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**HDIAC (Homeland Defense &  
Security Information Analysis Center)**

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## EMP PREPAREDNESS FOR CRITICAL INFRASTRUCTURE

### HDIAC Spotlight: EMP Preparedness for Critical Infrastructure Protection

An electromagnetic pulse (EMP) is a short burst of high-intensity electromagnetic radiation that originates from an energy source. Observable examples of natural EMP events include solar flares and lightning, whereas man-made EMPs emanate from electric motors, powerlines, or EMP-specific devices and weapons. Depending on its source and location, a transient EMP can severely damage computer servers, communication systems, power grids, or other electrical equipment that forms the autonomous bedrock of Western societies.

Continuous technology advancements in this digital age serve as constant reminders of the need for infrastructure-based vulnerability assessments.

**[READ THE SPOTLIGHT](#)**

### UPCOMING EVENTS

#### August/September 2019

**Name:** U.S. Department of Veteran Affairs/  
U.S. DoD Suicide Prevention Conference

**Date:** August 26 to August 29

**Location:** National Harbor, MD

**URL:** <https://www.hdiac.org/event/2019-u-s-department-of-veteran-affairs-va-u-s-department-of-defense-dod-suicide-prevention-conference/>

**Name:** RadWaste Summit

**Date:** September 3 to September 5

**Location:** Henderson, NV

**URL:** <https://www.hdiac.org/event/radwaste-summit/>

**Name:** The Battery Show

**Date:** September 10 to September 12

**Location:** Novi, MI

**URL:** <https://www.hdiac.org/event/the-battery-show/>

**Name:** Tactical Communications Summit

**Date:** September 11 to September 12

**Location:** Alexandria, VA

**URL:** <https://www.hdiac.org/event/tactical-communications-summit/>

## FEATURED SUBJECT MATTER EXPERT



George Preti, Ph.D., is an analytical organic chemist, member at the Monell Chemical Senses Center, and adjunct professor in the Department of Dermatology, Preleman School of Medicine of the University of Pennsylvania. He received his B.S. in Chemistry from the Polytechnic Institute of Brooklyn in 1966, and his Ph.D. in Organic Chemistry in 1971 from the Massachusetts Institute of Technology, with a specialty in Organic Mass Spectrometry. His research has focused on the nature, origin, and functional significance of human odors. His research was featured in the latest edition of the HDIAC Journal, and can be read [here](#).

## [APPLY TO BE A SUBJECT MATTER EXPERT](#)

**Technical Inquiry Service**

HDIAC provides up to **four free hours** of information services within our eight focus areas to academia, industry, and other government agencies.

**Services**

- Research & Analysis
- Literature Searches
- Product/Document Requests

**REQUEST A TECHNICAL INQUIRY**

**3D Mapping Techniques for Tissue Engineering**

*3D Body Mapping Techniques for Tissue Engineering*

**[WATCH THE TECH TALK HERE](#)**

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**WHAT DO SMEs DO?**

- ASSIST US IN ANSWERING TECHNICAL INQUIRIES
- AUTHOR JOURNAL ARTICLES
- CONTRIBUTE TO TECH TALKS
- PRESENT WEBINARS
- OPPORTUNITIES TO PRESENT AT CONFERENCES

**CLICK TO APPLY**

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### ALTERNATIVE ENERGY



#### Ultra-thin layers of rust generate electricity from flowing water

"New research shows that thin films of rust -- iron oxide -- can generate electricity when saltwater flows over them. These films represent an entirely new way of generating electricity and could be used to develop new forms of sustainable power production."

#### Coating developed by Stanford Researchers brings lithium metal battery closer to reality

"A new coating could make lightweight lithium metal batteries safe and long lasting. A team of researchers at Stanford University and SLAC National Accelerator Laboratory has invented a coating that overcomes some of the battery's defects."

### BIOMETRICS



#### Unmanned stores using biometrics, AI to be tested at Singapore University campuses

"Deployments such as palm scanners will allow shoppers to enter the kiosk, RFID will keep track of items purchased and AI will monitor movement inside the kiosk. These features as well as smart cameras and smart shelves will be used in data analysis to improve shoppers' journey and experience."

#### IDrive releases biometric facial recognition API for business and developers

Users have the option to include a number of features such as face comparison, analysis and identification of multiple faces in images, face verification to confirm face identity in match comparison, face analysis to classify gender and age, and facial expression analysis to establish a variety of emotions."

### CBRN DEFENSE



#### ATOS Participates in cosmic EU Project to Develop Shipping Container Threat Detection System

"ATOS, a global leader in digital transformation, today announced its participation in the Cosmic European project which aims to develop an advanced inspection system to detect Chemical, Biological, Radiological, Nuclear and Explosive (CBRNE) in shipping containers and ports."

#### Lawmakers seek probe of controversial bioweapons defense system

"In a three-page letter, four Democrats and Republicans on the House Energy and Commerce Committee asked the Government Accountability Office to conduct an in-depth scientific evaluation of the new system, called BioDetection 21."

### CRITICAL INFRASTRUCTURE PROTECTION



#### Critical VxWorks flaws expose millions of devices to hacking

"Researchers found serious vulnerabilities in VxWorks, the world's most popular real-time operating system that powers over 2 billion devices including enterprise network firewalls and routers, industrial controllers and medical equipment. The flaws allow attackers to take over devices remotely by sending network packets, which make them particularly dangerous."

#### New Ways for Taking Salt Out of Seawater

Scientists at the Department of Energy's Lawrence Berkeley National Laboratory (Berkeley Lab) investigating how to make desalination less expensive have hit on promising design rules for making so-called "thermally responsive" ionic liquids to separate water from salt."

### CULTURAL STUDIES



#### The Amazon Fires are more dangerous than WMDs

The destruction of the Amazon is arguably more dangerous than the weapons of mass destruction that have triggered a robust response. To lose a fifth of the Amazon to deforestation would trigger a process known as "dieback," releasing what The Intercept calls a "doomsday bomb of stored carbon"

#### Examining whether the Terrorism Label Applies to Antifa

"Does all of that — the endorsement of, and participation in, political violence by some elements of antifa, especially anarchists, along with Marxists, Maoists, and anarcho-syndicalists, who are usually among the most visible, vocal and violent elements which take part in antifa protests — make antifa a terrorist organization?"

**HOMELAND DEFENSE AND SECURITY**



**After leaving treaty, US tests ground launched cruise missile**

“The U.S. tested a new ground launched cruise missile just weeks after a treaty banning them expired. The new missile, previously banned under the Intermediate Range Forces Treaty (INF), was launched yesterday, August 18th, 2019, off the coast of California. The U.S. walked away from the INF Treaty after repeatedly accusing Russia of violating the treaty.”

**Hackers could have breached US bioterrorism defenses for years, records show**

“The data included the locations of at least some BioWatch air samplers, which are installed at subway stations and other public locations in more than 30 U.S. cities and are designed to detect anthrax or other airborne biological weapons, Homeland Security officials confirmed.”

**MEDICAL**



**Tiny biodegradable circuits for releasing painkillers inside the body**

“Researchers have developed biodegradable microresonators that can be heated locally with a wireless system. Doctors could soon be using them in implants to control the release of painkillers within tissue.”

**Using quantum dots and a smartphone to find killer bacteria**

“A combination of off-the-shelf quantum dot nanotechnology and a smartphone camera soon could allow doctors to identify antibiotic-resistant bacteria in just 40 minutes, potentially saving patient lives. Australian scientists develop cheap and rapid way to identify antibiotic-resistant golden staph (MRSA).”

**WEAPONS OF MASS DESTRUCTION (WMD)**



**Why the US abandoned nuclear-powered missiles more than 50 years ago**

“The United States tried to develop a nuclear-powered cruise missile in the 1950s and 1960s but abandoned the project as impractical. The weapon was known as Supersonic Low Altitude Missile, or SLAM, and it would have been the most dangerous nuclear weapon ever made.”

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