Harvesting Biofuels Realism Amid a Crop of Grim News

In numerous agricultural communities around the United States, the promise of a biofuels boom has turned into a bust.

Despite federal mandates for increasing the use of biodiesel and ethanol, and an investment community formerly eager to cash in on the expected demand, plants are not going into operation as expected. New plants are either shutting down or stalling in the construction phase before the first shovel of dirt is turned.

The sharp slowdown in adding production capacity also is raising questions about the federal government’s ability to increase the concentrations of either ethanol or biodiesel within the fuel mix. For instance, federal agencies have tested tailpipe emissions from standard vehicles to see if higher concentrations of renewable fuels will result in emissions comparable to 10 percent ethanol (E10) and other impacts on both the automotive and non-road engine markets. They have also begun planning ways to significantly ramp up biofuels usage to meet the ambitious clean-fuel mandates included in energy legislation during recent years.

A combination of over-optimism, rising commodity prices, regulatory obstacles and the advent of the global recession stymied the growth of biofuels infrastructure.

Take, for example, Lilbourn, a small town in southeastern Missouri. An Associated Press news article reported that a brand-new biodiesel plant there produced only 94,000 gallons (355,724 liters) in a two-week period before lack of funding halted operations.

The Missouri communities of Nevada and Rock Port share the Lilbourn predicament, as do towns scattered across the west, southwest and great plains (Greybull, WY, Clovis, NM, Belle Fourche, SD and Pratt, KS). Communities in the nation’s midsection — Hartsburg, IL, Lamoni, IA, and Greysville, WI are part of the same trend. Local officials and farmers that had expected an economic boost from new, thriving biofuel plants or facilities face a set of very different, harsh realities.

With the banking industry in turmoil, the ability for young companies to access millions of dollars of needed capital simply vanished. The impact has rippled through many communities that were betting on the growth of renewable fuels.

VeraSun Energy, a South Dakota-based ethanol producer, filed for bankruptcy protection in October. An Iowa ethanol company this fall scrapped plans for a 110 million gallon (416,273,000 liter) ethanol plant in Pierre, the state capital.

"The market just exploded and got so crowded," observed the president of a Missouri ethanol startup that had to abandon plans for a plant near the Kansas border. "We had been working on it for almost three years, and then, dozens of people ‘popped up’ from everywhere, and everyone wanted a plant. Things were just too good for a time."

Investment fever began to spike during 2005 as biofuel profits spiraled after hurricanes Katrina and Rita interrupted gasoline supplies and energy prices jumped. Over the last three years, more and more funding was poured into alternative fuels. One economic study reported recently at the Platts Annual Refined Products Storage & Transportation Conference showed that if all vehicles used E10 by the year 2012, the U.S. would consume 15 billion gallons (56.8 billion liters). Some ethanol industry players have been pushing for E15 or E20 blends.

The U.S. EPA is considering ways to boost the currently allowable E10 concentration, because the nation will soon reach a point when the ethanol-blending volume required under the Renewable Fuels Standard exceeds industry capacity.

When that threshold is reached, which is expected to occur between 2010 and 2013, the EPA will be unable to meet annual volume mandates. The scenario could be averted if E15 or E20 blends are permitted for use in conventionally fueled vehicles in the near term, according to the Argus newsletter of the North Carolina Petroleum & Convenience Marketers Association.

However, ethanol blends above E10 may void automobile manufacturers’ warranties. Questions also have been raised about the readiness of the petroleum storage infrastructure and dispensing equipment. For example, the California State Water Resources Control Board (CWRBC) does not permit biodiesel or E85 storage because many types of fuel handling and storage
equipment have not been tested and listed by nationally recognized testing laboratories. In addition, higher concentrations of ethanol may create performance issues in equipment such as lawn mowers, snowmobiles and small generators.

While regulators and political leaders debate the anticipated impacts, financial pressures have continued to influence rural markets that were counting on a biofuels bonanza.

Growing demand for corn and soybeans within two years of the Gulf Coast disasters led to higher commodity prices and farmland speculation. By 2007, profit margins were dwindling and some plants struggled to maintain operating cash reserves. A doubling of soybean prices halted operations at the new Lilbourn, MO plant as it was producing its first batch of biodiesel. Owners of the plant subsequently tried to sell the facility for $6.5 million but found no takers. An auction is the next step.

Despite these many factors, the outlook is not completely dire. As energy and commodity prices have begun dropping, construction at some stalled biofuels plants has resumed. “I think the economics of the ethanol industry became a lot more realistic,” said the president of a Missouri ethanol producer that opened earlier this year northeast of Kansas City.

ConocoPhillips Steps Away from Retail by Selling 600 Locations

ConocoPhillips continued a late-summer advance in the trend of major U.S. oil companies that are moving out of the service station and convenience-store business in the United States.

ConocoPhillips sold its remaining portfolio of 600 gasoline stations to PetroSun Fuel of Seattle. Most of the stations were on the West Coast and flying the Conoco, Phillips 66 and Union 76 flags, according to the Los Angeles Times article.

PetroSun officials indicated that the purchase would enable them to redefine traditional American convenience store offerings by focusing on fresh, high-quality foods sold in a clean, tasteful environment. PetroSun’s chief executive officer speculated, “We might have a product mix that you might find in a Whole Foods, not a 7-Eleven.”

The deal expanded PetroSun’s footprint of stations to 720. The former ConocoPhillips stations will be owned by a newly formed PetroSun affiliate called Pacific Convenience & Fuel.

Houston-based ConocoPhillips and other major oil companies have been selling retail locations in recent years to concentrate on more profitable exploration, production and refining operations.

In June, ExxonMobil unveiled plans to sell 820 company-owned-and-operated retail stations across the country. Similarly, the company was in the midst of selling another 1,400 dealer-operated outlets that ExxonMobil owned. In November 2007, officials with Shell Oil Products US said the company would sell about 250 retail sites and supply agreements in southern California to Tesoro Corp.

A petroleum industry consultant questioned whether dealers who run many of the ConocoPhillips stations acquired by PetroSun will acquiesce to the deal. Laws in the states of California and Washington, where many of the stations are located, provide a dealer the right of first refusal to buy a station when it is put up for sale.


U.S. Nuclear Industry Re-energized After Dim 30 Years

The New York Times reports that concerns about global warming are lifting the fortunes of the nuclear energy industry in the U.S.

It has been more than three decades since the last order for a new nuclear reactor in America. However today, 21 companies are pursuing construction plans for 34 new power plants throughout the country, from New York to Texas. As those companies seek permission to proceed, new factories are opening in Indiana and Louisiana that will focus on fabrication of reactor parts.

The trend mirrors activity in Europe where the potential long-term impact of global warming appears to be overtaking concerns about the risks of nuclear accidents.

In October, the world’s largest builder of nuclear reactors, the French firm Areva, and U.S.-based Northrop Grumman announced an investment of more than $360 million in a Newport News, VA shipyard to build major components for seven proposed U.S. reactors. Elsewhere, preparations have begun at a site in Georgia to install reactors, and millions of residents in Florida have begun to pay several extra dollars on their monthly electric bills to fund four new reactors.

No one knows how many of the proposed plants will actually open or what the true cost will be. Another wild card is turmoil in credit markets, which could curtail capital-intensive investments. Despite the challenges, one University of Virginia professor has said, “the climate for introducing new plants is probably the best it’s been since the industry started canceling plants 30 years ago.”

Nuclear-industry growth in the U.S. was hindered by national energy policy issues following the 1973 Arab oil embargo. Those issues were stymied further by subsequent concerns about power plant safety after an accident in 1979 at the Three Mile Island, PA reactor and the Chernobyl explosion in Ukraine in 1986. The industry also faced serious political opposition in Europe.

Despite the lack of new-reactor construction, utilities in the United States have largely continued to use more than 100 reactors to produce almost 20 percent of the nation’s electric power.

In addition, support for nuclear energy appears to be growing in the U.S. Congress, based on $18.5 billion in loan guarantees and other subsidies that were included in a 2005 federal energy law.


Fireguard® Tanks Meet New California Vapor Recovery Standing Loss Control Standard

The STI/SPFA-licensed Fireguard® Tank has passed the Standing Loss Control portion of the new California Air Resources Board (CARB) enhanced vapor recovery (EVR) certification requirement.

This means Fireguard aboveground storage tanks (ASTs) will comply with new EVR mandates that the state agency can enforce as of April 1, 2009.

The Standing Loss Control testing procedure is designed to demonstrate that a tank system reduces evaporative emissions...
from an AST by 90 percent or more as compared to a single-wall tank with no controls.

Reducing emissions is important to achieving better air quality. CARB regulates the sale, installation and use of vapor-recovery equipment at gasoline-dispensing facilities through a statewide certification program.

For more information, contact STI/SPFA Project Engineer, Dana Schmidt at 847-438-8265, ext. 246, or fax 847-438-8766.

### Pipeline Transportation

As reported in the Houston Chronicle, pipeline operator Kinder Morgan Energy Partners reported it has made progress in laying a foundation for distribution of renewable fuels in the United States.

On December 2, Kinder Morgan started operations for a new ethanol pipeline in central Florida. The launch followed the completion of their 18-month test in Florida that safely moved ethanol between Orlando and Tampa through an existing gasoline pipeline. The company is conducting similar tests with biodiesel fuel blends.

The early-stage tests could over a period of years enable the U.S. biofuels industry to become more efficient in transporting fuels, rather than continuing to rely on barges, rail cars and trucks.

Pipeline companies could require huge investments on infrastructure improvements if leaders decide to pursue large-scale distribution of ethanol and biodiesel. The Kinder Morgan test required more than $10 million of upgrades.

Operators have been concerned about ethanol in pipelines because it can absorb debris, rust and water, damage components and harm petroleum fuels that share the lines. Similarly, engineers have expressed hesitation about biodiesel because of inconsistent quality and the possibility that residues might damage jet fuel if it follows the biofuel through a pipeline.

The Florida pipeline was upgraded by replacing a variety of parts, including seals, gaskets and other components. Kinder Morgan scoured the interior with brushes and chemicals before advancing a 5,000 barrel batch of ethanol through the pipeline with good results.

The Renewable Fuels Association said Kinder Morgan has shown that, “any technical challenges that may exist with the transport of ethanol through pipelines can be overcome.”

The pipeline company also is testing biodiesel transportation in its Plantation pipeline from Collins, MS to Spartanburg, S. At the same time, it is preparing for tests in Oregon.

http://www.247wallst.com/2008/12/kinder-morgan-s.html

### Wisconsin Regulators Shed Light on Requirements for Video Inspection of UST Linings

A memo from the Wisconsin Department of Commerce, Storage Regulation Section reports that managers of lined underground storage tanks (USTs) in Wisconsin face a variety of requirements if they specify video inspection as part of their maintenance routine.

“The federal requirement for UST lining assessment is in 40 CFR 280.21,” the Wisconsin memo said. “The 40 CFR language was written based upon lining assessment via internal entry and before the advent of camera inspections. The language in the current [Wisconsin regulation] Comm 10.52(2) was written in 1990 and mirrors the federal rule language. Upon the development of a video camera inspection standard, Wisconsin began accepting camera inspections as meeting the 40 CFR 280 / Comm 10 lining inspection requirement.”

The memo cited three acceptable options for internal lining inspections:

1. Video cameras in accordance with Ken Wilcox Associates (KWA) Recommended Practices;
2. Ultrasound tester; and
3. Another method acceptable to the department such as an internal inspection via entry that follows American Petroleum Institute Standard API 1631

A pending regulation revision, Comm 10.535(4), includes the acceptable technology and methodologies, according to the memo. All three methods include assessment of a tank’s structural soundness and the condition of the lining.

Internal assessment in Wisconsin using a video camera must follow the KWA Recommended Practice for Inspecting Buried Lined Steel Tanks Using a Video Camera.


The memo further stated, “The KWA protocol for assuring that the lining is still performing as expected, referred to as ‘Method A’ in the protocol, in combination with ‘Method C,’ meet the periodic inspection requirement for lined tanks under 40 CFR 280.21 by providing the minimum periodic inspection requirements for internally lined tanks.” The KWA protocol stresses in several places the need to use Method A in combination with Method C to fulfill the video camera assessment criteria.”

Key components of the KWA video camera internal lining assessment protocol, emphasized in the Wisconsin memo, include:

- Conduct a 0.1 gallon-per-hour (gph) tightness test from any portion of the tank that routinely contains product. This test may be conducted by any methodology that maintains material approval for a 0.1 gph test, i.e., an automatic tank gauge (ATG). A 0.1 test within 30 days prior to the internal inspection would be acceptable. The “portion of the tank that routinely contains product” would be at a product level that is
typical after taking a delivery. For example, if a delivery is typically scheduled at the 25 percent product level and the post-delivery level typically is 12,000 gallons (45,412 liters), that is roughly the product level where the tightness test must be conducted.

- Empty and clean tank.
- Camera scan. If more than 10 percent of the tank is delaminated or bare steel, Method B must be implemented as well.
- Test thickness and hardness of lining.
- Develop prediction model.
- Determine tank suitability for continued service.
- Document results.

According to the Wisconsin memo, a camera assessment performed without inclusion of the final four items is not in compliance with the federal rule, the WI Comm 10 rule, or the accepted protocol.

New Kansas Law Sets the Stage for Inspection of Non-Fuel AST Systems

If their aboveground storage tanks (ASTs) haven’t already been inspected by the Kansas state fire marshal, owners and managers of ASTs that contain non-fuel, flammable or combustible materials should expect a visit before July 1, 2009.

That’s the outcome of legislation signed by the Kansas governor earlier this year.

The new law came in response to a series of explosions and fires during July 2007 at a solvents facility. About 660,000 pounds (299.37 metric tons) of flammable chemicals contained in 36 storage tanks at the facility caught fire and led to the evacuation of thousands of nearby residents.

Fire marshal inspections would determine whether non-fuel AST systems were following standards of the National Fire Protection Association (NFPA), according to the Aboveground Storage Tank Guide newsletter. After the initial inspection, the fire marshal would reinspect on a triennial basis.

The new law would impact AST facilities storing non-fuel, flammable or combustible materials if the aggregate storage capacity was at least 10,000 gallons (37,843 liters).

The legislation also called for new construction of such facilities in Kansas to conform to NFPA standards. Construction of new plants, or modification of existing systems, would require review and approval of the state fire marshal.

Letter Debating AST Emergency Vents, Professional Engineers’ Obligations and SPCC Regulations

Your comments (Tank Talk, September 2008) concerning PEs and SPCC regulations, “The PE needs to consider fire code requirements for emergency venting” is notable but misleading for those AST owners reading the article. Any AST installation was subject to many code reviews and installations, and no code review is required in the SPCC regs.

To suggest that the PE must review the site for code compliance is a distorted view and a view that is debatable for the client requiring the SPCC. One could also argue that an operation hazard plan should be required for review. The AST could have had an emergency vent when the SPCC plan was formulated and poor operating practices removed or altered the vent.

I believe your comments need to be retracted or clarified in your next issue. – Bob May

STI/SPFA Response from Wayne Geyer

I am interested in minimizing injury, death, and property damage from what I consider the biggest cause of catastrophes among aboveground, shop fabricated flammable liquid tanks. I am not a lawyer, and I could not even begin to predict how a judge or jury would rule in a situation where an SPCC plan has been written to comply with federal environmental protection regulations, but a tank exploded during a fire because it did not have emergency vents. I would hate to be the PE getting interrogated by the attorney for a deceased plaintiff.

I do acknowledge that the emergency vent can be, and has been, tampered with by the operator after a proper SPCC plan has been written. In our shop-fabricated AST inspection standard, we do expect the inspector (or owner/operator) to check for a proper operating emergency vent.

Thank you for your inquiry, Mr. May.


NSF International, in cooperation with the Association of State Drinking Water Administrators (ASDWA), earlier this year conducted a survey in which findings showed 45 states have requirements for the surfaces of storage tanks and pipes in contact with potable water to comply with NSF/ANSI Standard 61.

New Orleans Swimmer Stops Tank from Causing Post-Hurricane Canal Damage

After Hurricane Gustav hit New Orleans in August, The Times-Picayune reported the heroics of a swimmer and tugboat captain named Billy Zar. Zar observed a diesel fuel tank floating in the exceptionally high water of the city’s Industrial Canal. He knew
that the storage vessel should not be allowed to drift free and possibly harm the canal floodwall. Near midday, Zar, dove into the water south of the Claiborne Avenue Bridge to corral the 500 gallon (1,892-liter) tank.

"I've been around the water all my life," Zar said. "Ain't nothing to it." Zar was assisted by crew members who helped by fastening him to a safety net.

Later in the day at the other end of the canal, Zar jumped back in the water to round up more debris. Crew member Dana Perkins was impressed, but couldn’t suppress a joke: "He's the best swimmer. But if the weather wasn't so bad, we would have used him for fish bait."

Local leaders with the U.S. Army Corps of Engineers, the agency that oversees canal repairs, later met with Zar and his crew to thank them for preventing damage from the tank and other storm residue.

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**Facts of Steel**

**Heavy-Duty Helper**

Pick up a submarine? Lift a bridge? *Nothing to it!* Just another day in the office for Yoshida, the massive, steel floating crane built by Mitsubishi Heavy Industries in Japan. The Japanese submarine hoisted in this photo is about 275 feet (84 meters) long.


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Two Tons of Fun

Need a way to manage an especially large stack of documents? How about the world’s largest red, steel paper clip? At 15 feet, 2 inches long (4.6 meters) and 39 inches (1 meter) wide, the clip was fabricated from five-inch (12.7 centimeter) diameter solid steel and weighs almost 4,000 pounds (1.81 metric tons).


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**Forty-to-One Advantage**

More than three decades ago, motorists trying to cross the New River Gorge in West Virginia faced a 40-minute drive using various routes, some of them along narrow mountain roads.

In 1977, a 4,224-foot (1.29 kilometer) steel arch bridge was completed, saving drivers 39 minutes on the same trip. Today, the New River Gorge Bridge remains one of the world’s longest-spanning, steel single-arch bridges. It also holds the title of the second highest bridge in the U.S. behind the Royal Gorge Bridge in Colorado.

http://www.pbs.org/wgbh/buildingbig/wonder/structure/new_river_gorge.html
Online Sources of UST, AST and Pipeline News and Information

New resources are highlighted in yellow

Online Publications


Buncefield Fire http://www.buncefieldinvestigation.gov.uk/

California Air Resources Board, Enhanced Vapor Recovery Phase II Advisory: http://www.arb.ca.gov/vapor/advisories/adv359.pdf

Code Requirements for ASTs at Motor Vehicle-Dispensing Stations http://www.steeltank.com/LinkClick.aspx?fileticket=Y5KwcOn00rg%3D&tabid=110&mid=490

Energy Tomorrow, American Petroleum Institute http://www.energymorrow.org/
Ethanol Biorefinery Locations http://www.ethanolrfa.org/industry/locations/

Fuel Oil News http://www.fueloinews.com/


The PEI Journal Online http://www.thepeijournal.org/content/2q08/index.php

Recommended Practices for Overfill Prevention for Shop-Fabricated Aboveground Tanks (PEI RP600) http://www.pei.org/RP600


Renewable Fuels Association Industry Statistics http://www.ethanolrfa.org/industry/statistics/


Safe Tank Alliance Safe Tank Entry Fact Sheet http://www.steeltank.com/LinkClick.aspx?fileticket=u6%2fNp2egRNY%3d&tabid=36&mid=578


Steel Tank Institute Water in Fuel Tanks Research http://www.steeltank.com/LinkClick.aspx?fileticket=SmQZA0POL4E%3d&tabid=36&mid=535


Online Sources of UST, AST and Pipeline News and Information (continued)

Associations

American Iron & Steel Institute  http://www.steel.org
American Petroleum Institute  http://api-ep.api.org/
American Water Works Association  http://www.awwa.org/
Clean Diesel Fuel Alliance  http://www.clean-diesel.org/index.htm
National Association of Convenience Stores  http://www.nacsonline.com/NACS/News/
National Biodiesel Board  http://www.biodiesel.org
National Ethanol Vehicle Coalition  http://www.e85fuel.com
National Leak Prevention Association  http://www.nlpa-online.org/standards.html
National Oilheat Research Alliance  http://www.nora-oilheat.org
Petroleum Marketers Association of America  http://www.pmaa.org/
Renewable Fuels Association www.ethanolrfa.org
Safe Tank Alliance  http://www.osha.gov/dcsp/alliances/api_nfpa/api_nfpa.html#api
Society of Independent Gasoline Marketers of America  http://www.sigma.org/
Steel Plate Fabricators Association  http://www.spfa.org/
Steel Tank Institute  http://www.steeltank.com

Federal Regulatory Agencies (United States)

U.S. Chemical Safety and Hazard Investigation Board, Methanol Fire Report
U.S. Department of Labor, Occupational Safety & Health Administration
http://www.osha.gov

U.S. Environmental Protection Agency, Fiscal Year 2009 Budget Summary
U.S. Environmental Protection Agency, Office of Underground Storage Tanks http://www.epa.gov/swerust1/
U.S. Environmental Protection Agency, Office of Underground Storage Tanks, Biofuels Compendium http://www.epa.gov/oust/altfuels/bfcompend.htm
Online Sources of UST, AST and Pipeline News and Information (continued)


NEW U. S. Environmental Protection Agency, Emergency Management, Finalized Amendments to the Spill Prevention Control and Countermeasure Rule  http://www.epa.gov/emergencies/content/spcc/spcc_nov08amend.htm

U. S. Environmental Protection Agency, Emergency Management, Spill Prevention, Control and Countermeasure Rule  http://www.epa.gov/emergencies/content/spcc/index.htm

State Regulatory Agencies (United States)

California Air Resources Board, Vapor Recovery Information  http://www.arb.ca.gov/vapor/vapor.htm

U. S. Environmental Protection Agency, Office of Underground Storage Tanks, State and Territory UST/LUST Program Status And Contacts  http://www.epa.gov/swerus1/states/statcon1.htm

Model Codes and Testing Organizations

American National Standards Institute  http://www.ansi.org

ASTM International  http://www.astm.org/


National Fire Protection Association  http://www.nfpa.org/

Southwest Research Institute  http://www.swri.edu/

Underwriters Laboratories  http://www.ul.com/

Underwriters Laboratories of Canada  http://www.ulc.ca

Conferences and Meetings

Jan. 20 to 22, 2009
Underground Construction Technology International Conference & Exhibition 2009, San Antonio, Texas
http://www.uctonline.com/

Jan. 22 to 23, 2009
http://www.asse.org/education/safetyculture/

Feb. 1 to 4, 2009
www.biodieselconference.org

Feb. 8 to 14, 2009
http://www.asse.org/education/seminarfest09/

Feb. 11 to 15, 2009
Pipe Line Contractors Association Convention 2009, Carlsbad, Calif.
http://www.plca.org/

Feb. 12 to 13, 2009
Aboveground Storage Tank Conference, National Institute of Storage Tank Management, Houston, Texas
http://www.nistm.org/houston2009/houston09_overview.html

Feb. 17 to 19, 2009
https://shopping.wpma.com/Convention.aspx?state=No

Feb. 23 to 25, 2009
14th Annual National Ethanol Conference, Renewable Fuels Association, San Antonio, Texas
www.nationalethanolconference.com

March 1 to 3, 2009
http://www.forecourtshow.com/

March 10 to 11, 2009
Convenience U CARWACS Show 2009, Toronto, Ontario, Canada
http://www.convenienceu.ca/2008/TO/index.php

March 10 to 12, 2009
Aviation Industry Expo 2009, Las Vegas, Nev.
http://www.aviationindustryexpo.com/index.po

March 15 to 17, 2009
2009 Annual Spring Convention, Electrical Generating Systems Association, San Antonio, Texas
http://www.egsa.org/meetings/springconvention.cfm
March 22 to 26, 2009
http://events.nace.org/conferences/c2009/index.asp

March 30 to April 1, 2009
Annual National Tank and Expo 2009, New England Interstate Water Pollution Control Commission, Sacramento, Calif.
http://www.neiwpcc.org/tanksconference/

March 30 to April 3, 2009
http://www.hydrogenconference.org/

April 19 to 22, 2009
Alternative Fuels and Vehicles National Conference and Expo, Orlando, Fla.
http://www.afv2009.com/

April 25 to 28, 2009
http://www.nafalande.org/

April 26 to 30, 2009
http://www.aiche.org/Conferences/Specialty/GCPS.aspx

April 27 to 29, 2009
Spring Refining and Equipment Standards Meeting, American Petroleum Institute, Denver, Colo.
http://www.api.org/meetings/topics/refining/index.cfm

April 27 to 29, 2009
Freshwater Spills Symposium, U.S. Environmental Protection Agency, St. Louis, Mo.

May 4 to 7, 2009
http://www.windpowerexpo.org/