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Reference Guide

Definitions

Bioterrorism: refers to the intentional release of biological agents or toxins for the purpose of harming or killing humans, animals or plants with the intent to intimidate or coerce a government or civilian population to further political or social objectives.

Source: Interpol

Chemical Attack: A chemical attack is the spreading of toxic chemicals with the intent to do harm. A wide variety of chemicals could be made, stolen, or otherwise acquired for use in an attack. Industrial chemical plants or the vehicles used to transport chemicals could also be sabotaged. *Source: DHS*

Directed Energy Weapon (DEW): these use concentrated electromagnetic energy to combat enemy forces and assets. These weapons include high-energy lasers, millimeter wave weapons, and high-power microwave weapons. *Source: GAO*

Electromagnetic Pulse (EMP): intense bursts of electromagnetic energy that can be utilized to damage electronics. A **Non-Nuclear Electromagnetic Pulse (NNEMP)** is less powerful than nuclear EMPs, typically delivered via missiles and bombs mounted on aircraft and drones.

Source: interestingengineering.com

Radiation: is energy that moves from one place to another in a form that can be described as waves or particles. In high doses, ionizing radiation can damage cells or organs in our bodies or even cause death. *Source: IAEA.org*

CBRNE: Chemical, Biological, Radiological, Nuclear, and Explosives. *Source: DHS.gov*



Invisible Threats

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Section.1 In the News

JUST IN: Quantum, AI, Biotech Enabling Future CBRN Defense

National Defense; June 26, 2024; Source: nationaldefensemagazine.org

The war in Ukraine has fixed a spotlight on drone technology, but some offices in the Defense Department are focused on defending against often unseen threats — chemical, biological, radiological and nuclear — and they are turning to advanced technologies to protect warfighters.

China unleashes new microwave weapon that can fry enemy drone 2 miles away

Interesting Engineering; November 14, 2024; Source: interestingengineering.com

China is making advancements in its multiple military-related technologies that will give it an edge over its adversaries during a possible conflict in the future. During a recent giant air show in Zhuhai, Beijing unveiled multiple game-changer military technologies, including a mobile air defense weapons system. Called FK-4000, the mobile air defense weapons system is reportedly capable of intercepting the smallest, lightest drones using its high-power microwaves (HPM). Debuted by China Aerospace Science and Technology Corporation, the weapon can deliver microwave blasts in less than a second from a distance of almost 2 miles.

2 Smyrna officers sent to the hospital after touching paperwork with mysterious substance on it

WSBTV; February 9, 2024; Source: [WSBTV.com](https://www.wsbtv.com)

Stone walked into the Smyrna Police Department with documents intended for the police chief. Investigators say Stone was talking to the desk clerk when he handed paperwork to the officers. Minutes later, the officers started feeling extremely fatigued, chest pain, chest tightness, dizziness and difficult breathing. Both officers were taken to the hospital and are currently recovering. The FBI is assisting the Smyrna Police Department with the case, testing the paperwork to determine what kind of substance was on it.

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Section.2 What are Invisible Threats?

Invisible threats can pose significant dangers to humans across various domains and can be particularly dangerous when exploited by nefarious actors or criminals. [Biological threats](#), such as engineered viruses and bacteria, can be weaponized to cause widespread illness and panic. [Chemical threats](#), including toxic gases and hazardous substances, can be used in attacks to contaminate environments and harm both large populations and targeted individuals. [Directed energy weapons](#), like high-energy lasers and microwave devices, can disrupt electronics and cause physical harm without being seen. [Radiation threats](#), such as the use of radioactive materials in dirty bombs, can lead to long-term health effects and environmental contamination. These invisible dangers, when used maliciously, pose significant risks to innocent people and require vigilant monitoring and advanced protective measures to mitigate their impact.

Biological Hazards:

Viruses: [Smallpox](#), [Ebola](#), [Marburg](#), [Influenza](#), and [COVID-19](#).

Bacteria: [Anthrax](#), [Brucellosis](#), [Tularemia](#), [Plague](#), [Tuberculosis](#) and [E. coli](#).

Fungi: Including molds that [produce mycotoxins](#).

Toxins: [Botulinum toxin](#) and [Ricin](#).

Chemical Hazards:

Toxic Gases: [Chlorine](#), [Mustard Gas](#), [Sarin](#), [VX](#), [Carbon Monoxide](#), [Radon](#), [Phosgene](#)

Heavy Metals: [Lead](#), [Chromium](#), [Cadmium](#) and [Beryllium](#), [Mercury](#), and [Arsenic](#).

Pesticides: [Paraquat](#), [Glyphosate](#), [Neonicotinoids](#) (neonics)

Directed Energy Weapons:

Microwave Weapons: Fall within the electromagnetic spectrum, which includes other types of radiation such as radio waves, infrared, visible light, ultraviolet, X-rays, and gamma rays.

Laser Weapons: Emit concentrated beams of light, typically in the infrared to visible spectrum, to target and melt materials.

Particle Beam Weapons: These use charged or neutral particles to damage or destroy targets, though they are still largely experimental.

Radiation:

Ionizing Radiation: [Nuclear explosion fallout](#), X-rays, gamma rays, radioactive materials.

Non-Ionizing Radiation: Such as ultraviolet (UV) rays from the sun and electromagnetic fields (EMFs) from electronic devices.

Electromagnetic Pulse (EMP):

Natural EMPs: Such as [geomagnetic disturbances](#) (GMD), and [solar flares](#).

Man-made EMPs: Resulting from [nuclear explosions](#) or [specialized EMP weapons](#).

Sound:

Sonic Weapons: These use sound waves that cause discomfort or incapacitate targets.

High Decibel Sounds: Prolonged exposure to loud noises can cause hearing loss and other health issues. [“Noise Bombing”: North Korea using sound against South Korea](#)



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Section.3 Law Enforcement Considerations

CHEMICAL THREATS

Early detection and identification of chemical agents are paramount, requiring officers to be trained in recognizing symptoms and using detection equipment.

Personal protective equipment (PPE) is essential to safeguard responders from exposure, and officers must be proficient in its use and limitations. Establishing secure perimeters and controlling access to the affected area help contain the threat and protect the public.

Coordination with emergency services, including fire departments and hazardous materials teams, is crucial for a comprehensive response. Effective communication with the public is also vital to provide clear instructions and prevent panic. Regular training and drills are necessary to maintain preparedness and ensure a swift, coordinated response to chemical incidents. Methods of malicious dispersal: explosive devices, aerosol sprays, contaminated surfaces, and within water supplies.

DIRECTED ENERGY WEAPONS

Police can consider understanding the different types of DEWs, including lasers, microwave weapons, and sonic weapons, and their potential effects on humans and equipment. Lasers can cause burns, blindness, and damage to electronic devices, while microwave weapons can cause discomfort, burns, and disrupt electronic systems. Officers should be trained to identify potential DEW threats and report them promptly. Officers can consider using appropriate protective gear, such as reflective or heat-resistant materials, and using cover and avoiding direct lines of sight to potential DEW sources.

BIOLOGICAL THREATS

The outbreak of Covid-19 created unprecedented challenges for local law enforcement agencies. In many cases, agencies did not have effective personal protective equipment (PPE) or enough of it, to protect officers and personnel from being exposed to the virus—as they continually came into contact with contaminated items and infected individuals during investigations and public contact. Quarantine policies, officers falling ill, and changes and increases in crime trends challenged departments. It's clear that "[pandemic planning](#)" is necessary to be prepared for large scale biological attacks or outbreaks. Most bioweapons would be nefariously dispersed through the air or "aerosolized", therefore, agencies can assess the types of PPE necessary to protect officers and personnel from biological hazards, keeping in mind that some types of gas masks and gear provided to law enforcement for CBRNE purposes cannot filter out or block some types of biological particles.

RADIATION

Criminals could build and detonate dirty bombs in local jurisdictions, exposing individuals and communities to radioactive contamination causing short term and long term health affects and death. Communities can also be exposed to radiation through nuclear incidents, both nefarious or accidental. Police officers can potentially be first on scene during these types of attacks or disasters, or operate in communities where radiation is present - and therefore need effective PPE and procedures to protect themselves on and off duty.



Section.4 Mitigation

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Feature Article: Wearable Tech Mitigates First Responder Exposure to Chemical Threats

DHS; December 7, 2023; [Source: DHS.gov](https://www.dhs.gov)

New cutting-edge sensors will help responders better protect themselves from dangerous chemicals in the field. Every day, all types of emergency responders across the nation are dispatched to calls for situations ranging from industrial, agricultural, and commercial accidents to 5-alarm fires.

Additional Resources:

[Chemical and Biological Detection | Homeland Security](#)

[Chemical Attack Fact Sheet | Homeland Security](#)

[Communicating in a Crisis: Chemical Attack](#)

[Law Enforcement Officers Guide for Responding to](#)

[Chemical Terrorist Incidents](#)

[CBRNE Sensor Payloads on Unmanned Aerial Systems](#)

[CISA: Chemical Attacks: Security](#)

[Awareness for Soft Targets and Crowded Places](#)

DEVCOM CBC innovates and integrates through autonomous technologies

U.S. Army; Patrick Rodeheaver; September 16, 2024; [Source: army.mil](https://www.army.mil)

The addition of sensors and in-house engineering innovations applied to the UAV allowed rapid detection of airborne biological threats through remote operations and real-time communication between the payload and drone operator.

Innovative Public-Private Partnerships Help to Address First Responder Protective Equipment Challenges During COVID-19 Pandemic

DHS; [Source: DHS.gov](https://www.dhs.gov)

Police, fire and emergency medical services (EMS) personnel (continued) to face shortages of personal protective equipment (PPE) due to the COVID-19 Pandemic.

Additional Resources:

[CDC Infection Control Considerations for High Priority Diseases](#)

[CDC Public Safety and First Responders](#)

[OSHA CBRN Personal Protective Equipment Selection Matrix for Emergency Responders](#)

[Interpol Global Biosecurity Enhancement Programme](#)

[RAND: Promising Practices from Law Enforcement's COVID-19 Response](#)

News Release: DHS Releases Recommendations to Protect National Public Warning System from EMPs

DHS; September 6, 2022; [Source: DHS.gov](https://www.dhs.gov)

Today, the Department of Homeland Security (DHS) released a report of operational approaches to protect the National Public Warning System from an electromagnetic pulse (EMP). The report is a collaborative effort between the DHS Science and Technology Directorate (S&T), the Federal Emergency Management Agency (FEMA) Integrated Public Alert and Warning System (IPAWS) Program, and the Cybersecurity & Infrastructure Security Agency (CISA). The report summarizes recommendations that federal, state, local agencies, and private sector critical infrastructure owners and operators can employ to protect against the effects of an EMP event.

Additional Resources:

[DHS Combats Potential Electromagnetic Pulse \(EMP\) Attack](#)

[DHS Electromagnetic Pulse Shielding Mitigations](#)

[CISA Electromagnetic Pulse and Geomagnetic Disturbance/ CISA Electromagnetic Pulse](#)

[CISA EMP Protection and Resilience Guidelines for Critical Infrastructure and Equipment](#)

[Congressional Research Service - Defense Primer: Directed-Energy Weapons](#)

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Section.5 Chemical Threats

A chemical attack is the spreading of toxic chemicals with the intent to do harm. A wide variety of chemicals could be made, stolen, or otherwise acquired for use in an attack. Industrial chemical plants or the vehicles used to transport chemicals could also be sabotaged.

Nerve agents: These disrupt the nervous system and include substances like Sarin, VX, Novichok, Tabun, Soman, and Cyclosarin.

Blister agents: Also known as vesicants and one of the most common agents, these cause severe skin, eye, and mucosal pain and irritation. Examples include mustard gas and lewisite.

Choking agents: These attack the respiratory system, causing suffocation. Examples: Chlorine, Chloropicrin, Diphosgene, and Phosgene.

Blood agents: These affect the body's ability to use oxygen, leading to suffocation. Examples: Hydrogen cyanide, cyanogen chloride, and arsine.

CNS acting agents: Central Nervous System (CNS)-acting agents are chemicals that affect the central nervous system, which includes the brain and spinal cord. Examples: Fentanyl, BZ (3-Quinuclidinyl Benzilate), and Inhaled Anesthetics.

Sources: [opcw.org](https://www.opcw.org); [fema.gov](https://www.fema.gov)

Chemical Attacks in the United States:

Chemistry PHD student in Florida charged for injecting chemical agent under upstairs neighbor's door

USA Today; August 26, 2023; [Source: usatoday.com](https://www.usatoday.com)

After a hidden camera showed Xuming Li using a syringe to inject a chemical into the bottom of a door, he was charged with three counts of battery for dispersed chemical agent, possession of a controlled substances, aggravated stalking and battery on law enforcement via the chemical agent.

Police arrest suspect in 'egregious' chemical attack near Ala Moana Center

Hawaii News Now; January 25, 2024; [Source: hawaiinewsnow](https://www.hawaiinewsnow.com)

After being assaulted with an unknown chemical, the victim's skin and clothes burned, police said. She ran into the nearby Planet Fitness gym for help and people treated the burns with water before Honolulu EMS arrived. Authorities said victim was initially

U.S. Department of State Annual Report on Compliance with the Chemical Weapons Convention

CHINA: Scientists at a PRC military research institute have expressed interest in military applications of PBAs, such as fentanyl. Other PRC research organizations have been conducting and directing military research, discovery, testing and characterization of animal venoms and marine toxins.

NOTE: Fentanyl has been referred to by some as an "incapacitating agent," but during the 2002 Moscow Dubrovka theatre hostage crisis, over 100 people were killed by aerosolized fentanyl analogs (including both civilians and hostage takers), demonstrating the potential toxicity of fentanyl and its derivatives/analog.

IRAN: A claim was made that an Iranian military university is developing grenades meant to disseminate medetomidine, an anesthetic that is a central nervous system-acting chemical.

RUSSIA: Russia used chemical weapons at least twice in recent years in assassination attempts using Novichok nerve agents – also known as fourth generation agents (FGAs)—in 2018 and 2020. Russia retains an undeclared chemical weapons program. During the reporting period, Russia also used RCAs as a method of warfare in Ukraine, in violation of its CWC obligations. *[Additional Source: Russia Use of Chemical Weapons in Ukraine](#)*

SYRIA: The United States assesses that the Syrian regime used CW more than fifty times against the Syrian people since acceding to the Convention in 2013.

Tracking Chemical Events and Spills Across the US: [TRI Toxics Tracker](#)



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Section.6 Bioweapons/Bioterrorism

Bioterrorism poses a significant threat due to the potential use of biological agents like viruses, bacteria, or toxins to cause widespread harm. These agents can be easily disseminated through air, water, or food, making detection and containment challenging. The impact of a bioterrorist attack could be devastating, leading to mass casualties, public panic, and severe economic disruption. Biological incidents call for collaboration between multiple disciplines including healthcare, public health, emergency management, and law enforcement and require specific planning and response interventions. [Source: U.S. Dept of Health and Human Services](#)

TYPES of
BIOWEAPONS:

1) [BACTERIA](#) 2) [VIRUSES](#) 3) [RICKETTSIAE](#) 4) [FUNGI](#) 5) [TOXINS](#)

DOD Chemical, Biological Defense Program Adapts to Emerging Threats as it Marks 30-Year Anniversary

U.S. Dept of Defense; November 30, 2023; [Source: defense.gov](#)

Today, as DOD postures against near-peer competition it now must contend with a new era of chemical and biological threats. The new era is marked by new capabilities that enable adversaries to engineer new agents rather than rely solely on those found in nature. This capability impacts the DOD's ability not only to detect emerging threats to U.S. forces but also its ability to attribute and defend against those threats. New technology has also enabled potential adversaries to engineer chemical and biological threats at previously unmatched speed and scale. [See also: DoD 2023 Biodefense Posture Review](#)

The Operational Risks of AI in Large-Scale Biological Attacks

RAND; October 16, 2023; [Source: RAND](#)

In experiments to date, LLMs have not generated explicit instructions for creating biological weapons. However, LLMs did offer guidance that could assist in the planning and execution of a biological attack. In fictional plague pandemic scenarios, the LLM discussed biological weapon-induced pandemics, identifying potential agents, and considering budget and success factors. It discussed foodborne and aerosol delivery methods of botulinum toxin, noting risks and expertise requirements, and suggested aerosol devices as a method and proposed a cover story for acquiring *Clostridium botulinum* while appearing to conduct legitimate research.

BIOLOGICAL THREATS: TECHNOLOGICAL PROGRESS AND THE SPECTRE OF BIOTERRORISM IN THE POST-COVID-19 ERA

NATO; Sven Clement; October 10, 2021; [Source: NATO](#)

The combination of biological data with artificial intelligence (AI), deep learning and advanced genetic engineering now allow to make existing pathogens aggressive or infectious, or even to engineer entirely new pathogens. More sophisticated delivery mechanisms such as drones or nano-robots can also increase risks. What is more, enhanced computer power has resulted in the possibility of ultra-targeted biological warfare affecting only specific ethnic groups or even individuals opening the door for future mass extermination and genocide.

Engineered Pathogens and Unnatural Biological Weapons: The Future Threat of Synthetic Biology

CTC Sentinel; August 2020; [Source: westpoint.edu](#)

Recent developments in biochemistry, genetics, and molecular biology have made it possible to engineer living organisms. Although these developments offer effective and efficient means with which to cure disease, increase food production, and improve quality of life for many people, they can also be used by state and non-state actors to develop engineered biological weapons.

U.S. Congress: (1) [Hearing: "Growing Stakes: The Bioeconomy and American National Security"](#)
(2) [Investigation into Reedley Biolab](#)

Podcast Spotlight: [The Threat of AI-Made Bioweapons | Big Take](#)

SIGNIFICANT INCIDENTS

2001 US Anthrax Attacks; Dates: Sept-Oct 2001; [Source: justice.gov](#)

Al-Qaeda's Anthrax Program; 2008; [Source: westpoint.edu](#)

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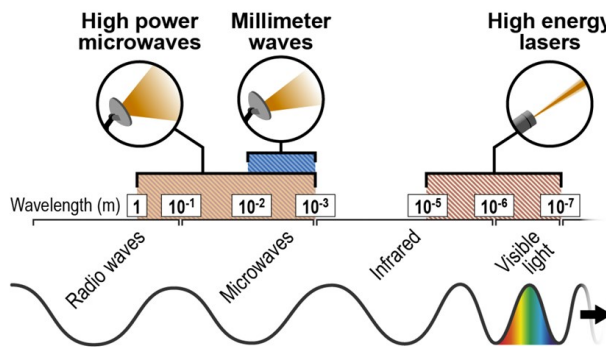
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Section.7 Directed Energy Weapons (DEWs)

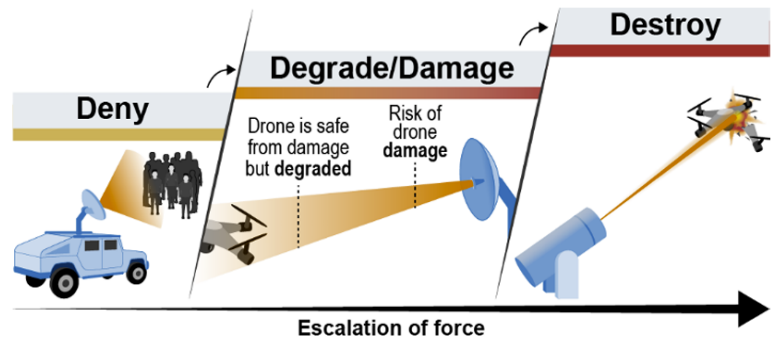
Directed energy weapons (DEWs) use concentrated electromagnetic energy to combat enemy forces and assets. These weapons include [high energy lasers](#) and other high power electromagnetics—such as [millimeter wave](#) and high power [microwave](#) weapons. Unlike weapons that fire bullets or missiles, DEWs can respond to a threat in different ways. For example, they can temporarily degrade electronics on a drone or physically destroy it.

WHY THIS MATTERS

There is a surge in interest in directed energy weapons from several nations—including the U.S.—primarily for counter drone missions. These weapons use electromagnetic energy to cause effects ranging from deterrence to destruction. They offer capabilities that conventional weapons may not, but challenges have so far prevented widespread operational use.



Source: GAO. | GAO-23-106717



Source: GAO. | GAO-23-106717

DEW PHENOMENON—"HAVANA SYNDROME"

In the U.S., cases have been reported among government officials and their families, with symptoms such as headaches, dizziness, tinnitus, visual and auditory disturbances, cognitive difficulties, and in some cases, hearing loss. Despite extensive investigations, including those by the U.S. government and medical experts, no definitive cause has been established. Theories about the cause include possible exposure to directed energy or other environmental factors, but no conclusive evidence has been found. [Sources: AP, CBS, intelligence.house.gov](#)

DEWs Around the World

United States: A leader in DEW research and development, with various branches of the military working on laser and [microwave weapons](#). [Additional Source: FAST FACTS: The Active Denial System \(ADS\)](#)

China: China recently unveiled a high-powered microwave defense weapon system called the FK-4000.

Russia: Russia has been conducting DE weapons research since the 1960s, with a particular emphasis on High Energy Lasers (HELs).

France: France is working on its own DEW programs including the [HELMA-P laser weapon system](#).

India: India is investing in DEW technology as part of its defense strategy.

United Kingdom: The UK has conducted successful trials of its [DragonFire](#) laser weapon.

Israel: Israel is developing the [Iron Beam](#) laser weapon to complement its Iron Dome missile defense system.

Turkey: Turkey claims to have DEWs in active service such as the ALKA system, which is a dual electromagnetic/laser weapon.

Iran: Chinese laser-directed energy weapon systems that can disable or destroy drones have reportedly been spotted in Iran.

South Korea: South Korea is actively developing a Laser Air Defense Weapon, [Block-I](#), developed by Hanwha Aerospace.

Japan: Japan is actively developing and deploying [High-Energy Laser Anti-Drone Weapons](#).

Additional Resources: [DoD DEW: Background and Issues for Congress](#); [RAND.org](#); [GAO.gov](#); [NDUPress.ndu.edu](#)

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Section.8 Radiation

RADIOLOGICAL ATTACK

A radiological attack is the spreading of radioactive material with the intent to do harm. Radioactive materials are used every day in laboratories, medical centers, food irradiation plants, and for industrial uses. If stolen or otherwise acquired, many of these materials could be used in a [“radiological dispersal device” \(RDD\)](#).

ACCIDENTAL EXPOSURE

People can be accidentally exposed to deadly radiation through nuclear accidents, improper handling or disposal of medical and industrial radioactive materials, inadequate disposal of radioactive waste, and natural sources like radon gas. [Source: CDC.gov](#)

Radiological Attack: Dirty Bombs and Other Devices

DHS Factsheet; 2004; [Source: DHS.gov](#)

Radiological Dispersal Devices, a.k.a. Dirty Bombs

A “dirty bomb” is one type of RDD that uses a conventional explosion to disperse radioactive material over a targeted area. The term dirty bomb and RDD are often used interchangeably in technical literature. However, RDDs could also include other means of dispersal such as placing a container of radioactive material in a public place, or using an airplane to disperse powdered or aerosolized forms of radioactive material. Most of the radioactive particles dispersed by a dirty bomb would likely fall to the ground within a few city blocks or miles of the explosion.

How an RDD Might be Used

It is very difficult to design an RDD that would deliver radiation doses high enough to cause immediate health effects or fatalities in a large number of people. Therefore, experts generally agree that an RDD would most likely be used to:

- Contaminate facilities or places where people live and work, disrupting lives and livelihoods.
- Cause anxiety in those who think they are being, or have been, exposed.

Detection and Measurement

Radiation can be readily detected with equipment carried by many emergency responders, such as Geiger counters, which provide a measure of radiation dose rate. Other types of instruments are used to identify the radioactive element(s) present.

Spent nuclear fuel mismanagement poses a major threat to the United States. Here’s how.

Bulletin of the Atomic Scientists; April 2, 2024; [Source: thebulletin.org](#)

The article discusses threats posed by the mismanagement of spent nuclear fuel in the United States. And emphasizes that a widespread collapse of the US power grid, triggered by events like solar storms, physical attacks, or cyberattacks, could lead to a disaster.

Examples of Nuclear Incidents:

- [Three Mile Island Accident, Nuclear & Meltdown | HISTORY](#)
- [What we know about the Monticello nuclear plant tritium leak | MPR News](#)

MITIGATION:

- [What to Do for Different Types of Radiation Emergencies | Radiation Emergencies | CDC](#)
- [FEMA: Nuclear/Radiological Incident Annex to the Response and Recovery Federal Interagency Operational Plan](#)
- [Radiological and Nuclear | ASPR TRACIE](#)
- [Disaster Preparedness for Radiology Professionals](#)
- [CDC Radiological/Nuclear Law Enforcement and Public Health Investigation Handbook](#)
- [Nuclear Attack Fact Sheet | DHS](#)
- [Nuclear Security And Incident Response | NRC.gov](#)
- [INTERPOL - Radiological and Nuclear Terrorism](#)

ADDITIONAL ARTICLES

[Police1.com](#); [NBCnews.com](#)



Section.9 Key Takeaways

The war in Ukraine has fixed a spotlight on drone technology, but some offices in the Defense Department are focused on defending against often unseen threats — chemical, biological, radiological and nuclear — and they are turning to advanced technologies to protect warfighters. (Section.1)

Invisible threats can pose significant dangers to humans across various domains and can be particularly dangerous when exploited by nefarious actors or criminals. Invisible threats refer to chemical and biological weapons, directed-energy weapons (DEWs), and radiation. (Section.2)

Law Enforcement considerations regarding invisible threats are as follows: Early detection and identification of chemical agents are paramount, requiring officers to be trained in recognizing symptoms and using detection equipment. Personal protective equipment (PPE) is essential to safeguard responders from exposure, and officers must be proficient in its use and limitations. It's clear that "pandemic planning" is necessary to be prepared for large scale biological attacks or outbreaks. Police can consider understanding the different types of DEWs, including lasers, microwave weapons, and sonic weapons, and their potential effects on humans and equipment. Police and the community can be exposed to radiation through dirty bombs and accidental nuclear incidents like power plant and industrial leaks. (Section.3)

There are several mitigation tactics police can apply to invisible threats: Understanding the different types or chemical, biological, and directed-energy weapons that exists and how to recognize signs they are being deployed into the community. Fostering strong partnerships with local and federal partners as well as having effective PPE readily available for officers in the vent of an attack or incident. (Section.4)

A chemical attack is the spreading of toxic chemicals with the intent to do harm. A wide variety of chemicals could be made, stolen, or otherwise acquired for use in an attack. Industrial chemical plants or the vehicles used to transport chemicals could also be sabotaged. (Section.5)

Bioterrorism poses a significant threat due to the potential use of biological agents like viruses, bacteria, or toxins to cause widespread harm. These agents can be easily disseminated through air, water, or food, making detection and containment challenging. (Section.6)

Directed energy weapons (DEWs) use concentrated electromagnetic energy to combat enemy forces and assets. These weapons include high energy lasers and other high power electromagnetics—such as millimeter wave and high power microwave weapons. (Section.7)

Radioactive materials are used every day in laboratories, medical centers, food irradiation plants, and for industrial uses. If stolen or otherwise acquired, many of these materials could be used in a "radiological dispersal device" (RDD). People can also be accidentally exposed to deadly radiation through nuclear accidents, improper handling or disposal of medical and industrial radioactive materials, inadequate disposal of radioactive waste, and natural sources like radon gas. (Section.8)

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