Bulletin of the
Connecticut Academy of Science and Engineering
Volume 26,2 / Summer 2011

Connecticut Researchers, Companies Key Players in Assessing, Managing Gulf Spill

When an estimated 173 million gallons of oil gushed into the Gulf of Mexico last spring and summer from BP's crippled Deepwater Horizon offshore oil rig, a coordinated effort was launched not only to clean up the foul mess but to assess the damage to fish, birds and the environment—and to try to predict where and when that black tide would reach beaches and marshes.

The effort included intense attempts to stop that BP oil tide from reaching Gulf shores, assessing the spill's effect on the air, testing Gulf seafood to make sure it was free of contamination and various studies on every aspect of its long-term effects. The University of Connecticut, two Connecticut companies and The Connecticut Agricultural Experiment Station (CAES) were involved in that effort.

Today, most of the Gulf waters are open and fishermen there are once more plying their trade. And although occasional tar balls can be found inches below the surface on some Gulf beaches, the beaches are mostly pristine. But many marshes, especially in Louisiana, have been badly fouled.

As to where the huge plumes of oil released by the biggest spill in US history —a spill watched with fascination on television by millions around the world as underwater cameras captured the steady gush of oil from beneath the sea—are hiding, the National Oceanic and Atmospheric Administration (NOAA) has located many of them.

But according to CASE member James O'Donnell, professor of marine sciences at the University of Connecticut, one reason so much of the oil remains invisible is due to rapid oxidation in the Gulf, which is rich with the kind of bacteria that actually "eats" oil.

Then there is the vastness of the Gulf waters—waters that over time, tend to cleanse themselves.

O'Donnell, who visited ten Gulf cities and towns in the wake of the spill, helped deploy a technique to remotely measure the surface currents in an attempt to predict where oil would wash ashore using sophisticated instruments first tested in Long Island Sound.

"But we had limited success because the instruments were not well deployed," he said. O'Donnell also worked as a consultant to a consortium of law firms, giving advice to people whose lives were disrupted by the spill.

"It was an amazing few weeks," he said. "A lot of people were hurting."

From the vast army of ships surrounding the oil spill site, TRC Environmental of Windsor assisted BP in "providing air quality models and monitoring," according to TRC Senior Vice President and Technical Director and CASE President Gale Hoffnagle. "Working on the ships, we evaluated concentrations of pollutants to which the workers would

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Experiment Station Tapped to Assist in Gulf Seafood Testing

Gulf seafood is still safe to eat.

Evidence supporting that conclusion was produced by the chemical laboratory at The Connecticut Agricultural Experiment Station (CAES) after testing 104 Gulf of Mexico seafood samples in the wake of the huge BP oil spill—the largest ever recorded in US waters.

None of the tested samples was contaminated at levels of concern and all met federal Food and Drug Administration (FDA) standards, according to Chief Chemist Jason White, head of CAES's Department of Analytical Chemistry laboratory in New Haven—one of three in the

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News from the National Academies

The following is excerpted from press releases and other news reports from the National Academies (www.national-academies.org).

◆ Report Calls for 'Substantial' Action on Climate Change

Warning that the risk of dangerous climate change impacts is growing with every ton of greenhouse gases emitted into the atmosphere, a National Research Council committee reiterated the pressing need for substantial action to limit the magnitude of climate change and to prepare to adapt to its impacts. The nation's options for responding to the risks posed by climate change are analyzed in a new report and the final volume in *America's Climate Choices*, a series of studies requested by Congress. The committee that authored the report included not only renowned scientists and engineers but also economists, business leaders and other policy experts.

The new report reaffirms that the preponderance of scientific evidence points to human activities—especially the release of carbon dioxide and other greenhouse gases into the atmosphere—as the most likely cause for most of the global warming that has occurred over the last several decades. This trend cannot be explained by natural factors such as internal climate variability or changes in incoming energy from the sun. The report adds that the impacts of climate change on human and natural systems can generally be expected to intensify with warming.

Noting that most actions taken to reduce vulnerability to climate change impacts are common sense investments that will offer protection against natural climate variations and extreme events, the report says that crucial investment decisions made now about equipment and infrastructure can "lock in" commitments to greenhouse gas emissions for decades to come. Finally, while it may be possible to scale back or reverse many responses to climate change, it is difficult or impossible to "undo" climate change, once manifested, the report warns.

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Gulf *(from page 1)*

be exposed. BP also gathered surface oil and burned it to reduce damage from oil reaching the shore," he said. "From the black plumes that resulted, we analyzed the concentrations of the various chemicals and used models to see what, if any, effect they would have on Gulf shorelines. Thankfully, our studies indicated they had no environmental impact."

TRC earned $1.3 million from BP for its efforts, Hoffnagle said.

Connecticut-made booms help control the spill

For months, television was alive with images of oil booms and skimmers attempting to gather oil before it reached Gulf shores.

"Oil booms are floating fences that control the spread of a spill," explained Steve Reilly, CEO of Seymour-based Slickbar Products Corporation, a 50-year old company that manufactures oil skimmers and pumps in addition to the booms.

"We had to open a second outlet in Beacon Falls and were working around the clock for months after the spill," he said.

Polyvinyl chloride (PVC) coated fabric booms manufactured by Connecticut-based Slickbar Products were deployed to contain oil from the massive BP spill. [Photo: Slickbar]

Slickbar manufactured "many thousands of feet" of the polyvinyl chloride (PVC) coated fabric booms that were lightweight and easy to handle, according to Reilly.

"The majority of the booms used had a height of 18 inches and were general purpose, solid-float booms. However, larger air inflatable offshore booms were also very effective," Reilly said.

UConn researchers continue to assess environmental impact

The attempts in Connecticut to assess environmental damage include on ongoing study by the UConn Center for Environmental Sciences and Engineering (CESE) to test blood from Gulf birds.

"Our current efforts are to support the National Wildlife Damage Assessment being conducted by the US Fish and Wildlife Service," said Christopher Perkins, director of the CESE analytical facility. "We are conducting analysis of the blood of shore and wading birds from impacted areas of the Gulf." He added that "since the data we are generating will be used in litigation and assessment of damages to BP, we are bound under a Non-Disclosure Agreement not to disclose any specifics of what we have found or how many samples we tested."

However, Perkins did say: "We are determining the concentrations of PAHs (polycyclic aromatic hydrocarbons) and dispersant (Corexit) in the red blood cells (RBCs) of shorebirds from the Gulf as well as reference area birds. We are using targeted blood samples since these birds are live captures and blood sampling is pretty non-invasive.

"We are looking at red blood cells specifically for two reasons. First, RBCs are the only part available after the blood is spun down and plasma is shipped out for clinical chemistry data. Secondly, RBCs are an indicator of recent exposure since they are replaced every 30 days. We are using an ultra-performance liquid chromatograph (UPLC) with several detectors, including tandem mass spectrometry, photo diode array, and fluorescence," explained Perkins.

The non-disclosure agreement is understandable since 858,000 claims have been filed by people claiming they were hurt financially by the BP spill and many of them have yet to be settled.

It is not only Gulf seafood, the environment and Gulf birds that are being tested and studied by various scientists, but the Gulf waters themselves.

Professor Penny Vlahos of UConn's Departments of Marine Sciences and Chemistry said titanium plates coated with polymer have been placed in seven different Gulf sites—three in each—to gather chemicals found there for testing and analysis.

"The plates are tied to buoys and are gathered every two weeks," she said. "With the aid of sophisticated instruments, we analyze the chemicals at our lab to see if any are harmful to birds, other animals, fish or humans. It is an ongoing process we recently started and will be tracking for the foreseeable future. Its purpose is to see if the Gulf waters recover over time."—***Robert C. Pollack is a freelance writer who has worked for many of the state's newspapers.***

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Biomedical Research

CT FIRMS AWARDED $14M. Under the Qualifying Therapeutic Discovery Project program, the IRS, in conjunction with the Department of Health and Human Services, awarded Connecticut firms over $14 million for projects that showed significant potential to produce new and cost-saving therapies, support jobs and increase US competitiveness. The following Connecticut firms were grant winners: **Achillion Pharmaceuticals, Inc**; **AllerQuest, LLC**; **Amarin Pharmaceuticals Inc; Applied Spine Technologies, Inc; Artificial Cell Technologies; Axerion Therapeutics; Beta Pharma, Inc; Biodel, Inc; Biomedisyn Corporation; BioRelix, Inc; Biowave Corporation; Brain Tunnelgenix Technologies Corp; Cara Therapeutics Inc; CAS Medical Systems Inc; Cheminpharma LLC; Cytogel Pharma, LLC; CyVek, Inc; Genomas, Inc; HistoRx Inc; Ikonisys Inc; IVFonline.com DBA Zenith Biotech, LLC; Kolltan Pharmaceuticals, Inc; Kotinos Pharmaceuticals Inc; L2 Diagnostic, LLC; Marinus Pharmaceuticals Inc; Medadherence LLC; Molecular Neuroimaging LLC; Myometrics, LLC; Optherion, Inc; Protein Sciences Corporation; RIB-X Pharmaceuticals Inc; Sibtech Inc; SurgiQuest, Inc; The Bronx Project Inc;** and **The Institutes for Pharmaceutical Discovery LLC.**

THE AMAZING BRAIN. The human brain has yet to explain the origin of one its defining features—the deep fissures and convolutions that increase its surface area and allow for rational and abstract thought. An international collaboration of scientists from the **Yale School of Medicine** and Turkey may have discovered humanity's beneficiary—a tiny variation within a single gene that determines the formation of brain convolutions (*Nature Genetics* online, May 15). A genetic analysis of a Turkish patient whose brain lacks the characteristic convolutions in part of his cerebral cortex revealed that the deformity was caused by the deletion of two genetic letters from 3 billion in the human genetic alphabet. Similar variations of the same gene, called laminin gamma3 (LAMC3), were discovered in two other patients with similar abnormalities. The folding of the brain is seen only in mammals with larger brains, such as dolphins and apes, and is most pronounced in humans.

Business & Industry

ALEXION'S POSSIBLE NEW MARKETS FOR SOLIRIS. Cheshire drug maker **Alexion Pharmaceuticals Inc.** reported seeking US and European clearance to market its highly successful Soliris drug to treat another rare type of life-threatening blood disorder known as atypical hemolytic uremic syndrome (aHUS). The extremely rare disease causes blood clots in small blood vessels that can lead to kidney failure, stroke, heart attack and death.

SIKORSKY WINS COLLIER TROPHY. **Sikorsky Aircraft's** X2 demonstrator program was awarded the 2010 Robert J. Collier Trophy at a May 2011 ceremony. The Collier Trophy, the top prize for American aeronautics and astronautics, is named for the late aviator, humanitarian, and sportsman who commissioned the trophy in 1910. A new helicopter, the Sikorsky's X2, can take off like a chopper but fly at the speed of many fixed wing aircraft, and reached more than 250 knots in testing.

ATMI IN SBIR HALL OF FAME. Danbury-based **ATMI** was inducted into the inaugural Small Business Innovation Research (SBIR) Hall of Fame earlier this year in Washington. ATMI's co-founder and former CEO/Chairman of the Board, **Gene Banucci**, recipient of the 2006 Connecticut Medal of Technology and a member of CASE, accepted the award on behalf of ATMI. He credited SBIR as the catalyst for both the creation and growth of ATMI.

PRATT CONTRACTS: AIRBUS, PENTAGON. Airbus SAS selected East Hartford-based **Pratt & Whitney Co.'s** PW1100G turbofan engine as the lead power plant for its A320neo series, with entry into service scheduled for October 2015. Airbus reported having more than 300 commitments for the A320neo series. Pratt also wrapped up a $1.13 billion Pentagon contract to supply engines and spare parts for the F-35 Lightning II warplane.

PRATT 'BACK IN COMMERCIAL AVIATION.' **Pratt and Whitney's** new PurePower PW1000G engine—known within the company as "GTF" for geared turbo fan—puts the company "back in business in commercial aviation" according to an article in the May 19 *Time Magazine* online. The new engine, which incorporates a 300 lb. gearbox that transfers 30,000 horsepower, promises a 16% better fuel burn and carbon emissions and a 50% reduction in noise—critical factors for customers concerned about carbon emissions, fuel prices and noise control at the world's increasingly busy airports, many of which are in booming emerging markets. Noting that the aftermarket aspect of jet engines—their postsale maintenance, repair and operation—is even bigger than the original-equipment segment, Pratt & Whitney president David Hess said, "If we strictly do the math for the number of engines that we will be delivering for those airplanes and add in some estimates for what the aftermarket will look like, the number comes out to about double what Pratt & Whitney is today."

HAMILTON NAVY CONTRACT. Naval Air Systems Command (NAVAIR) awarded a contract for as many as 25 electronic propeller control kits to Windsor Locks-based **Hamilton Sundstrand**. The award provides for up to 20 kits for the US Navy Reserve's C-130T aircraft and as many as five kits for the US Air National Guard's LC-130H aircraft, with a combined estimated value of $24.6 million.

GERBER FURTHERS TRANSFORMATION. Tolland-based **Gerber Scientific, Inc.** reported on actions completed in Q4 FY2011 in connection with its previously announced transformation plan. The company will exit the flatbed printer business to focus on its more profitable thermal printing products. Gerber has also signed an agreement to sell its South Windsor facility and will enter into a one-year lease with the new owners for a portion of the facility. The company is also in the final stage of determining additional workforce reductions.

Communication

XEROX, CISCO IN CLOUD. Norwalk document-information manager **Xerox Corp.** and California data-network and communications operator Cisco Systems Inc. announced that they would form an alliance to deliver cloud-based services and technology solutions that simplify information technology management. The plan is to bring Xerox's managed print and

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cloud IT outsourcing services to customers over Cisco's intelligent network infrastructure.

FCC REQUIRING ROAMING AGREEMENTS, REVIEWING USF. The Federal Communications Commission voted in April to require mobile carriers to enter into data-roaming agreements with competitors. The commission's two Republicans voted against the order, arguing that the FCC has no congressional authority to enforce common-carrier rules on mobile broadband service. Several small mobile carriers had called for FCC action on data-roaming agreements, saying the two large carriers—AT&T and Verizon—often refuse to negotiate. Additionally, the FCC has begun investigating the Universal Service Fund (USF) for rural telephone service to see how the USF might be revamped to address rural broadband.

NEW FROM VBRICK. Enterprise IP video leader **VBrick Systems** of Wallingford has introduced its Rich Media Desktop (RMD). The RMD enables employees throughout an enterprise to easily create and stream presentations that combine audio, video, images and data from their desktops. VBrick is the first to introduce a desktop solution for video content creation for live or on-demand viewing that can be streamed to devices like PCs, smart phones and tablets behind the corporate firewall and over the Internet.

AD SOFTWARE CO RELOCATES TO CT. **Zadspace Inc.** relocated its corporate headquarters from California to Norwalk, CT. The company's proprietary software-as-a-service (SaaS)-based platform enables retailers to deliver highly targeted advertisements on 4" x 6" color labels affixed to packages shipped to consumers. This enables advertisers to more effectively target prospects. Zadspace noted that **Connecticut Innovations** was instrumental in attracting the company to the area. In March, the company closed on a $3.2 million Series B round of venture investment led by Connecticut Innovations and DFJ Frontier.

AT&T PLANNING ENHANCEMENTS. AT&T said it will spend some of its $19 billion US capital budget in FY12 to add enhancements to Connecticut's network. In Connecticut, AT&T will add, among other things, about 15 new cell sites, along with upgrading another 750 existing sites to enable 4G voice-data transmission speeds. The company did not specify AT&T's 2011 Connecticut capital spending.

Education & Cognition

DISCOVERY EDUCATION. All Connecticut middle grades science teachers have free access to Discovery Education SCIENCE for Middle School through a state contract that expires June 30, 2012. More than just video clips from the Discovery Channel favorites like Science Sleuths and MythBusters, Science for Middle School offers a selection of standards-based teaching materials for Grades 6-8, including virtual labs, science simulations, nonfiction reading passages and assessments. If you do not know your district's user name and password, please contact **Liz Buttner**, K-8 Science Consultant, at the **Connecticut Department of Education**, elizabeth.buttner@ct.gov. For more information on Discovery Education Science for Middle School, access the webinars posted at http://links.discoveryeducation.com/DESMwebinars.

CT PRESIDENTIAL SCHOLARS. Three Connecticut students are among the 2011 Presidential Scholars. They are **Theresa Oei** of **East Catholic High School**, **Lyra Olson** of **Choate Rosemary Hall** and **Clayton Rountree** of **Haddam-Killingworth Senior High School**. The group is among hundreds of students nationwide that will travel to Washington June 18-21 to be honored at a recognition ceremony. A presidential commission appoints Presidential Scholars based on academic success, artistic work, community service, leadership and other factors.

MAJOR GIFT TO YALE ENGINEERING. Liberty Media and Liberty Global Chairman **John Malone**, Yale College 1963, made a gift of $50 million to **Yale School of Engineering & Applied Science** (SEAS) to endow ten new professorships. The gift is the largest in the School's history. Malone has been a leading supporter of Yale Engineering. An earlier contribution funded the construction of the **Daniel L. Malone Engineering Center**, named in memory of his father, which opened in 2005 to house **Yale's Department of Biomedical Engineering.** In coming years, the Malone professorships will allow the hiring of new faculty members across SEAS's four departments of **Biomedical Engineering, Chemical & Environmental Engineering, Electrical Engineering**, and **Mechanical Engineering & Materials Science.**

Energy

UIL CAMPAIGNS FOR GAS. New Haven utility **UIL Holdings Corp.**—which has four electric and natural gas subsidiaries—launched an ad campaign to encourage Connecticut residents to use natural gas for home heating. UIL acquired the **Connecticut Natural Gas Corp., Southern Connecticut Gas Co.** and the Berkshire Gas Co. in Massachusetts for $1.3 billion last year. The campaign focuses on the high cost of fuel oil and how Connecticut residents can save half off their heating bills by switching to natural gas.

GE TO BUILD LARGEST SOLAR PLANT. Fairfield-based **General Electric** announced that it will build the nation's largest solar panel factory. The $600 million venture will reportedly employ 400 people and produce enough solar panels per year to power 80,000 homes. The company has not said where the plant will be located, but notes that multiple locations are being scouted.

FUELCELL TO TEST WITH COAL. Danbury's **FuelCell Energy Inc.** is getting another $8.2 million in federal funds to build the latest demonstration version of its clean power generator that runs off coal. FuelCell and its Colorado technology partner, Versa Power Systems Inc., will share the remainder of the $11.7 million cost to construct a scalable 60-kilowatt solid oxide fuel cell stack powered by gas synthesized from coal. The companies have already shown practical applications for their technology on a 25-kilowatt stack, FuelCell says. The US Energy Department (DOE) picked up $21 million of the $30.2 million cost for that unit. If the latest demo works as planned, then 250-kilowatt or larger versions of the unit could exploit the nation's abundant coal supply and curb US foreign-oil dependence, according to FuelCell.

SIEMENS NEW GAS TURBINE BREAKS EFFICIENCY RECORDS. **Siemens** announced that its SGT5-8000H gas turbine—part of a new generation of H-class gas turbines—set a new world record in power plant efficiency at the Irsching 4 plant in Bavaria. With an output of more than 578 megawatts (MW) and an efficiency level of 60.75% (net), Siemens surpassed the targeted efficiency mark of "more than 60%" during the test phase, making history in the field of power plant technology. The new Siemens gas turbine is designed for 400 MW in simple cycle duty and for 600 MW in combined cycle duty. "These are historic dimensions and world record levels," declared Michael Suess, CEO of Siemens Energy Sector. Siemens turbines are in use at **Bridgeport Energy** in Bridgeport and **Kleen Energy** in Middletown.

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Environment

NORTH HAVEN SITE CLEAN UP. The former **Pharmacia & Upjohn** riverfront manufacturing site in **North Haven** has a $150 million contamination cleanup project of the US Environmental Protection Agency (EPA) under way. The site became contaminated with several chemicals and metals as Pharmacia & Upjohn manufactured products for dyes, pigment, sunscreen, soap, perfumes, herbicides and pharmaceuticals. Manufacturing stopped at the site in 1993. EPA has been orchestrating this cleanup since 1989. Initial work includes installation of barriers to keep contamination from the **Quinnipiac River,** treating concentrated areas of contamination, removing river sediment, and long-term monitoring and maintenance. Reclamation of the site—now owned by **Pfizer Inc.**—will enable its reuse as either open space or light industrial. The 78 acres includes wetlands and meadow habitat along the Quinnipiac River.

PREVENTING THE SPREAD OF DIDYMO ALGAE. The state **Department of Environmental Protection** (DEP) announced in March that the highly invasive freshwater alga, Didymosphenia geminata, known as "didymo," was discovered in the Farmington River's west branch in Hartland and Barkhamsted, a very popular trout stream in northwestern Connecticut. This is the first report of didymo in Connecticut. "This find is very troubling," said **DEP Deputy Commissioner Susan Frechette**. "Extensive blooms of this organism can harm the river ecosystem and decrease its recreational and economic value." Visit the DEP website to learn procedures for helping to prevent the spread of didymo.

CT CITIZENS/GROUPS RECEIVE EPA HONORS. Three citizens and two environmental groups from Connecticut were honored in Boston when the US Environmental Protection Agency (EPA) presented its annual regional Environmental Merit Awards in May. The awards recognize valuable contributions to environmental awareness and problem solving. Awards are given in these categories: individual; business; local, state or federal government; and environmental, community, academia or nonprofit organization. Each year, EPA also may present lifetime achievement awards for individuals. The Connecticut Winners of the Lifetime Achievement Environmental Merit Awards are:

- **Richard Harris,** Director, and **Peter Fraboni**, Associate Director, **Harbor Watch/River Watch** (HW/RW)
- The late **Leslie J. Mehrhoff** of Willington, University of Connecticut-trained botanist and naturalist
- **Mark Mitchell**, MD, MPH, Founder and President, **Connecticut Coalition for Environmental Justice**

Winners of the Environmental, Community, Academia, & Non-profit Organizations Environmental Merit Award are:

- **Green Village Initiative, Dan Levinson**, Westport, CT
- **North Haven Citizens' Advisory Panel**

To learn more visit www.ct.gov/dep

Food & Agriculture

AGRICULTURE BENEFITS FROM COMMUNITY INVESTMENT ACT. A group of state legislators lauded the success of the **Community Investment Act (CIA)**, six years after its passage by the General Assembly in 2005. "The Community Investment Act has helped sustain the character and strengthen the economy of nearly every town and city in Connecticut," said **Senate President Donald E. Williams,** who authored the original bill. The CIA established a fund to support farmland preservation, open space preservation, affordable housing, and historic preservation. Achievements include:

- 157 dairy farm businesses saved with CIA support payments
- 2,000 jobs created in affordable housing and historic preservation sectors
- $47,212,553 CIA funds invested through granting programs
- Almost 200% in matching funds—totaling $82.3 million—from private, federal, and local sources have been raised to match the state's CIA dollars
- 562 projects finished in 145 towns.

JUNK FOOD ADS AND TAXES IMPACT FOOD CHOICES. Children exposed to advertisements for high-calorie and nutrient-poor foods consume more unhealthy foods overall, regardless of the specific product and brand being marketed, according to a study by the **Rudd Center for Food Policy & Obesity** at **Yale University** (*Economics and Human Biology*). Using the Early Childhood Longitudinal Study-Kindergarten Cohort (ECLS-K), a nationally representative dataset, the study tracked food consumption patterns and Body Mass Index (BMI) among nearly 10,000 children in the fifth grade. The children's BMI were obtained through height and weight measurements, and food consumption patterns were reported by the children themselves. Nielsen, a media research company, provided data on spot television advertising of cereals, fast food restaurants, and soft drinks to children aged 6-11. Another Rudd Center study shows that taxing sugar-sweetened beverages a penny per ounce has the potential to reduce consumption and generate significant revenue (*Preventive Medicine*.) Read more about both studies at www.yaleruddcenter.org.

NEW USDA RULES ENCOURAGE LOCAL FARM PRODUCTS IN SCHOOL LUNCHES. The US Department of Agriculture (USDA) announced that USDA's child nutrition programs are implementing new rules designed to encourage use of local farm products in school meals. One of the new rules will let schools and other providers give preference to unprocessed locally grown and locally raised agricultural products as they purchase food for the National School Lunch, School Breakfast, Special Milk, Child and Adult Care, Fresh Fruit and Vegetable, and Summer Food Service programs. The rule is part of the Healthy, Hunger-Free Kids Act of 2010 signed into law by President Obama and one of the key provisions to bolster farm to school programs across the country.

Health

MALLOY'S BIG PLANS FOR UCHC. **Gov. Dannel P. Malloy** announced in May a sweeping new **University of Connecticut Health Center** proposal that he says will help the state become a leader in the health and bioscience industries. The nearly $900 million plan includes construction of a $318 million tower to treat patients, with a $163 million renovation of the current tower to be used for research. The proposal promises to expand the school's medical and dental programs and create 3,000 construction jobs. Long-term, Malloy said his proposal will create 16,400 jobs by 2037. The plan calls for the creation of a **University of Connecticut Health Network**, creating a partnership between major players in the state's health care industry. To finance the project, $254 million would come from new bonding, with $203 million in private financing, and $338 million in previously approved bonding.

CHC GETS MEDICAL HOME CREDENTIALS. Eleven primary care centers operated by the **Community Health Center of Middletown** (CHC) received national recognition as a patient-centered medical

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home by the National Committee for Quality Assurance. The medical home has been identified as a means of controlling costs and improving quality and health status. The concept is a key part of the federal health care reform law. The medical home recognition, which is valid for three years, is awarded in three levels. CHC received the highest recognition by providing written standards and measurement for patient access and communication, electronic charting tools to organize clinical information, and electronic prescription management, among other things. CHC, which serves largely uninsured and underserved populations in Connecticut, received the recognition for using electronic medical records and a team-based model to better coordinate patient's care.

INSURANCE COVERAGE FOR INFERTILITY, FEWER MULTIPLE BIRTHS. Faced with the prospect of costly in vitro fertilization (IVF) but with no financial assistance from insurance coverage, some infertile couples feel pressure to transfer multiple embryos in an attempt to ensure that the IVF is a success. This can lead to higher rates of twin and triplet births and prematurity. Insurance coverage for IVF could curtail the costs associated with these multiple births, according to a new study by researchers at **Yale School of Medicine** (*Fertility & Sterility*, Vol. 95, No. 3). The study found that the 15 states, including Connecticut, that provide insurance coverage for infertility saw significantly lower multiple birth rates. The authors say this translates into tremendous savings on the costs of maternal/fetal complications. In 2005, it was estimated that the economic impact of preterm birth was $26.2 billion nationally.

CI FUNDING FOR INNOVATIENT SOLUTIONS. **Connecticut Innovations** (CI), the state's quasi-public authority responsible for technology investing and innovation development, made an investment of $500,000 in **Innovatient Solutions Inc.** (Innovatient) of Farmington, through its Seed Investment Fund. CI led the investment round of $1 million, which also involved company founders and angel investors. Innovatient is developing a patient-centered information system aimed at improving communications between hospital care providers and patients, thus enhancing clinical outcomes and patient satisfaction. The company's first application, nVision Information Therapy Solution, will provide education, communication services and entertainment to patients using pre-existing television sets in hospitals. Patients can communicate about daily goals, pain levels, meal preferences and other matters.

High Technology

UCONN WORKS TO SECURE MICROCHIPS. A consortium of hardware security experts from the **University of Connecticut** and three other universities received a $1.2 million National Science Foundation grant for virus-proofing microchips used in cell phones, TVs and other electronic devices. The consortium includes the Polytechnic Institute of New York University, Rice University and the University of California, Los Angeles. The grant's principal investigator is **Mohammad Tehranipoor,** associate professor of electrical and computer engineering at UConn. Authorities say the researchers will develop benchmark circuits—"trust benchmarks"—infected with hardware Trojans with the aim of creating bulletproof hardware platforms.

UCONN DEVELOPING CUTTING EDGE VIRTUAL REALITY. **Horea Ilies**, an associate professor of mechanical engineering and computer science & engineering at the **University of Connecticut,** was inspired to research and develop a hand gesture-based virtual reality (VR) system for a variety of engineering, science, medical and defense applications. While attending a conference on virtual reality, Ilies said he was struck by the cumbersome interaction between the user and the VR system. From this, he drew inspiration for the research and development of a hand gesture-based VR system. The prototype is supported by a $1.2 million National Science Foundation (NSF) grant and is housed in a research facility at the UConn Storrs campus. The research involves collaboration with the Virtual Reality Applications Center at Iowa State University and several other departments at UConn.

NOVEL NANOWIRES BOOST FUEL CELL EFFICIENCY. Over time, the catalysts used in today's fuel cells break down, inhibiting the chemical reaction that converts fuel into electricity. In addition, current technology relies on small particles coated with the catalyst; however, the particles' limited surface area means only a fraction of the catalyst is available at any given time. A team of engineers at the **Yale School of Engineering & Applied Science** has created a new fuel cell catalyst system using nanowires made of a novel material that boosts long-term performance by 2.4 times compared to today's technology (*ACS Nano*, April).

Transportation

CTI CRASH TEST DATA REPOSITORY. Investigators with The **CT Transportation Institute (CTI)** are working with the **CT Department of Transportation** and the Federal Highway Administration to develop a repository of Connecticut's Motor Vehicle Crash Data. The purpose of the **Connecticut Crash Data Repository** (CDR) project is to create an accurate, timely, and complete online access data query and analysis toolset for members of the traffic-safety community. The first phase will focus on design and function of the repository. Future phases will incorporate data such as roadway information, traffic volumes, photolog imagery and GIS mapping with crash data reports

FLORIDA'S LOSS, CT'S GAIN. Connecticut will receive $30 million of Florida's discarded high-speed rail funding. **Gov. Dannel P. Malloy** had requested $100 million from the declined Florida funding after Florida's governor cancelled the state's high-speed rail project and lost $2.4 billion. Connecticut's high-speed rail project aims to link **New Haven** and **Springfield**. The state has already earmarked $286 million in state bonding for the $800 million rail project. With this latest award, the federal government has given Connecticut $191 million for the project.

THE HARTFORD TO INSTALL CHARGING STATIONS. The **Hartford Financial Services Group, Inc.** will install electric vehicle charging stations in **Hartford, Simsbury** and **Windsor,** to further provide infrastructure for the alternative fuel cars. A number of charging stations have already been installed in Connecticut, including several by **Northeast Utilities**. The Hartford also announced that it will change its homeowners insurance policies to include electric vehicle charger coverage and coverage for environmentally friendly building materials.

HYDROGEN CLUSTER. Wallingford gas supplier **Proton Onsite** said it would focus on creating a Northeast region hydrogen refueling cluster, replacing its ambitious plans for an East Coast "Hydrogen Highway." The original concept behind the Hydrogen Highway was to increase use of hydrogen fuel cell cars, therefore boosting Proton's business of supplying hydrogen systems. Proton's sister company **SunHydro** operates the stations, which are solar powered.

— Compiled and edited by Ann G. Bertini, Asst. Dir. for Programs

Current efforts of local, state, and private-sector actors are important, but not likely to yield progress comparable to what could be achieved with the addition of strong federal policies that establish coherent national goals and incentives, and that promote strong US engagement in international-level response efforts. The inherent complexities and uncertainties of climate change are best met by applying an iterative risk management framework and making efforts to significantly reduce greenhouse gas emissions; prepare for adapting to impacts; invest in scientific research, technology development, and information systems; and facilitate engagement between scientific and technical experts and the many types of stakeholders making America's climate choices.

http://www.nap.edu/catalog.php?record_id=12781

◆ Understanding Prevention, Amelioration, and Resolution of Lyme and Other Tick-Borne Diseases

Tick-borne diseases (TBDs) represent some of the world's most rapidly expanding arthropod-borne infectious diseases, yet significant gaps remain in our understanding and knowledge about them. In the United States, Lyme disease is the most common disease carried by ticks, and the number of those afflicted is growing steadily. If left untreated, the diseases carried by ticks can cause severe pain, fatigue, neurological problems, and other serious health problems.

Reasons for the rise in TBDs include shifts in the prevalence and distribution of animal reservoirs and tick vectors as well as the movement of humans into areas where animal hosts and tick populations are abundant. The incomplete understanding of the complex interactions of ticks, hosts, pathogens, and habitats that underlie changing disease patterns and the potential for climate change to exacerbate these trends is a growing concern for the nation's public health officials.

At the request of the National Institute of Allergy and Infectious Diseases, the Institute of Medicine formed the Committee on Lyme Disease and Other Tick-Borne Diseases: The State of the Science. The committee, which held a two-day workshop in the fall of 2010, was asked to include the breadth of scientific approaches and disciplines, but to exclude treatment guidelines from the workshop. In addition, the workshop was designed to provide a forum for broad scientific and public input and was to produce a workshop report that would highlight the major themes of the workshop and commissioned papers. The committee was not asked to develop conclusions or recommendations.

http://www.nap.edu/catalog.php?record_id=13134

◆ Digital Health Infrastructure Subject of Workshops in IOM's Learning Health System Series

Like many other industries, health care increasingly is turning to digital information and the use of electronic resources. The next generation digital health infrastructure could shape health and health care in fundamental ways. Electronic patient records, digital communication between patients and clinicians, accessible web-based health information, and even remote site diagnosis and treatment are examples of rapidly emerging technologies with great potential. With access to timely, comprehensive digital health information, patients and clinicians will be able to make collaborative and informed decisions grounded in a sound and up-to-date evidence base. At the same time, the availability of large repositories of health data will transform the breadth, depth, and pace of clinical research and analysis.

As part of its Learning Health System Series, the Institute of Medicine's Roundtable on Value & Science-Driven Health Care hosted three workshops, sponsored by the Office of the National Coordinator for Health IT, to explore current efforts and opportunities to accelerate progress in improving health and health care with information technology systems. Participants' discussions and presentations focused on four important cross-cutting dimensions: promoting technical advances and innovation, generating and using information, engaging patients and the public, and fostering stewardship and governance. This report summarizes workshop discussions on these issues and the context for their engagement.

http://www.iom.edu/Reports/2011/Digital-Infrastructure-for-a-Learning-Health-System.aspx

◆ Sustainable Urban Water and Resource Management

An article in the Spring issue of *The Bridge* from the National Academy of Engineering discusses how effective water management can also be an opportunity for enhancing the urban environment.The article describes a new approach to supplying and managing water and resource infrastructure to achieve urban sustainability. Examples of system components are also identified, as are challenges to implementing higher performing systems.

The author concludes that urban water and resource management systems are evolving in a clear and unified direction: (1) from the use of remote water supplies to the use of local water supplies, such as rainwater and reclaimed used water; (2) from optimizing the cost of infrastructure to optimizing water use, energy production, and nutrient extraction; (3) from independent, single-purpose components to integrated, multi-purpose systems; and (4) from centralized systems to hybrid systems that incorporate centralized and decentralized components. These changes are necessitating changes in institutions, system management, financing, and urban planning.

http://www.nae.edu/Publications/Bridge/43180/43201.aspx

◆ Promising Practices in Undergraduate Science, Technology, Engineering, and Mathematics Education

Numerous teaching, learning, assessment, and institutional innovations in undergraduate science, technology, engineering, and mathematics (STEM) education have emerged in the past decade. Because virtually all of these innovations have been developed independently of one another, their goals and purposes vary widely. Some focus on making science accessible and meaningful to the vast majority of students who will not pursue STEM majors or careers; others aim to increase the diversity of students who enroll and succeed in STEM courses and programs; still other efforts focus on reforming the overall curriculum in specific disciplines. In addition to this variation in focus, these innovations have been implemented at scales that range from individual classrooms to entire departments or institutions.

By 2008, it was apparent that little was known about the feasibility of replicating individual innovations or about their potential for broader impact beyond the specific contexts in which they were created. The research base on innovations in undergraduate STEM education was expanding rapidly, but the process of synthesizing that knowledge base had not yet begun.The field clearly needed a retrospective look at the ways in which earlier innovations had influenced undergraduate STEM education. To address this need, the National Research Council (NRC) convened two public workshops to examine the impact and effectiveness of selected STEM undergraduate education innovations. This report summarizes the workshops, which addressed such topics as the link between learning goals and evidence; promising practices at the individual faculty and institutional levels; classroom-based promising practices; and professional development for graduate students, new faculty, and veteran faculty.

http://books.nap.edu/catalog.php?record_id=13099

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Station *(from page 1)*

country selected by the FDA in late July 2010 to test sea food samples from the Gulf.

White said that as of October 28, 2010, when the commercial fishing season ended, the testing had not uncovered any unsafe levels of polycyclic hydrocarbons—chemicals associated with petroleum.

Since then, long-term testing has been taken over by the FDA. "We will be plugged back into the program," White said, "only if such testing shows contamination."

Polycyclic aromatic hydrocarbons (PAHs), White said, include 15 tested chemicals—seven of them carcinogens—that are "a cause for concern" if found in seafood. But so far, not a single sample has yielded any of them that exceed FDA guidelines.

'We helped get fisherman fishing again," White said, adding that the lab is using a new testing method which the station helped develop that is much faster than the one it replaced.

The tested samples included shrimp, crab and finfish; testing took some 500 hours to complete.

White pointed out that one sample could contain 20 jars of shrimp, crab or other seafood. "It's a painstaking process. First we homogenize the seafood—blend and mix it—then we extract it," he said.

Dr. Walter Krol prepares to analyze samples of seafood from the Gulf of Mexico for oil-related contaminants. [Photo: CAES]

The process entails first thawing the seafood samples—they arrive frozen on dry ice—then grinding them in a blender and putting them in test tubes. The material is then run through a high-pressure liquid chromatograph, which detects a spectrum of chemical properties associated with oil.

"We can test samples with this method much faster than with the old procedure," White said.

The National Oceanic and Atmospheric Administration (NOAA) and the FDA are the federal agencies responsible for shutting down commercial shrimping and fishing if oil or other pollution makes seafood in a specific area potentially unsafe to eat. But in light of test results, nearly all Gulf waters have been re-opened.

"We had to report our findings to the FDA within 24 hours of getting samples," White said.

Researcher Terri Arsenault conducted the extraction process after the samples were thawed and homogenized and Dr. Walter Krol used special instrumentation to analyze the specific chemicals they contained, White said. Both work in the Station's Department of Analytical Chemistry.

"Both Terri and Walter have done excellent work on the testing," White said. "And we are proud of the fact that we helped put hundreds of fishermen back to work."

The entire department has drawn plaudits from Station Director and CASE Member Louis A. Magnarelli. "Putting science to work for society is one of our key mottos," Magnarelli said. "This seafood testing project turned those words into reality." ***—Robert C. Pollack***