Nuclear Reactors, Materials, and Waste Sector Snapshot

Sector Information

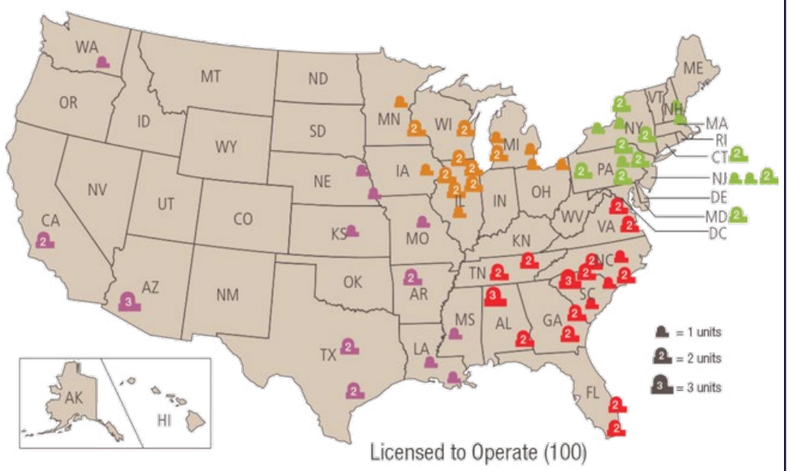
The Nuclear Reactors, Materials, and Waste Sector in New Jersey consists of nuclear power generation and the industrial, medical, and research use of radioactive materials.

New Jersey has four nuclear reactors at two facilities in Ocean and Salem Counties.

Salem 1 and 2 Nuclear Reactors
Source: www.pseg.com

The US Nuclear Regulatory Commission (NRC) regulates civilian use of nuclear material, including licensing to meet safety and security requirements. For New Jersey, the NRC has authorized the Department of Environmental Protection to perform that function.

Operating Commercial US Nuclear Power Reactors



Source: US Nuclear Regulatory Commission

Threat

Cyber: Moderate

The NRC mandates that critical safety, security, and emergency preparedness systems at nuclear facilities are isolated from the Internet. Networks following these requirements are well defended against cyber intrusion and attacks at the operational level. However, a nuclear facility's corporate network is still vulnerable to cyber intrusion. An attacker could exfiltrate or manipulate sensitive data, including nuclear reactor and facility information. The most notable cyber attack against a nuclear facility took place in January 2010, destroying a reported one-fifth of Iran's Natanz uranium enrichment plant's centrifuges.

Terrorism: Low

In 2015, Russian-linked criminal organizations in Moldova sought to sell radioactive cesium to the Islamic State of Iraq and Syria. The nuclear material was intended for use in a radiological dispersion device (RDD)—often referred to as a "dirty bomb"—which releases radioactive particles into the air. While usually ineffective in causing fatalities, an RDD event would pose major health risks, as well as a costly and time-consuming decontamination process.

Investigation of the Brussels Airport attack in Belgium in March 2016 revealed attackers had 10 hours of reconnaissance video of the Director of Belgium's Nuclear Research and Development program, likely an attempt to gain access to a nuclear facility. Al-Qa'ida considered nuclear facilities as potential targets prior to the 9/11 attacks.

Natural Hazards

During Superstorm Sandy in 2012, some of New Jersey's nuclear reactors temporarily shut down because of failing water circulation pumps. Operators followed severe weather procedures, upgrading the event to an "alert," the second-lowest in the NRC's four-tiered caution system.

The NRC's rigorous safety regulations ensure that US nuclear facilities are designed to withstand tsunamis, earthquakes and other hazards. In addition to those plants in recognized earthquake zones, the NRC has been working with several agencies to assess recent seismic research for the central and eastern part of the country. That work continues to indicate US plants will remain safe.

Preparedness

The US Food and Drug Administration approved the use of two drugs to increase the odds of survival for those exposed to high-dose radiation that damages bone marrow. Radiological dispersal events such as "dirty bombs" and nuclear accidents pose major health risks including cancer, burns, acute radiation syndrome, and death. Pegfilgrastim and filgrastim were approved following research funded by the National Institute of Allergy and Infectious Diseases—the branch of the National Institutes of Health tasked with the US Government's Radiation and Nuclear Countermeasures Program.

The NRC emphasizes the integration of safety, security, and emergency preparedness as the basis for its primary mission of protecting public health and safety. The NRC's review of the emergency preparedness programs reaffirmed its emergency planning remains valid under the current threat environment.

The Federal Emergency Management Agency's Radiological Emergency Preparedness (REP) Program provides NRC-licensed commercial nuclear power plants planning guidance, alert and notification system requirements, training and exercises, and an REP Program Manual.

Intelligence Gaps

- Which terrorist groups, criminal organizations, or foreign adversaries have attempted to exfiltrate data from nuclear facilities?
- How are nuclear facilities vulnerable to insider threat?
- What vulnerabilities exist during the transport of nuclear material?

Contact Information

For more information, please contact NJOHSP's Preparedness Bureau at preparedness@njohsp.gov.