

# THE CARBON SEQUESTRATION NEWSLETTER

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

March 2004

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## Sequestration in the News

**Los Angeles Times, "Oil Project Goes Underground for Cleaner Air."** Reviews the Canadian oil field experiment at Weyburn. At the four year mark, oil production is up 50%, 5,000 tons of carbon dioxide are injected per day, and no leaks have been detected. "The carbon originated from under the ground. We're putting it back," said Gardiner Hill, manager of BP's environmental technology group. February 15, 2004, <http://www.latimes.com/news/nationworld/world/la-fg-gas15feb15,1,5614516.story?coll=la-headlines-world> (registration req'd) Similar articles found in the *Seattle Times*, [http://seattletimes.nwsourc.com/html/nationworld/2001861641\\_carbon19.html](http://seattletimes.nwsourc.com/html/nationworld/2001861641_carbon19.html), and the *Contra Costa Times*, <http://www.contracostatimes.com/ml/cctimes/news/8019022.htm>.

**Agence France Presse, "Carbon storage: When a pollutant can make a profit."** Describes a recently unveiled Dutch government and Gaz de France (GDF) plan in which CO<sub>2</sub> will be captured from a natural gas processing facility on the shore of the North Sea, transported 60 miles offshore, and injected into an ageing methane gas field (K12-B). Roughly ten thousand tonnes of CO<sub>2</sub> will be injected into the reservoir between April and September of 2004. If that goes well, storage will be scaled up in 2005, and could ultimately reached 480,000 tonnes of CO<sub>2</sub> a year. February 15, 2004, <http://www.afp.com/> (subscription req'd).

**Financial Times, "Clean coal strategy is within reach."** In a letter to the editor, Prof Jeffrey Sachs, Director of the Earth Institute at Columbia University, writes, "...whether we use these fuels to produce gasoline or to produce hydrogen as the energy carrier, we will need to introduce new carbon capture-and-disposal technologies to limit decisively the rise of atmospheric carbon." February 10. Mr. Sachs writes in response to James Page's dismissal of coal in place of Middle East oil (letters, December 29). <http://www.ft.com> (subscription req'd).

**University of Queensland Newsletter (Australia), "Smokestack emissions could go underground"** Paul Massarotto, the Principal Research Fellow at the University of Queensland's CO<sub>2</sub> program is studying carbon sequestration in unmineable coal beds in Australia. February 21, 2004 <http://www.uq.edu.au/news/index.phtml?article=5331> similar article in the *Townsville Bulletin*

**EnergyReview.net "Fossil Fuels are our Future: APPEA"** At the International Energy Agency's Zero Emissions Technologies (ZETS) Conference, held mid February, the Australian Petroleum Production Exploration Association executive director Barry Jones said that carbon capture and sequestration, "is not just a question for the private sector, as near zero emissions technologies deliver a legacy of public benefits that will continue generations into the future," February 24, 2004, <http://www.energyreview.net>

**Waste News, "Capturing carbon contains promise."** Carbon Sequestration is compatible with the existing energy infrastructure and needed, given the magnitude of GHG emissions reduction that will be required for atmospheric stabilization. "As sequestration technologies continue to take hold and ideas come to fruition, the longer-term reductions that we look for from sequestration could be enormous," said Scott M. Klara, technology manager for the Carbon Sequestration Program at the U.S. Department of Energy's National Energy Technology Laboratory. February 2, 2004, <http://www.wastenews.com> (subscription req'd)

**Regional Carbon Sequestration Partnerships.** Several web-pages are up for the NETL-sponsored effort to create a nationwide network of partnerships to determine suitable technologies, regulations, and infrastructure needs for carbon capture, storage and sequestration in geographically diverse regions. The Illinois Basin: <http://www.igs.uiuc.edu/mgsc/>; Southwest: <http://southwestcarbonpartnership.org/>; and Midwest: <http://projects.battelle.org/mrcsp/default.htm>. For more general information, see <http://www.netl.doe.gov/coalpower/sequestration/partnerships/>

## Announcements

**Clean Coal Power Initiative Solicitation.** Energy companies in the US are invited to bid for a share of \$280 million federal funds for 'barrier-breaking' clean coal technologies. The Secretary of Energy Spencer Abraham announced the second round of funding under the CCP initiative, calling in particular for progress toward performance targets in the areas of gasification, mercury control, and sequestration. Proposals due June 15, 2004. U.S. DOE, February 13, <http://www.netl.doe.gov/business/solicit/index.html>

**NETL Programmatic EIS Website Released.** On February 27, NETL added a new area to provide information about the ongoing programmatic Environmental Impact Statement (EIS). [www.netl.doe.gov/coalpower/sequestration](http://www.netl.doe.gov/coalpower/sequestration)

## Sequestration in the News, Cont'd

**California Energy Commission's Public Interest Energy Research Environmental Area (PIER-EA)** requests proposals for research projects through its Environmental Exploratory Grant Program (EEGP). This grant supports the early development of promising, new scientific concepts. Global climate change is one topic area in this solicitation. Applications due May 3, 2004. <http://www.energy.ca.gov/contracts/index.html#PIER>.

### Science

**Pentagon Briefing on Sudden Climate Change** “. . . Recent research suggests, however, that there is a possibility that this gradual global warming could lead to a relatively abrupt slowing of the ocean's thermohaline conveyor, which could lead to harsher winter weather conditions, sharply reduced soil moisture, and more intense winds in certain regions that currently provide a significant portion of the world's food production.” The report considers average temperature drops in some regions of 5-10 degrees F in a single decade. An Abrupt Climate Change Scenario and Its Impact on National Security, October, 2003, Peter Schwartz and Doug Randall. Full report: <http://www.ems.org/climate/pentagon-climate-change.pdf>. Summary articles can be found in *Fortune*, Feb. 27, <http://www.fortune.com/fortune/technology/articles/0,15114,582584,00.html>. the *NYT*, <http://query.nytimes.com/gst/abstract.html?res=F40D14F93E5C0C7B8EDDA80894DC404482> and the *UK Guardian*, <http://observer.guardian.co.uk/international/story/0,6903,1153513,00.html>.

**New Data on Atmospheric Concentrations of GHGs Available.** The U.S. Department of Energy's Carbon Dioxide Information Analysis Center (CDIAC) has released an updated database of concentrations of methane, nitrous oxide, several halogenated hydrocarbons, carbon monoxide, and hydrogen produced from its global ALE/GAGE/AGAGE monitoring network. <http://cdiac.ornl.gov/ndps/alegale.html>

**WRI Earthtrends Database.** Provides a useful search tool to access climate data. <http://earthtrends.wri.org/>

**Coral Reefs Study.** A report by the Pew Center on Global Climate Change, released at the American Association for the Advancement of Science meeting in Seattle, predicts that warming and acidifying ocean water will negatively affect coral reefs. “Global warming threatens coral reefs,” February 16, 2004 <http://www.nature.com/nsu/040216/040216-3.html>

### Technology

**Breakthrough Technology Claimed for Producing Hydrogen from Ethanol.** A new process, developed by Lanny Schmidt, a chemist at the University of Minnesota, uses rhodium and ceria as catalyst to convert ethanol to hydrogen. Using a simple fuel injector from an automobile engine Schmidt and his colleagues sprayed an ethanol-water mix into a warm chamber to vaporize it. When the vapor passed through a porous ceramic plug embedded with the rhodium and ceria catalysts - viola, hydrogen flowed out the other end. Schmidt's process is autothermal, meaning it supplies its own heat. Because of that, the equipment is only a hundredth the size of conventional steam reforming systems and requires far less energy. “One step closer to hydrogen economy?” *Christian Science Monitor*, February 19, <http://www.csmonitor.com/2004/0219/p15s01-stss.html>

**Fluor, Mitsui Babcock, Alstom Power and Imperial College London to Work Together on Study.** Fluor Corporation has been selected by the International Energy Agency Greenhouse Gas Research and Development Program to study the capture and recovery of CO<sub>2</sub> in natural gas combined-cycle and pulverized-coal fueled power generation plants. Fluor will be working with Mitsui Babcock, Alstom Power and Imperial College London. The study, due to be completed by April 2004, will investigate cost options, unresolved issues and visualize likely technology developments over the next two decades. Fluor developed proprietary ECONAMINE FG(SM) and ECONAMINE FG Plus(SM) technologies, which are used for amine scrubbing of fuel gases. <http://www.fluor.com> “Fluor Selected for Greenhouse Gas R&D Study,” *PR Newswire*, February 5, 2004, <http://www.prnewswire.com>

### Electron Stream Carbon Dioxide Reduction (ESCO<sub>2</sub>R).

Introduced briefly in last month's newsletter as a novel approach to CO<sub>2</sub> capture, an article in *Business Week* sets forth the opinions of some skeptics. “Trouble is, that [the ESCO<sub>2</sub>R process] would violate physical laws,” argues Hans-Joachim Ziock, a physicist and energy expert at Los Alamos National Laboratory. Breaking the chemical bonds that glue atoms together into molecules takes even more energy than was used to create them, he explains. Since the energy released by burning coal stems mainly from oxidizing carbon, reversing the process would require all that energy output, and then some. “I'm missing the magic here,” agrees Henry J. Cialone, senior vice-president for energy services at Battelle Memorial Institute, a think tank in Columbus, Ohio. Yet Holcomb has some hopeful supporters. “I'm confident there's no hoax here,” declares J. Alex Silver, head of energy consulting at Black & Veatch Corp., an Overland Park (Kan.) engineering firm. Holcomb hired Black & Veatch to test his prototype CO<sub>2</sub> converter in January. Says Silver: “We definitely were getting dissociation of CO<sub>2</sub> [into carbon and oxygen], and that by itself is very neat.” Still, he adds, “the big question is, how much energy was going into the converter?” “All fired up over clean coal,” Feb. 16, [http://www.businessweek.com/magazine/content/04\\_07/b3870116.htm](http://www.businessweek.com/magazine/content/04_07/b3870116.htm). Breakthrough purports answer to global warming,” <http://www.solaraccess.com/news/story?storyid=6001>

### Terrestrial

**Terrestrial Uptake.** The Free Air CO<sub>2</sub> Enrichment (FACE) experiment is designed to simulate the response of trees to elevated amounts of CO<sub>2</sub> in the atmosphere. Early results indicate a sustained 24% increase in plant and fine root production but no sustained growth in wood production. Also, argue scientists, the magnitude of the increased uptake is not enough to counterbalance anthropogenic GHG emissions. “Carbon dioxide fertilization is neither boon nor bust,” *Newsweek*, <http://www.newsweek.com/articles/view/503175/>, and “Duke open-air experiment results could deflate hopes that forests can alleviate global warming,” *EurekAlert*, [http://www.eurekalert.org/pub\\_releases/2004-02/du-doe020904.php](http://www.eurekalert.org/pub_releases/2004-02/du-doe020904.php)

**Soy Yields May Increase Under CO<sub>2</sub> Fertilization, Warming.** Scientists at Urbana-Champaign have tended experimental soybean plots near the university since 2001, exposing the plants to increased levels of ozone and CO<sub>2</sub>. Despite the negative effects of ozone, soy yields could increase 13% by 2050, all else remaining equal. “Climate change could boost cash crops,” *Nature*, February 17, <http://www.nature.com/nsu/040216/040216-8.html>

**Self-insurance for Terrestrial Carbon Sequestration Credits.** The one-to-one conversion of long-term or temporary CERs into allowances could be accomplished either through drawing on only some of the credits of a project (and the remainder as a self-insurance); or insuring the credit by other means. The inclusion of sinks is an impending issue within the EU linking Directive. Guest commentary by Bernhard Schlamadinger, Carbon Market Europe, Feb. 27, [http://www.pointcarbon.com/wimages/CME\\_27\\_February\\_2004.pdf](http://www.pointcarbon.com/wimages/CME_27_February_2004.pdf)

### Ocean

#### **Geological Carbon Sequestration: Critical Legal Issues.**

Reviews the legal issues concerning geological carbon sequestration in the offshore waters surrounding the United Kingdom. Different locations of the sea are subject to different prescriptions under international law. A key legal question is whether CO<sub>2</sub> is considered to be a "waste," and whether storing it is considered "dumping." It is likely that CO<sub>2</sub> sequestration will be defined as both, according to this paper. [Full document](#) (PDF, 55 pages, 675kB) Tyndall Centre Working Paper 45, Ray Purdy and Richard Macrory, January 2004

**Ice Sequestration.** Preliminary research by University of Manitoba researcher Tim Papakyriakou suggests that the ice-bound Arctic Ocean absorbs CO<sub>2</sub> faster than the North Atlantic ocean. His results, not yet published, show the ice drawing down carbon at "roughly 50 to 60 per cent of what you'd expect over a temperate wetland or marsh during its growing season." Bacteria and phytoplankton living inside the ice layer may be capturing the CO<sub>2</sub>. "Arctic research makes greenhouse-gas find," Edmonton Journal -Alberta, Canada, Feb 17, <http://www.canada.com/edmonton/edmontonjournal/story.asp?id=57EEA8DA-DE83-4100-8C57-1A6DE6728597>

**Ocean Fertilization: No Definitive News.** "Goal of ocean 'iron fertilization' said still unproved," EurekAlert, Feb 13, [http://www.eurekalert.org/pub\\_releases/2004-02/du-goo020904.php](http://www.eurekalert.org/pub_releases/2004-02/du-goo020904.php), and "Carbon dioxide fertilization - boon or bust?" Oak Ridger, [http://www.oakridger.com/stories/022004/new\\_20040220062.shtml](http://www.oakridger.com/stories/022004/new_20040220062.shtml)

**AAAS Meeting on Ocean and Carbon.** Sessions on CO<sub>2</sub> fertilization, a CO<sub>2</sub> enriched ocean, new technologies, and methane hydrates were headed by MBARI chemist Peter Brewer and several other MBARI scientists. "Cutting-edge oceanography helps scientists understand climate," AScribe – USA, Feb 15, <http://www.ascribe.org/cgi-bin/spew4th.pl?ascribeid=20040212.104707&time=15%2006%20PST&year=2004&public=1>

**Ocean Carbon Distribution.** Highlights the VERTIGO study project by Woods Hole Oceanographic Institution engineer Brian Guest. "Voyage to ocean's 'Twilight Zone,'" *Christian Science Monitor*, <http://www.csmonitor.com/2004/0212/p14s01-sten.html>

### Trading

**Outlook on 2004 CO<sub>2</sub> Trades.** Point Carbon estimates that the global transactions volume in the carbon market will be around 100 million tonnes CO<sub>2</sub>-equivalents in 2004, and sets the value of the carbon market to almost 400 million euros this year. "Carbon market worth €400 million in 2004," January issue of Carbon Market Analyst, February 9, <http://www.pointcarbon.com/article.php?articleID=3194&categoryID=147>

**CCX News: Big Trades in January, Dow New Member, Trust Negotiated.** The Chicago Climate Exchange saw 82,200 tonnes of CO<sub>2</sub> traded in its first full month. The price stayed just below one US dollar per tonne. More participants traded, and they exchanged larger lots. Dow Corning is a new member. CCX, February 2, <http://www.chicagoclimatex.com/news/>. Premier Minister of a Manitoba, Canada signed an agreement with CCX to develop a climate trust to work with groups to develop GHG emission reduction projects. "Manitoba and CCX to develop climate trust," *Winnipeg Sun*, Feb 4, <http://www.pointcarbon.com/article.php?articleID=3185&categoryID=147>.

**Alaska's Terrestrial Sequestration Potential.** Restoration of forests, wetlands and other habitat that offset CO<sub>2</sub> emissions by cars and factories could raise up to \$450 million of dollars for Alaska, according to Rep. Ethan Berkowitz, an Anchorage Democrat. "\$450 million carbon market potential for Alaska," *Juneau Empire*, Feb 3, [http://www.juneauempire.com/stories/020304/sta\\_forests.shtml](http://www.juneauempire.com/stories/020304/sta_forests.shtml). See also "Could Alaska trade forest restoration for money?," *Juneau Empire*, [http://www.juneauempire.com/stories/020304/sta\\_forests.shtml](http://www.juneauempire.com/stories/020304/sta_forests.shtml)

### Policy

#### **EIA Voluntary U.S. Greenhouse Gas Reductions in 2002.**

More than 228 U.S. companies and other entities voluntarily cut the equivalent of 265 million metric tons of CO<sub>2</sub> emissions in 2002, according to the DOE's Energy Information Administration (EIA). "Voluntary Reporting of Greenhouse Gases 2002," January 30th. [EIA press release](#), or go directly to either the summary report ([PDF 120 KB](#)) or the full report ([PDF 1.0 MB](#)).

**Silicon Valley Carbon Reduction Plans.** As many as 20 large Silicon Valley companies are in line to kick off a corporate carbon dioxide reduction campaign. "Companies joining forces to curb carbon dioxide," *San Jose Business Journal*, <http://sanjose.bizjournals.com/sanjose/stories/2004/01/26/story5.html>

**Industry Support for Mandatory CO<sub>2</sub> Caps.** Five electric utility companies (Austin Energy, Burlington Electric, Sacramento Municipal Power District (SMUD) Waverly Light and Power, and FPL Group, which owns Florida Power & Light and FPL Energy) pledged to support a mandatory cap on CO<sub>2</sub> and make other efficiency and renewable energy commitments. No companies use sequestration, although several view it as a potentially viable option in the future. "Five Utilities Call For CO<sub>2</sub> Emissions Cap," *The Energy Daily*, February 12, 2004. See also "First US power companies pledge a power switch," *Edie weekly summaries*, [http://www.edie.net/gf.cfm?L=left\\_frame.html&R=http://www.edie.net/news/Archive/8067.cfm](http://www.edie.net/gf.cfm?L=left_frame.html&R=http://www.edie.net/news/Archive/8067.cfm)

#### **AEP and Cinergy Agree to Disclose to Shareholders.**

American Electric Power Co. and Cinergy Corp. agreed to shareholders' requests that a committee of independent directors oversee company actions to prepare for potential federal and state laws to cut CO<sub>2</sub>. AEP will post its report on its website Sept. 2004, and Cinergy's will be in its 2003 annual report. "AEP, Cinergy in shareholder pact on emissions curbs," *Reuters*, Feb 19, <http://www.energycentral.com/centers/news/daily/article.cfm?aid=4648800> See also, "AEP, Cinergy to Detail Cuts In Carbon Dioxide," *Quicken*, [http://www.quicken.com/investments/news\\_center/story/?story=NewsStory/dowJones/20040219/ON200402190238000146.var&column=P0DFP](http://www.quicken.com/investments/news_center/story/?story=NewsStory/dowJones/20040219/ON200402190238000146.var&column=P0DFP)



**AEP Anticipates Change in U.S. Policy on CO<sub>2</sub>.** "We don't expect Kyoto timeframes to be enforced in the United States but we do expect international consensus on this issue (CO<sub>2</sub> emissions) will prevail in the United States," Susan Tomasky, chief financial officer at American Electric Power (AEP) told a conference. AEP is the largest burner of coal in the western hemisphere. "U.S. likely to limit carbon emissions – AEP," *Reuters*, Feb. 16, 2004, [http://www.forbes.com/home\\_europe/newswire/2004/02/16/rtr1262425.html](http://www.forbes.com/home_europe/newswire/2004/02/16/rtr1262425.html)

**EU Guidance for National Allocation Plans adopted.** The European Commission adopted its guidance for national allocation plans (NAPs) which will determine the emissions cap each installation faces under the EU emissions trading scheme. The UK published its draft allocation plan last month under the EU emissions trading scheme (ETS). [http://europa.eu.int/comm/environment/climat/emission\\_plans.htm](http://europa.eu.int/comm/environment/climat/emission_plans.htm)

**Revised Bush Administration CCSP Improved.** According to a National Academies panel, the revised strategic plan for climate change research has been improved and should be implemented as soon as possible. Commitments to fund many of the newly proposed activities are still lacking, and research should be shielded from political pressures. Implementing Climate and Global Change Research: A Review of the Final U.S. Climate Change Science Program Strategic Plan <http://www.nap.edu/catalog/10635.html>, see also "Bush climate plan somewhat improved," *New York Times*, February 19, <http://www.nytimes.com/2004/02/19/politics/19CLIM.html?ex=1077771600&en=3ddb0c0f9067aa73&ei=5062&partner=GOOGLE>

**Japan Reevaluating Reliance on Coal.** "Owing mostly to its low and stable prices, coal is ranked as the second essential energy after oil, accounting for roughly 20% of Japan's total primary energy source. Coal's preeminent position resulting from its reliability as well as efficiency is, however, becoming increasingly precarious because of concerns over a rapid increase in China's coal demand and an ever-rising need to reduce greenhouse gas emissions," said the Ministry of Energy, Trade and Industry (METI). "Japan to reposition on coal," Point Carbon, February 9, <http://www.pointcarbon.com/article.php?articleID=3210&categoryID=147>

**A European Commission report shows EU CO<sub>2</sub> transportation emissions have decreased 11 percent between 1995 and 2002.** The EU is aiming for a 35 percent drop by 2010. Road transport generates more than a fifth of all CO<sub>2</sub> emissions in the EU. "EU cars spew out less carbon dioxide-report," *Reuters*, February 12, 2004, <http://www.reuters.co.uk/newsArticle.jhtml?type=healthNews&storyID=4347826&section=news>

**Australia Supports Coal and Sequestration.** The Australian Federal Government backed plans sequester carbon emissions underground to make brown coal power generation in the Latrobe Valley more viable in the future. "Canberra backs plan to lock power for future," *The Age*, Feb. 9, <http://www.theage.com.au/articles/2004/02/08/1076175032044.html>

March 15-16, 2004, **Climate Change in New England and Eastern Canada: Impacts and Adaptation Responses**, Boston, Massachusetts. Sponsored by the Conference of New England Governors and Eastern Canadian Premiers, the meeting will focus on the environmental and economic impacts of climate variability on natural resources in the northeast. <http://www.necg.org>.

March 22-23, 2004, **IEA Bioenergy Task 38 (Greenhouse Gas Balances of Biomass and Bioenergy Systems)**, Rotorua, New Zealand. Organised by the NZ Ministry for the Environment, NZ Climate Change Office, Force Consulting and IEA Bioenergy Task 38. The conference will focus on terrestrial carbon sequestration and bioenergy projects in national and international greenhouse-gas markets and policies. The day after the conference will be a 1 day field tour. <http://www.joanneum.ac.at/iea-bioenergy-task38/>

March 22-24, 2004, **GreenTrading Summit™: Emissions, Renewables & Negawatts**, New York, US. Carbon emission reduction credits; Building the forward price curve for carbon; CO<sub>2</sub> and REC market developments on state level; White, green and black certificate trading; Interrelationship of environmental and energy efficiency markets; Importance of energy decisions on the competitiveness of business investments; Presenting the corporate case for carbon and greenhouse gas management; Carbon and greenhouse gas transparency for market development. <http://www.greentradingsummit.com/>

March 28-April 1, 2004, **ACS Spring meeting**, Anaheim, CA. A special sequestration symposium, "Carbon Dioxide Capture and Sequestration". Contact: Mercedes Maroto-Valer [mmm23@psu.edu](mailto:mmm23@psu.edu) or Dan Fauth [Daniel.Fauth@netl.doe.gov](mailto:Daniel.Fauth@netl.doe.gov). <http://oasys.acs.org>

April 13-15, 2004, **15th Annual Earth Technologies Forum**, Washington, DC. <http://www.earthforum.com>

April 18-21, 2004, **American Association of Petroleum Geologists meeting**, Dallas, TX. AAPG has asked for sessions on critical scientific results relevant to the subject of the potential for geological CO<sub>2</sub> sequestration to impact the fossil fuel economy. Contact Nicholas Woodward and Susan Hovorka, Co Chairs, [nick.woodward@science.doe.gov](mailto:nick.woodward@science.doe.gov) and [susan.hovorka@beg.utexas.edu](mailto:susan.hovorka@beg.utexas.edu), CO<sub>2</sub> Sequestration Sessions (DEG) <http://www.aapg.org/meetings/dallas04/index.html> Contact: AAPG Convention Department, P.O. Box 979, Tulsa, OK 74101-0979, USA. Tel: 1 800-364-2274 (USA and Canada) or +1 918-560-2679, [convenc@apag.org](mailto:convenc@apag.org)

April 18th - 22nd 2004, **29th International Technical Conference on Coal Utilization & Fuel Systems**, Clearwater, Florida, USA. Contact: Barbara A. Sakkestad, Vice President, Coal Technology Association, 601 Suffield Drive, Gaithersburg, MD 20878. [BarbaraSak@aol.com](mailto:BarbaraSak@aol.com) [www.coaltechnologies.com](http://www.coaltechnologies.com)

April 20-21, 2004, **Point Carbon: Carbon Market Insights 2004**, Amsterdam, the Netherlands. Contact: Mrs. Marte Nordseth, tel: +47 907 71 668, e-mail: [conference@pointcarbon.com](mailto:conference@pointcarbon.com), <http://www.pointcarbon.com>

## Events Cont'd

April 21st - 24th 2004, **2<sup>o</sup> Latin American Symposium About Carbon Sequestration**, Curitiba, Paraná, Brazil. Contact: [www.ambientebrasil.com.br](http://www.ambientebrasil.com.br)

April 25th - 30th 2004, **European Geosciences Union - 1st General Assembly**, Nice, France. Contact: EGU Office, Max-Planck-Str. 13, 37191 Katlenburg-Lindau, Germany. Tel: +49 5556 1440 Fax: +49 5556 4709 [egu@copernicus.org](mailto:egu@copernicus.org), <http://www.copernicus.org/EGU/ga/egu04/>

April 25-30 2004, **EGU – 1st General Assembly**, Nice/France. The BG 12 Regional greenhouse gas budget of the terrestrial biosphere session is addressed to researchers working on surface fluxes of direct and indirect greenhouse gases. Co-Sponsorship: CarboEurope. [http://www.copernicus.org/EGU/ga/egu04/abstract\\_submission.htm](http://www.copernicus.org/EGU/ga/egu04/abstract_submission.htm)

April 28 to 30, **CleanTech Venture Forum IV**, San Francisco, CA, <http://www.cleantechventure.com/index.cfm?pageSRC=Events>

May 2-6, 2004, **Third Annual Conference on Carbon Sequestration**, Alexandria, VA. For further information, please visit <http://www.carbonsq.com>

May 5-7, 2004, **GHG Registries, Climate Policy and the Bottom Line**, California Climate Action Registry, San Diego, CA. Topics include: The Future of U.S. Climate Policy; and GHG Registries in the U.S. and beyond. Breakout Sessions on: Industry GHG Accounting for the Electric Power, Oil & Gas, and Cement Industries Emissions, Trading and GHG Registries, Forest GHG Accounting. Hosted by CCAR, IETA and BP. Contact: Gwendy Donaker, California Climate Action Registry, tel.: +1(213)8916920, fax: +1(213) 6236716, e-mail: [gwendy@climateregistry.org](mailto:gwendy@climateregistry.org), <http://www.climateregistry.org/EVENTS/Conference>

May 10 -12, 2004, **The Ocean in a High CO<sub>2</sub> World: An International Science Symposium**, UNESCO, Paris, France. An open symposium to address biological and biogeochemical consequences of increasing atmospheric and oceanic CO<sub>2</sub> levels. Overviews ocean sequestration strategies. Papers from the symposium will be published in a special issue of the *Journal of Geophysical Research-Oceans*. <http://ioc.unesco.org/iocweb/co2panel/HighOceanCO2.htm> or contact Ed Urban ([scor@jhu.edu](mailto:scor@jhu.edu)) or Maria Hood ([m.hood@unesco.org](mailto:m.hood@unesco.org)).

May 10-14, 2004 **2nd World Conference and Technology Exhibition on Biomass for Energy, Industry and Climate Protection**, Rome, Italy, <http://www.conference-biomass.com/>  
May 11-14, **Energy Smart America**, Minneapolis, Minnesota. The U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy will host Energy Smart 2004: Tools and Solutions for States and Communities. Expert sessions on energy efficiency, renewable energy, clean fuel technologies. To register visit <http://www.energysmartamerica.org/>

May 11-14, **Energy Smart America**, Minneapolis, Minnesota. The U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy will host Energy Smart 2004: Tools and Solutions for States and Communities. Expert sessions on energy efficiency, renewable energy, clean fuel technologies. To register visit <http://www.energysmartamerica.org/>

May 12-14, 2004, **Critical Elements of International Climate Policy**, Hamburg Institute of International Economics, Germany. Covers ten years climate policy research at Hamburg Institute Baselines and additionality, validation and verification of CDM projects, LULUCF and the Kyoto Mechanisms, and the role of sinks. <http://www.hwwa.de/climate.htm>

June 7-8, 2004, **Climate protection as development opportunity**, the Hamburg Institute of International Economics, Hamburg, Germany. Focus on the Clean Development Mechanism to reach development targets. Email: [a-michaelowa@hwwa.de](mailto:a-michaelowa@hwwa.de) with expressions of interest. <http://www.hwwa.de/climate.htm>

September 5-9, 2004, **7th International Conference on Greenhouse Gas Control Technologies**, Vancouver BC, Canada. GHGT-7 is being organized by University of Regina, Natural Resources Canada, and the IEA GHG R&D Programme. [www.ghgt7.ca](http://www.ghgt7.ca). Contact: GHGT-7 Conference Secretariat, Ted Morris, Suite 150, 10 Research Drive, Regina, SK. S4S 7J7, Canada. Tel: +1 306 337 2290 Fax: +1 306 337 2301 [secretariat@ghgt7.ca](mailto:secretariat@ghgt7.ca)

September 13-17, 2004, **CALL FOR ABSTRACTS for International Pittsburgh Coal Conference**, Osaka Japan. Industrial Ecology topics include: life cycle studies of coal conversion plants; Industrial ecology of emission trading; and planning future energy plants. One-page abstracts are due on or before **March 1, 2004**. <http://www.engr.pitt.edu/pcc> Topics: <http://www.engr.pitt.edu/pcc/04AbstractTopics.htm>

November 2004, **Climate Change and Business**, Auckland, New Zealand. Seven partner organisations are putting together a conference on the business opportunities arising from climate change. For further information, see: <http://www.climateandbusiness.com/>

## Recent Publications

**U.S. Department of Energy's Energy Information Administration (EIA) Annual Energy Outlook 2004**. The report projects trends in energy consumption, energy intensity, mix of fuel sources, and carbon dioxide emissions through the year 2025. This year's report devotes several pages to a summary of state clean air and climate initiatives that are expected to affect the electricity generation sector. State initiatives discussed in detail include those in Connecticut, Massachusetts, Maine, New Hampshire, New Jersey, New York, North Carolina, and Oregon. The report also summarizes California's Low Emission Vehicle Program and Carbon Standard for Light-Duty Vehicles. <http://www.eia.doe.gov/oiaf/aeo/index.html>

**A supplement to the Climate Policy Journal**. Contains articles on absolute versus intensity-based emission caps, carbon trading systems, and others. *Climate policy* 3 (Sup. 2, 2003). <http://www.sciencedirect.com/science/journal/14693062>

## Recent Publications Cont'd

**UK Report Forecasts Energy Demand, CO<sub>2</sub> and SO<sub>2</sub> Emissions to 2015.** Cambridge Econometrics, the economic and industrial forecasting group, published its latest edition of UK Energy and the Environment which says the UK is set to make good progress towards a low carbon future, but the achievement of the 20% cut in carbon emissions by 2010 hinges crucially on the impact of the EU Emissions Trading Scheme (ETS) in reducing coal burnt in electricity generation. UK Energy and the Environment is published twice a year, in January and July. The report is available by subscription at <http://www.camecon.co.uk/whatsnew/releases/uke3041.htm>

**UK Parliamentary Briefings on Climate Change and Environmental Policy.** The UK Parliamentary Office of Science and Technology (POST) published two briefings on the environment, one entitled [Climate Change and Business](#) and another, [Environmental Policy and Innovation](#). The publication on climate change points out that the Government's Climate Change Programme (CCP) is aimed at reducing UK emissions of carbon dioxide by a fifth, against 1990 levels, by 2010. UK policy depends on international developments, most directly the EU Emissions Trading Scheme. Long-term success depends on convincing businesses, their financial stakeholders, and their customers, that there are gains to be made by moving towards low carbon options. Environment-Centre, February 13, <http://www.environment-centre.net/cgi-bin/croner/jsp/Editorial.do?cache=true&contentId=102805>

**The Public Perceptions of Carbon Capture and Storage.** Based on responses from two citizen panels held in late 2002 / early 2003 in the UK, the paper describes the changes in the perceptions of the risks associated with CCS when first presented with the idea and when more background information. (79 pages) Tyndall Centre Working Paper 44, [Simon Shackley](#), [Carly McLachlan](#) and [Clair Gough](#), January 2004, [http://www.tyndall.ac.uk/publications/working\\_papers/wp44.pdf](http://www.tyndall.ac.uk/publications/working_papers/wp44.pdf)

**"Geologic Sequestration of Carbon Dioxide: Sequestration of Emissions From Fossil-Fired Power Plants."** Co-authored with Melissa Chan, Scott M. Smouse and Scott Klara, this article was published in the Nov-Dec 2003 special issue of the journal *Asia Pacific Tech Monitor*. [http://www.techmonitor.net/techmon/03nov\\_dec/tm/pdf/03nov\\_dec\\_geologic.pdf](http://www.techmonitor.net/techmon/03nov_dec/tm/pdf/03nov_dec_geologic.pdf)

## Legislative Activity

**Pennsylvania State May Adopt Renewable and Waste Coal Portfolio.** With the support of Governor Ed Rendell and some influential Republican lawmakers, environmental advocates are pushing a bill that would require that 10 percent of electricity used in Pennsylvania to be renewable. At issue is whether to include generation from waste coal, possibly with some limitations. "Push for clean energy could include Waste Coal," *Associated Press*, February 11, [APwastecoal](#)

**Summary Impacts of Modeled Provisions of the 2003 Conference Energy Bill,** Energy Information Administration, Feb 2004, [http://www.eia.doe.gov/oiaf/servicerpt/pceb/pdf/sroiaf\(2004\)02.pdf](http://www.eia.doe.gov/oiaf/servicerpt/pceb/pdf/sroiaf(2004)02.pdf)

## Legislative Activity

**Analysis of Five Selected Tax Provisions of the Conference Energy Bill of 2003,** Energy Information Administration, Feb 2004, [http://www.eia.doe.gov/oiaf/servicerpt/ceb/pdf/sroiaf\(2004\)01.pdf](http://www.eia.doe.gov/oiaf/servicerpt/ceb/pdf/sroiaf(2004)01.pdf)

## Erratum

**Correction to January newsletter (Science section):** The meeting described in "Scientists mull out-of-the-box ideas for combating global climate change" took place at Isaac Newton Institute, Cambridge, England -- not MIT. MIT and the University of Cambridge (UK) have an official institute to collaborate called the Cambridge-MIT Institute, who sponsored the meeting. "Scientists use creativity to fight global warming," *The Boston Globe*, January 20, 2004, see also "Thought experiment on macro engineering to combat climate change," *Environmental Data Interactive*, UK <http://www.edie.net/news/Archive/7912.cfm>

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](mailto: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. Contact: Scott Klara, [klara@netl.doe.gov](mailto:klara@netl.doe.gov).