

The Latest In Homeland Defense & Security News

September 8, 2015

Highlight:

[Probing The Limits Of Wind Power Generation](#)

Because wind turbines remove kinetic energy from the atmospheric flow, researchers are concerned about the effectiveness and efficiency as the size

and density of a wind farm increases. Researchers compared two methods to estimate the power generation and also studied the differences of the wind farms during the day and night.



Alternative Energy

[Forecasting Wave Energy Several Hours In Advance](#)

Marine energy is still in its infancy and requires additional research. Researchers are currently developing models for the Bay of Biscay to determine the wave energy and its predictability through studies of the wave swells and frequency.

[New Nanomaterial Maintains Conductivity In Three Dimensions](#)

Researchers have developed a one-step process to make seamless carbon-based nanomaterials that possess superior thermal, electrical and mechanical properties in three dimensions. The research could lead to increased energy storage in batteries and supercapacitors, and increase the efficiency of energy conversion in solar cells.

[Solar Water-Splitting Technology Developed](#)

Researchers have utilized light-activated gold nanoparticles to harvest the sunlight and transfer solar energy to the hot electrons which split water molecules into oxygen and hydrogen. Oxygen and hydrogen are the feedstock for fuel cells that produce electricity.

Biometrics

[Customs Piloting Biometric Border Entry And Exit Control At U.S.-Mexico Border](#)

The U.S. Customs and Border Protection plans to launch "Pedestrian Border

Experiment" which is the agency's first use of facial and iris scans on the U.S.'s southern border. The program will track nonimmigrant visa holders who enter the country legally but continue to stay in the country after their visa has expired.

[Homeland Security Releases Biometric Framework](#)

The U.S. Department of Homeland Security released its "Biometric Strategic Framework" which outlines plans for its use of biometric technologies to ensure national security and public safety through 2025.

[EU Agency To Release Research On Fundamental Rights Concerns Regarding Biometrics In Border Checks](#)

The European Union Agency for Fundamental Rights (FRA) conducted a survey regarding the European Agency for Large-Scale IT Systems' (eu-LISA) pilot project on the EU's smart borders package. "The survey is part of the organization's wider research initiative regarding the fundamental rights aspects of the use of biometrics in migration, asylum and border procedures." The results are expected to be published this fall.

[NIST, FBI Research Contactless Fingerprint Devices](#)

"The National Institute of Standards and Technology (NIST) has partnered with the Federal Bureau of Investigation Biometric Center of Excellence to conduct research on contactless fingerprinting devices."

CBRN

[NIAID Exercises Option on Soligenix Radiation Countermeasure](#)

The National Institute of Allergy and Infectious Diseases (NIAID) has exercised a funding option to advance preclinical development of a radiation medical countermeasure for the treatment of gastrointestinal acute radiation syndrome (GI ARS).

[Metallic Gels Produce Tunable Light Emission](#)

Researchers have developed a light-emitting lanthanide metallogel that could be used to detect chemical and biological compounds.

Critical infrastructure

[Drought And Growth Prompt More Cities To Quench Thirst With Salt Water](#)

In response to the droughts, cities within the U.S. and other nations are either utilizing desalination or are investigating desalination as a means to obtain more water.

[Flu Study Highlights Risks Of Banning 'Dangerous' Research, Investigators Say](#)

Last year, the U.S. government suspended funding of gain-of-function (GOF) studies and ordered a review of their risks and benefits. The concern is that viruses could be made more transmissible or more pathogenic. The National Science Advisory Board for Biosecurity (NSABB) is awaiting a risk/benefit analysis and the Infectious Diseases Society of America has urged the NSABB to narrow its definition of GOF research so that "low risk studies" can proceed.

Cultural

[Sustainable Settlements To Combat Urban Slums In Africa](#)

25 of Africa's cities are among the 100 fastest growing cities in the world and are already overburdened. "The United Nations Human Settlements Programme (UN-Habitat) projects that nearly 1.3 billion people – more than the current population of China – will be living in cities in Africa in the next 15 years."

[Why 100,000s Of Syrian Refugees Are Fleeing To Europe](#)

The neighboring countries of Syria - Lebanon, Jordan, and Turkey do not have the capability or capacity to take care of additional Syrian refugees. The United Nations High Commissioner for Refugees is appealing the EU and the United States for assistance in the resettlement.

[Venezuela: Unnatural Disaster](#)

According to the International Crisis Group, Venezuela is headed toward a humanitarian disaster. The current political and economic crises, and potential food and medical crises would be disastrous for Venezuela.

[Toward A Better Understanding Of Religion And Global Affairs](#)

According to John Kerry, "religious actors and institutions are playing an influential role in every region of the world and on nearly every issue central to U.S. foreign policy."

Homeland Defense and Security

[Climate Change Will Irreversibly Force Key Ocean Bacteria Into Overdrive](#)

Researchers have discovered that ocean acidification can trigger an organism to work harder, grow faster, and produce 50 percent more nitrogen.

The problem is that it does not stop when carbon dioxide is reduced and consequently it diminishes other food sources and there are die-offs of numerous organisms.

[Magnetic Fields Provide A New Way To Communicate Wirelessly](#)

Researchers have "demonstrated a new wireless communication technique that works by sending magnetic signals through the human body." Although this is still in the proof-of-concept stage, it could be an alternative to existing wireless communication systems which would immediately aid individuals working remotely.

[US Revives New-Look 'Virtual Fence' Along Its Southern Border](#)

The Department of Homeland Security has recently resurrected a ten-year-old virtual fence concept. "Video surveillance feeds from a handful of remote "integrated fixed towers" in southern Arizona are now on the computer screens of local border patrol personnel."

[Protecting Earth From Asteroid Impact](#)

NEOSHIELD is an EU-funded initiative that will utilize science and technology through its experiments and models to develop a plan to "move" the near-Earth objects (NEOs) out of an Earth-bound orbit.

Medical

[New Research Aims To Slow The Spread Of Infectious Diseases](#)

Emerging pandemic disease outbreaks are threatening global public health and world economies. According to scientists, "we can expect five such new diseases to emerge each year."

[Blocking A Newly Identified Memory Pathway Could Prevent PTSD](#)

Post-traumatic stress disorder (PTSD) is

particularly common among soldiers who have been in combat, though it can also be triggered by physical attack or natural disaster. Researchers' "findings suggest that it may be possible to either prevent traumatic memories from forming so strongly in the first place, or to weaken them after consolidation."

[Wearable Device Helps Medics Save Lives In Disasters, On The Battlefield](#)

A wearable device has been designed to measure and monitor the vital signs of multiple trauma patients for emergency response in disasters and battlefield situations. The wearable biometric device monitors patients and collects and transmits breathing and heart rates in real-time.

[How Kidney Injury During Combat Affects The Long-Term Health Of Today's Soldiers](#)

In a recent study by Walter Reed National Military Medical Center, 88% of the acute kidney injury (AKI) injuries were due to blasts or projectiles. "Given that a single episode of AKI increases the risk of developing chronic kidney disease later in life, long-term monitoring of patients who experience AKI is very important."

[Study Finds Increased Risk Of MGUS In Vietnam Vets Exposed To Agent Orange](#)

"A study that used stored blood samples from U.S. Air Force personnel who conducted aerial herbicide spray missions of Agent Orange during the Vietnam war found a more than 2-fold increased risk of the precursor to multiple myeloma known as monoclonal gammopathy (MGUS)."

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