

# Conservation Committee Report

Volume 13 Issue 9

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### The Conservation Pledge

I give my pledge as an American to save and faithfully defend from waste, the natural resources of my country; the soil, the water, the air, the minerals, the plant life and the wildlife.

This is my Pledge!

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## Pennsylvania DEP Suspends Enforcement of Summertime Gasoline Requirements for Pittsburgh Area

### Action Will Prevent Supply Shortages

Because extensive flooding has interrupted gasoline pipeline delivery of seasonal fuel to the western part of Pennsylvania, Governor Corbett acted quickly on Friday to request from the U.S. Environmental Protection Agency (EPA) a temporary waiver of the low RVP (Reid Vapor Pressure) gasoline requirement in the seven-county Pittsburgh-Beaver Valley region.

DEP Secretary Mike Krancer sent the letter on behalf of the Governor electronically from the PA Emergency Management Agency's Emergency Operations Center on Friday, where the Governor had assembled his Cabinet members upon his call of Level 1 emergency operations.

DEP received official word from EPA on Saturday night that it had granted the waiver. Therefore, effective immediately, DEP suspends enforcement of state requirements for lower gasoline volatil-

ity in Allegheny, Armstrong, Beaver, Butler, Fayette, Washington and Westmoreland counties because of imminent supply shortages due to disruption of the Buckeye Pipeline. The suspension will extend for the remainder of the compliance period, until Sept. 15.

Between June 1 and Sept. 15 each year, DEP requires gasoline retailers to sell a cleaner, less evaporable gasoline to reduce summertime level ozone

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## New Technologies that Enhance Environmental Protection

**New Technologies that Enhance Environmental Protection, Increase Domestic Production, Result from DOE-Supported Consortium**

**Cost-Cutting Technologies Developed Through SWC Maximize Oil and Natural Gas Recovery, En-**

**hance Energy Security**

New technologies that help small,

(continued on page 3)

## Pennsylvania DEP Suspends Enforcement of Summertime Gasoline Requirements for Pittsburgh Area

pollution. The gasoline must meet a volatility limit of 7.8 pounds per square inch Reid Vapor Pressure (RVP).

“Enabling the sale of conventional gasoline in southwestern Pennsylvania will ensure residents and business have fuel, and it will have no negative effect on the environment,” Krancer said.

The shortages and disruption of the RVP 7.8 gasoline supply are due to a severe flood event in the

South-central region of the state, which has flooded the Buckeye pumping station in Swatara Township, Dauphin County. This situation was compounded by disruptions from the Buckeye/Laurel pipeline and some eastern Pennsylvania/New Jersey refinery outages from Hurricane Irene in late August and early September. The conditions have resulted in delays for the delivery of summertime gasoline to various Pennsylvania terminals in southwestern Pennsyl-

vania. DEP’s investigations indicate that some terminals may be out of fuel complying with state rules by Sunday, and that consumer demand may not be met with existing supplies of RVP 7.8 gasoline. However, supplies of conventional gasoline are available for immediate distribution to the region.

For more information, visit [www.depweb.state.pa.us](http://www.depweb.state.pa.us).

Source: PA DEP



# New Technologies that Enhance Environmental Protection (continued)

independent oil and natural gas operators contribute to domestic energy production while improving environmental protection have resulted from U.S. Department of Energy (DOE) support of the Stripper Well Consortium (SWC).

"Stripper wells" are wells that produce less than 10 barrels of oil or 60,000 standard cubic feet of natural gas per day. According to the Interstate Oil and Gas

Compact Commission, more than 375,000 U.S. stripper oil wells account for nearly 720,000 barrels of oil per day, or about 20 percent of the U.S. production. More than 322,000 stripper natural gas wells produce over 2 trillion standard cubic feet of natural gas annually, or 19 percent of the total U.S. natural gas production.

By improving the economics of oil and natural gas production

from these marginal wells, the nearly 100 technology-driven projects funded since the SWC was founded in 2000 have helped maximize the recovery of domestic hydrocarbon resources, minimize environmental impacts, and strengthen the nation's energy security. In addition, every dollar of stripper oil and natural gas production generates roughly one dollar of economic activity, and nearly 10

jobs are dependent upon every one million dollars of stripper well oil and natural gas produced.

The Consortium is mainly composed of small, domestic oil and natural gas producers, as well as service and supply companies, trade associations, industry consultants, technology entrepreneurs, and academia. Its goal is

to keep stripper wells productive in an environmentally sustainable way.

Many SWC projects have resulted in commercialized technologies over the years and have been previously highlighted by DOE. Additional technologies, developed over the past couple of years, are now moving toward commercialization and are ex-

pected to positively impact the oil and natural gas industry, including:

- **Clean Tech Innovations LLC** (Bartlesville, Okla.) has developed an environmentally friendly soil amendment to remediate oilfield brine-contaminated soil. This rapid, simple, economic, and dependable remedia-

tion technology uses a proprietary component along with a highly soluble calcium source and fertilizer. The process involves tilling the soil; adding the amendment component, calcium source, and fertilizer; re-tilling; and watering. Grass grows in treated

soil in 2–6 weeks, instead of years. The product can be applied by the customer, is lower cost than currently available technologies, and has been successfully demonstrated at multiple sites across the United States.

- **Systems of Merritt Inc.** (Upland, Ind.) has devel-

oped an iPhone app called Pumper's Friend for collecting digital data from oil and natural gas fields. Using a smartphone, the app allows the pumper/well tender to quickly gather and transmit field (continued on page 4)

## New Technologies that Enhance Environmental Protection (continued)

data more accurately and to review well performance at the well site. This capability leads to more efficient operation of the well and increased production.

- **OsComp Systems** (Cambridge, Mass.) has developed a prototype positive displacement, near-isotherm rotary compressor to reduce the cost of natural gas compression at stripper wells.

The technology lowers capital costs, is capable of a 42:1 compression ratio, has both wet gas and multiphase compression capability, has high energy efficiency (which results in reduced fuel gas use), and dramatically reduces the footprint of compression operations. In addition to its use for stripper wells, the compression technology has applications to small-

scale liquid natural gas, enhanced oil recovery, mobile compression, sour aggressive gas, and for the compressed natural gas refueling industry. OsComp Systems will conduct field trials of the compressor in 2012.

The Stripper Well Consortium is managed and administered by The Pennsylvania State University. Base funding and technical guidance to the consortium are

provided by DOE's National Energy Technology Laboratory and the New York State Energy Research and Development Authority.

Read about additional tools developed with DOE/SWC support that are commercially available:

- Smith Lift Hydraulic Diaphragm Electric Submersible Pumps

- Multi-Drop Downhole Pressure Gauge
- GOAL PetroPump
- VortexTools

Source: U.S. Department of Energy

# CO2 Injection in Kansas Oilfield Could Greatly Increase Production

## CO2 Injection in Kansas Oilfield Could Greatly Increase Production, Permanently Store Carbon Dioxide, DOE Study Says

## Near-Miscible Flooding in Arbuckle Formation Would Help Small Producers Tap Additional Domestic Resources

The feasibility of using carbon dioxide (CO2) injection for recovering between 250 million

and 500 million additional barrels of oil from Kansas oilfields has been established in a study funded by the U.S. Department of Energy (DOE).

The University of Kansas Center for Research studied the possibility of near-miscible CO2 flooding for extending the life of mature oilfields in the Arbuckle Formation while simultaneously providing permanent geologic

storage of carbon dioxide, a major greenhouse gas.

Miscibility refers to the pressure at which the CO2 and oil are completely soluble in one another or form a single phase. Below the minimum miscibility pressure (MMP) the injected CO2 mixes with and swells the oil to reduce its viscosity, increasing its ability to flow through the reservoir more easily to the production well.

The project was administered through the Research Partnership to Secure Energy for America to address the technology challenges of small producers as part of the Ultra-Deepwater and Unconventional Natural Gas and Other Petroleum Resources Program (Energy Policy Act, 2005). The program is managed by the Office of Fossil Energy's Na-

tional Energy Technology Laboratory.

In the laboratory, researchers subjected core samples from the Arbuckle Formation to simulate CO2 flooding. The studies showed that more than 50 percent of the residual oil remaining after water-flooding could be recovered from Berea Sand-

stone, Baker dolomite, and Arbuckle dolomite cores at pressures below the MMP.

The investigators also conducted simulation studies which indicated that the ultimate oil recovery is highly dependent on the degree of reservoir heterogeneity. Maximum recovery efficiency can be achieved by

proper design and implementation of CO2 injection, with optimization of injection pressure, injection rates, and the well pattern.

The project is now moving into a second phase of research, in which researchers will conduct a variety of tests to improve char-

acterization of Arbuckle reservoirs. The testing will determine the nature of the flow paths and average properties in the reservoir, assess the effect of geology on process performance, calibrate a reservoir simulation model, and identify operational issues and concerns for future applications of near-miscible

CO2 flooding. Future work, if funded, would include field demonstration of the methodology.

The Arbuckle Formation has produced 36 percent (2.2 billion barrels) of the 6.1 billion barrels of total Kansas oil produced over the past 100 years. Oil production peaked in the 1950s, tapering off

## CO2 Injection in Kansas Oilfield Could Greatly Increase Production (continued)

to the point where today, 90 percent of the wells operated by more than 100 small producers pump less than five barrels per day. The Arbuckle was chosen for the DOE-sponsored project because it represents a significant resource for improved oil recovery even though miscibility with CO2 is not achievable at the operating pressures in most Arbuckle reservoirs.

Following primary oil recovery (in which oil is naturally driven from a reservoir) and secondary recovery (in which pressure is applied to force the oil from the reservoir, usually by water flooding), as much as two thirds of the original oil in place typically remains stranded in a reservoir. Additional oil can be recovered using improved oil recovery techniques that increase the mobility of the crude oil. This enhanced oil recovery

(EOR) not only adds to U.S. domestic energy supplies, but also provides a means of safe, secure long-term storage of CO2, and is a key component of carbon capture, storage and utilization research.

Near-miscible CO2 flooding may be applicable to thousands of mature oilfields in Kansas and prevent them from being abandoned prematurely. According to the Kansas Geologic Survey,

more than 6,400 highly compartmentalized reservoirs exist in Kansas, though about a third of these are small fields with an average of five producing wells or less.

Source: U.S. DOE

## Secretary Chu Announces \$14 Million for Six New Projects to Advance IGCC Technology

### Projects Will Enhance Efficiency, Environmental Sustainability and Reliability of IGCC Power Plants

U.S. Department of Energy Secretary Steven Chu announced today the selection of six projects aimed at developing technologies to lower the cost of producing electricity in integrated gasification combined cycle (IGCC) power plants using carbon capture, while maintaining

the highest environmental standards. Supported with up to \$14 million in total funding, the selected projects will improve the economics of IGCC plants and promote the use of the Nation's abundant coal resources to produce clean, secure, and affordable energy.

The successful development of advanced technologies and innovative concepts that reduce emissions of carbon dioxide into

the atmosphere is a key objective of the Obama Administration's effort to help mitigate the effects of climate change. Today's announcement is a direct investment in IGCC-related infrastructure among electric power and industrial facilities, academic institutions, and other organizations operating across the United States.

"Today's announcement represents a commitment to working

with industry partners to develop one of the most promising technologies for energy plants of the future. These new technologies will not only help reduce carbon pollution, they will keep America competitive, create the high-tech jobs of the future and drive down electricity costs for consumers," said Secretary Steven Chu.

Compared to traditional power plants, IGCC power plants offer many advantages, including increased power plant efficiency. Higher efficiencies mean that less fuel is used to generate power; resulting in better economics, which can mean lower costs to consumers and the formation of fewer harmful pollutants. For example, a 60%-

efficient gasification power plant can cut the formation of carbon dioxide by 40% compared to a typical coal combustion plant.

The six projects will promote the commercialization of IGCC with carbon capture by advancing technologies to make the process more economical. The projects support the Department's goal of using gasification to provide

power from coal with 90 percent carbon capture, utilization, and storage at minimal increase in the cost of electricity. DOE is developing advanced technologies to ensure that we can continue to rely on the nation's most abundant energy resource in a clean and affordable way that

strengthens the economy and protects the environment.

The projects, which will be managed by DOE's National Energy Technology Laboratory, are described below:

- **Electric Power Research Institute, Inc.** (Palo Alto, Calif.)—

Slurries of liquid carbon dioxide (CO<sub>2</sub>) and low-rank coal can potentially lower the cost and increase the efficiency of IGCC power plants with carbon capture. The Electric Power Research Institute will confirm the potential advantages of these slurries by conducting plant-

# \$14 Million for Six New Projects to Advance IGCC Technology (continued)

wide technical and economic simulations, developing a preliminary design and cost estimate of a slurry preparation and mixing system, and performing laboratory tests for increasing the knowledge and understanding of maximum solids loading capability for three coals. EPRI will team with Dooher Institute of Physics and Energy (Garden City, N.Y.),

Worley Parsons Group, Inc. (Houston, Texas), Columbia University (New York, N.Y.), and ATS Rheosystems/REOLOGICA (Bordentown, N.J.). (DOE share: \$817,316; recipient share: \$204,329; duration: 12 months)

- **TDA Research, Inc.** (Wheat Ridge, Colo.)—Teaming with the University of California at

Irvine, Southern Company (Birmingham, Ala.), and ConocoPhillips (Houston, Texas), TDA Research will demonstrate the technical and economic viability of a new IGCC power plant designed to efficiently process low-rank coals. The plant uses an integrated CO<sub>2</sub> scrubber/water gas shift (WGS) catalyst to capture more than 90 percent

of the CO<sub>2</sub> emissions, while increasing the cost of electricity by less than 10 percent compared to a plant with no carbon capture. The team will optimize the sorbent/catalyst and process design, and assess the efficacy of the integrated WGS catalyst/CO<sub>2</sub> capture system, first in bench-scale experiments and then in a

slipstream field demonstration using actual coal-derived synthesis gas. The results will feed into a techno-economic analysis to estimate the impact of the WGS catalyst/CO<sub>2</sub> capture system on the thermal efficiency of the plant and cost of electricity. (DOE share: \$500,000; recipient

- share: \$125,000; duration: 12 months)
- **General Electric Company** (Houston, Texas)—The use of the nation's large reserves of low-cost, low-rank coals in IGCC systems is currently limited by the capabilities of available coal feed systems. General Electric and partner

Eastman Chemical Company (Kingsport, Tenn.) will evaluate and demonstrate the benefits of novel dry-feed technologies to effectively, reliably, and economically feed low-rank coal into commercial IGCC systems. Investigators will complete comparative

techno-economic studies of two IGCC power plant cases, one without and one with advanced dry feed technologies. The study will focus on IGCC systems with 90 percent carbon capture, but the dry feed system will be applicable to all IGCC power generating plants

- and other industries requiring pressurized syngas. (DOE share: \$695,194; recipient share: \$173,798; duration: 12 months)
- **Air Products and Chemicals, Inc.** (Allentown, Pa.)—Downstream processing of syngas for CO<sub>2</sub> capture requires separation of the crude stream into

## \$14 Million for Six New Projects to Advance IGCC Technology (continued)

the desired products (hydrogen and carbon monoxide), a sulfur stream (primarily hydrogen sulfide), and sequestration-ready CO<sub>2</sub>. Air Products has developed a three-step process to accomplish this separation at lower cost and greater efficiency than currently available technologies. Working with the Energy and Environmental Research Center at the Uni-

versity of North Dakota, Air Products and Chemicals will extensively test the process and use the results to generate a high-level pilot process design and to prepare a techno-economic assessment to evaluate the applicability of the technology to plants using low-rank coals. (DOE share: \$799,944; recipient share: \$199,986; duration: 12 months)

- **Reaction Engineering International (REI)** (Salt Lake City, Utah)—In an IGCC plant, syngas coolers—heat exchangers located between the coal gasifier and the combustion turbine—offer high efficiency, but their reliability is generally lower than other process equipment in the gasification island. Downtime events associated with the syngas cooler are typically a

result of ash deposits. REI, along with researchers from the University of Utah, will evaluate ash deposition and plugging in industrially relevant syngas cooler designs and evaluate methods to mitigate fouling and plugging. Improving the performance of the syngas cooler through reduced plugging and foul-

ing will improve the reliability, availability and maintainability of IGCC plants. (DOE share: \$702,186; recipient share: \$175,865; duration: 24 months)

- **General Electric Company** (Houston, Texas)—General Electric and partner Eastman Chemical Company, Kingsport,

Tenn., will work on the following four tasks, which were selected based on their broad applicability to the IGCC industry to better benefit the public: integrated operations philosophy, modularization of gasification/IGCC plant, active fouling removal, and continuous slag handling. (DOE share: \$7,685,969;

recipient share: \$1,921,492; duration: 36 months)

Source: U.S. Department of Energy

# FOURTH HUMAN CASE OF WEST NILE VIRUS IN PENNSYLVANIA CONFIRMED

**THIRTY-TWO MOSQUITO SAMPLES, TWO AVIAN SPECIMENS AND ONE VETERINARY SPECIMEN TEST POSITIVE**

Human Positives Reported

## Human Positives Reported

County	Gender	Date Re-	Status
Allegheny	Male	9/16/2011	
Lackawanna	Male	9/12/2011	
Bucks	Female	9/6/2011	
Lebanon	Female	8/31/2011	

State DEP and county mosquito control professionals have been using Bti, a naturally occurring bacteria, to kill mosquito larvae for years. This material is now becoming widely available for you to buy and use yourself at home.

Bti can be purchased in small, donut-shaped form, often called

"mosquito dunks", which are useful in small areas of standing water, such as a birdbath or small puddle of water that may gather in a low spot on your property. A granular form of Bti is available, and effective for larger areas, such as backyard ponds.

Bti can be purchased in many lawn and garden, outdoor supply, and home improvement

stores. The great thing about this bacteria is that it kills only mosquito and black fly larvae. It is not harmful to people, pets, aquatic life (such as fish) or plants.

*The best way to control mosquitoes is still to get rid of standing water on your property. And, make sure you follow all label instructions carefully if you use Bti at home.*

Source: PA DEP