and speakers should submit abstracts by June 13, 2003. <http://www.emissions.org/conferences/fallconference03/default.html>

October 14-17, **Innovative Methods for Emission-Inventory Development and Evaluation workshop**, Austin, TX. The workshop is being organized by North American Research Strategy for Tropospheric Ozone (NARSTO) at the University of Texas, Austin. <http://www.cgenv.com/narsto/EmissionsWorkshop.html>

November 2-6, **The 12th International Conference on Coal Science**, Cairns Convention Centre, Cairns, Australia. Topics include: Global warming, GHG emissions, CO₂ mitigation and sequestration. <http://www.aie.org.au/iccs/>

November 11-14, **Business and Emissions Trading workshop**, Wittenberg, Germany. The workshop is organized by the Martin-Luther-University Halle-Wittenberg and abstracts are due by June 15. http://www.wiwi.uni-halle.de/loi/bwl/umwelt/index.php?folder_default_neffolderID=11006

November 16-21, **The American Institute of Chemical Engineers annual meeting**, San Francisco, CA. The Environmental and the Catalysis and Reaction Engineering divisions will sponsor two "GHG Sequestration Technology" sessions. <http://www.aiche.org/Annualapp/previewmodule/grouplist.asp?groupcode=09&>

November 17-18, **Climate policy after 2012**, Ghent, Belgium, arranged by the Ghent University. For information e-mail johan.albrecht@rug.ac.be

Recent Publications

Modeling of CO₂ ECBM results available. "The Allison Unit CO₂ - ECBM Pilot: A Reservoir Modeling Study" provides an overview of a modeling study for enhanced coal bed methane (ECBM) based on a field test in New Mexico. The injection of CO₂ at the Allison Unit has resulted in incremental methane recovery of approximately one scf of methane for every three scf of CO₂ injected. "The Allison Unit CO₂ - ECBM Pilot: A Reservoir Modeling Study," <http://www.coal-seq.com/Proceedings2003/40924R01.pdf>

Assessment of CO₂ sequestration and ECBM potential of U.S. coalbeds. The CO₂ sequestration capacity of U.S. coalbeds is estimated to be 90 Gt. Of this, 38 Gt is in Alaska, 14 Gt is in the Powder River basin, 10 Gt is in the San Juan basin, and 8 Gt is in the Greater Green River basin. Total CO₂ emissions from power generation plants is currently about 2.2 Gt/year. "Assessment of CO₂ Sequestration and ECBM Potential of U.S. Coalbeds," <http://www.coal-seq.com/Proceedings2003/40924R07.pdf>

Novel Approaches to Carbon Management: Separation, Capture, Sequestration, and Conversion to Useful Practices - Workshop Report. National Academy of Sciences, May 2, http://www.nap.edu/catalog/10699.html?onpi_listserv050203

IASB GHG accounting standards. The International Financial Reporting Interpretations Committee has released proposals for new accounting requirements for companies participating in government schemes aimed at reducing GHG emissions. "Proposed new accounting interpretation - GHG emissions," International Accounting Standards Board, May 15, <http://www.iasb.org.uk/cmt/0001.asp>

CDM predictions. In the report "CDM: A three-year forecast," Point Carbon estimates that the total volume of Certified Emissions Reductions (CERs) to be offered in the 2005 market are likely to be small. "CDM: A three-year forecast," Point Carbon, May 2003, http://www.pointcarbon.com/wimages/Carbon_Market_Europe_21_March_2003.pdf

EPA seeks comments on draft GHG emission factors. The new emission factors quantify the life-cycle GHG impacts for carpets, personal computers, and selected building materials using a variety of waste management practices, including source reduction, recycling, combustion, and landfilling. EPA's Climate and Waste, May 2003, <http://yosemite.epa.gov/oar/globalwarming.nsf/content/ActionsWasteToolsReportsNewEmissionFactors.html>

International Energy Agency interactive website. The IEA now offers searchable access to information on energy-related policies and measures taken or planned in IEA Member countries to reduce GHG emissions. It contains over 800 records collected over three years (1999-2002). "Dealing with Climate Change," The International Energy Agency, May 2003, <http://www.iea.org/envissu/pamsdb/index.html>

A market report on emissions trading opportunities in Europe. "The Corporate Carbon Strategies Outlook to 2012," Reuters Business Insight, May 2003, <http://www.reutersbusinessinsight.com/rbi/content/rben0156p.pdf>

The Pew Center on Climate Change reviews six diverse US emissions trading programs. Voluntary features have a role that merits inclusion in GHG trading programs, but cost savings benefits should be weighed against increasing emissions potential, say the authors. "Emissions trading in the US: Experiences, lessons and considerations for GHGs," Pew Center, May 2003, http://www.pewclimate.org/projects/emissions_trading.cfm

The Pew Center on Climate Change examines three carbon constraining options. A domestic GHG reduction program could take the shape of a cap and trade program, a GHG tax, or sectoral hybrid programs, according to this report. "Designing a mandatory GHG reduction program for the US," Pew Center, May 2003, <http://www.pewclimate.org/projects/USgas.cfm>

National cap or technological growth curve. An alternative approach to relying on fixed national CO₂ caps proposes to rely instead on a growth curve to establish, for each year, the minimum fraction of each country's emissions that can arise from non-fossil fuels. "Technology growth curves: a new approach to reducing global CO₂ emissions," *Energy Policy* Volume 31 Issue 12, 2003, <http://www.sciencedirect.com/science/journal/03014215>

Legislative Activity

The Energy Policy Act of 2003 calls for the enhancement of domestic energy security and includes provisions for carbon sequestration R&D through the hydrogen fuel initiative and related to coal technologies. Status: On legislative calendar. Domenici, S 1005, May 6, 2003, <http://thomas.loc.gov/cgi-bin/bdquery/z?d108:s.01005>:

Bill to study financial opportunities of terrestrial CO₂ absorption. Alaska House Bill 196 calls for an advisory committee working with the Alaska Department of Natural Resources to study the idea of carbon sequestration. It passed the House 35-1, and now goes to the Senate. "House approves bill to study carbon sequestration," *Fairbanks Daily News*, May 17, <http://www.news-miner.com/Stories/0,1413,113~26794~1398714,00.html>

Healthy Forests Restoration Act of 2003. One of the purposes of this bill is to protect, restore, and enhance degraded forest ecosystem types in order to promote the recovery of threatened and endangered species as well as enhance carbon sequestration. Status: Referred to committee. HR 1904, May 21, 2003, <http://thomas.loc.gov/cgi-bin/bdquery/z?d108:h.r.01904>:

To enhance energy conservation and research and development, to provide for security and diversity in the energy supply for the American people, and for other purposes. Status: On legislative calendar. HR 6, April 29, <http://thomas.loc.gov/cgi-bin/bdquery/z?d108:h.r.00006>:

Clean Smokestacks Act of 2003. By 2009, this bill caps CO₂ emissions from powerplants at 1990 levels. Status: Referred to subcommittee. HR 2042 May 8, 2003, <http://thomas.loc.gov/cgi-bin/bdquery/z?d108:h.r.02042>:

Energy Tax Incentives Act of 2003. Amends the Internal Revenue Code of 1986 to provide energy tax incentives. Status: On legislative calendar. S.1149, May 23, 2003, <http://thomas.loc.gov/cgi-bin/bdquery/z?d108:s.01149>:

Introduced in April:

Global Change Research and Data Management Act of 2003, H.R. 1578 Udall (D-CO), <http://thomas.loc.gov/cgi-bin/query/z?c108:H.R.1578>:

Clean Air Planning Act of 2003, S.843 Carper (D-DE), <http://thomas.loc.gov/cgi-bin/query/z?c108:S.843>:

Department of Energy Catalysis Research and Development Act, Bingaman (D-NM), <http://thomas.loc.gov/cgi-bin/query/z?c108:S.873>:

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