

# ISSUE BRIEF

No. 3699 | AUGUST 13, 2012

## Preventing Catastrophe: Time for a National EMP Awareness Day

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An electromagnetic pulse (EMP) attack on the U.S. would have devastating effects. On August 15, 2003, a major blackout occurred throughout the northeastern U.S. and Canada, offering a glimpse of what life would be like after an EMP attack. More than 55 million people were affected, but most services were restored within a day.

That would not be the case after an EMP. Damage to lives and property would be immense, and the ensuing devastation would continue for years, if not decades. Yet despite this substantial threat, the U.S. remains largely vulnerable to such an attack. In order to raise recognition of the threat and begin a national dialogue, Congress should establish August 15 as National EMP Awareness Day.

**When the Lights Go Out.** A successful EMP attack—a high-intensity burst of electromagnetic energy

caused by a rapid acceleration of charged particles—would fundamentally change the world:

- Airplanes would fall from the sky;
- Most cars would be inoperable;
- Electrical devices would fail;
- Water, sewer, and electrical networks would fail simultaneously; and
- Systems of banking, energy, transportation, food production and delivery, water, emergency services, and even cyberspace would collapse.

It would take years—possibly decades—to restore the U.S. electricity supply. Recovery abilities would be critically limited, and the country would be challenged to support current population levels. Millions would likely die.

**Launching an Attack.** One of the most effective means of delivering an EMP attack is detonating nuclear weapons at a high altitude. Energetic particles released during the explosion would disable, damage, or destroy all unhardened electronic

devices within the line of sight of the detonation.

A rogue state would not need a long-range ballistic missile to deliver a nuclear warhead. Even short-range ballistic missiles carrying an EMP device or a nuclear warhead launched from a ship off the U.S. coast could impact millions. Today, over 30 countries, including Iran and North Korea, possess ballistic missile capabilities.

An EMP can also be created by a radio-frequency weapon. While comparatively easier and cheaper than a nuclear weapon mounted on a missile, a radio-frequency device must be detonated close to the target and does not produce as much damage.

Additionally, an EMP can be generated during a Carrington event, or space weather. In 1859, British astronomer Richard Carrington observed an unusually large solar flare. It reached earth minutes later and had a significant impact on telegraphs, which shocked their operators unconscious. A solar flare of this magnitude today would have a much more devastating impact, as modern society depends heavily on electronic devices.

**Rejected Warnings and Failures in Preparedness.** While

This paper, in its entirety, can be found at <http://report.heritage.org/ib3699>

Produced by the Douglas and Sarah Allison Center for Foreign Policy Studies

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the U.S. government has been aware of the threat of an EMP effect since its 1962 Starfish Prime nuclear weapons test, little has been done to harden civilian infrastructure. Key military systems were hardened during the Cold War, but interest in the EMP threat dropped precipitously after the collapse of the Soviet Union.

Recommendations of various congressionally mandated commissions, such as the EMP Commission and the Quadrennial Defense Review Panel, have not fully materialized, despite increasing U.S. civilian and military reliance on electronic devices. Today, comprehensive threat assessments and scenario planning for EMP attacks remain underdeveloped. At the federal level, the Department of Homeland Security (DHS) continues to lack a national recovery plan in the event of an EMP attack.

Similarly, an EMP event has not been included within the National Planning Scenarios. These high-consequence scenarios form the basis of federal, state, and local disaster response exercises that are intended to help determine response and recovery capabilities and needs and address problems before a disaster occurs. Given the potentially catastrophic consequences of an EMP attack and the unique nature of the threat, an EMP event should be added to the list of scenarios.

At the same time, state and local governments also remain poorly prepared for an EMP attack. These vulnerabilities are magnified by the fact that the federal government also remains unprepared and would likely be unable to render assistance in the event of an EMP attack.

**Take Action Now.** Bringing attention to the threat with a National EMP Awareness Day would help, but awareness should be joined

with action. In order to prevent and mitigate the effects of a potential EMP attack, the U.S. government should:

■ **Improve and restructure U.S. missile defense programs.**

Improved command-and-control features and interceptors tied to forward-deployed radar would give the Standard Missile-3 (SM-3) interceptor the ability to counter long-range ballistic missiles in the late midcourse stage of flight. Additionally, the government should improve the SM-3's ability to intercept short-range ballistic missiles in the ascent phase of flight. Ultimately, the U.S. should develop and deploy space-based missile defense, the best way to protect the U.S. and allies from a ballistic missile threat.

■ **Demand that the Administration develop a National Recovery Plan.** The EMP Commission emphasized that the nation should first improve the infrastructure on which all other sectors are dependent, specifically citing electrical power and telecommunications. This risk-based approach recognizes that certain infrastructure is key to post-EMP attack recovery. EMP should also be added to the list of 15 National Disaster Scenarios.

■ **Determine which countries could attack.** The U.S. should produce a national intelligence estimate on which countries are pursuing EMP weapons and associated delivery systems and platforms or are already capable of launching an EMP attack. Preparing for an attack means understanding one's opponents

and how they are incorporating EMP weapons into their strategic postures. It is essential that policymakers have the most recent intelligence at their hands so that they can determine how best to respond to EMP threats as they arise.

■ **Prepare and protect the nation's cyber infrastructure.**

Cyber infrastructure is dependent on the power grid—which makes it a unique challenge in an EMP scenario. Thus, contingency planning should explore ways to keep the cyber system functioning without primary power; it should also explore ways to protect cyber circuit boards from the deleterious effects of a large burst of energy in the network. As such, Congress should direct the Department of Defense and DHS to review their cyber systems, incorporating the recommendations of the EMP Commission, including identification of the most critical elements of the cyber system that must be hardened against an EMP attack. The commission also recommends that preparedness planning account for the interdependency between the nation's cyber infrastructure and other elements of the broader infrastructure. Overall, the key to countering an EMP is to put barriers in place to prevent cascading failures in the nation's infrastructure.

■ **Require more research.** In addition to raising national awareness, more research is needed on the risk associated with an EMP attack to ensure that the nation understands the full scope of the threat and how to close critical vulnerability gaps.

**Protect the Nation.** The U.S. has the technology to protect itself from the effects of a deliberate attack or space weather. It is a no-brainer that the government should pursue these options and “provide for the common defense.” The nation should not continue to underestimate the threat of an EMP attack.

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