

CHEMICAL SECURITY SEMINARS

July 11, 2024

State of Chemical Security

Kelly Murray

Associate Director
CISA Chemical Security

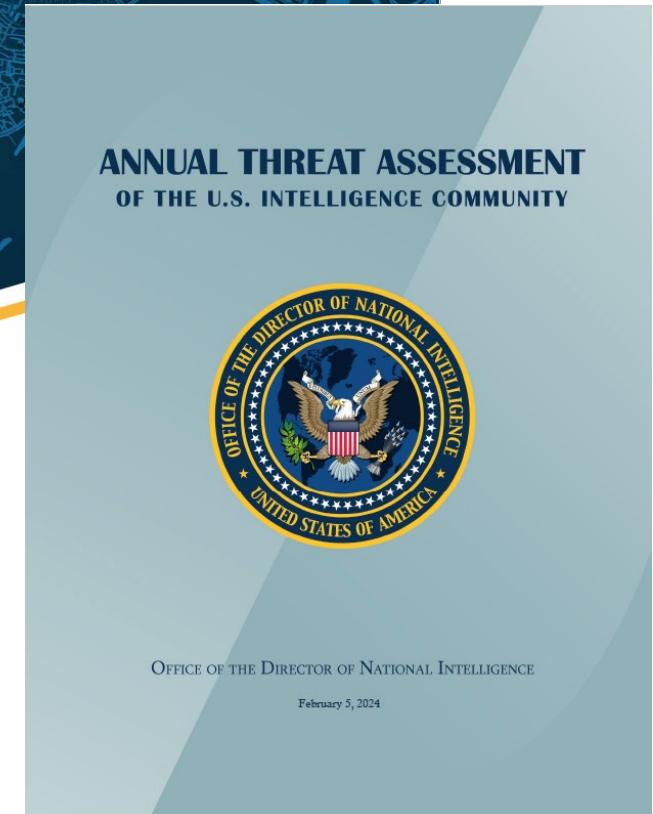
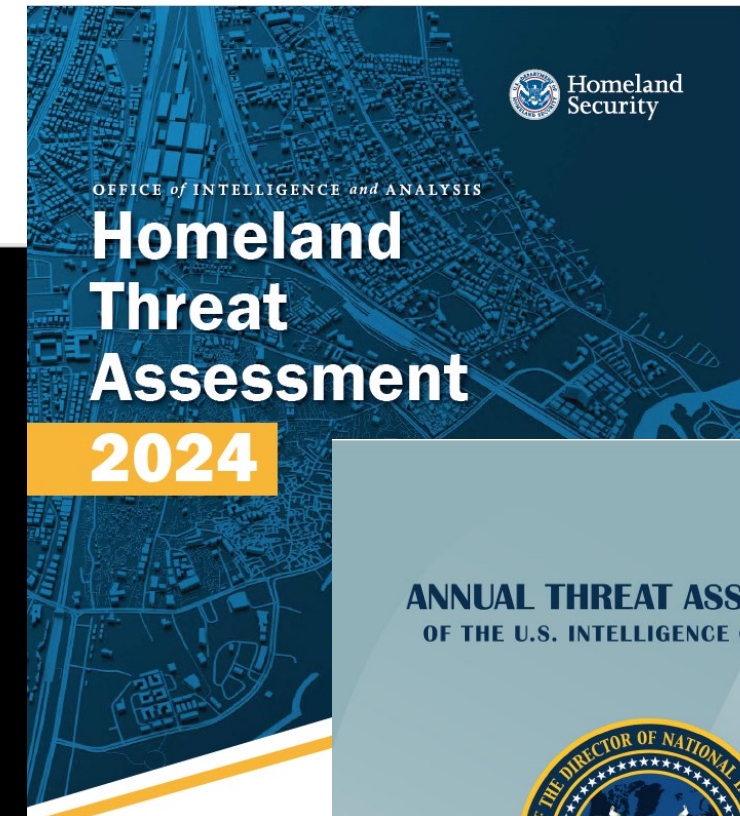


[#ChemicalSecurity](#)

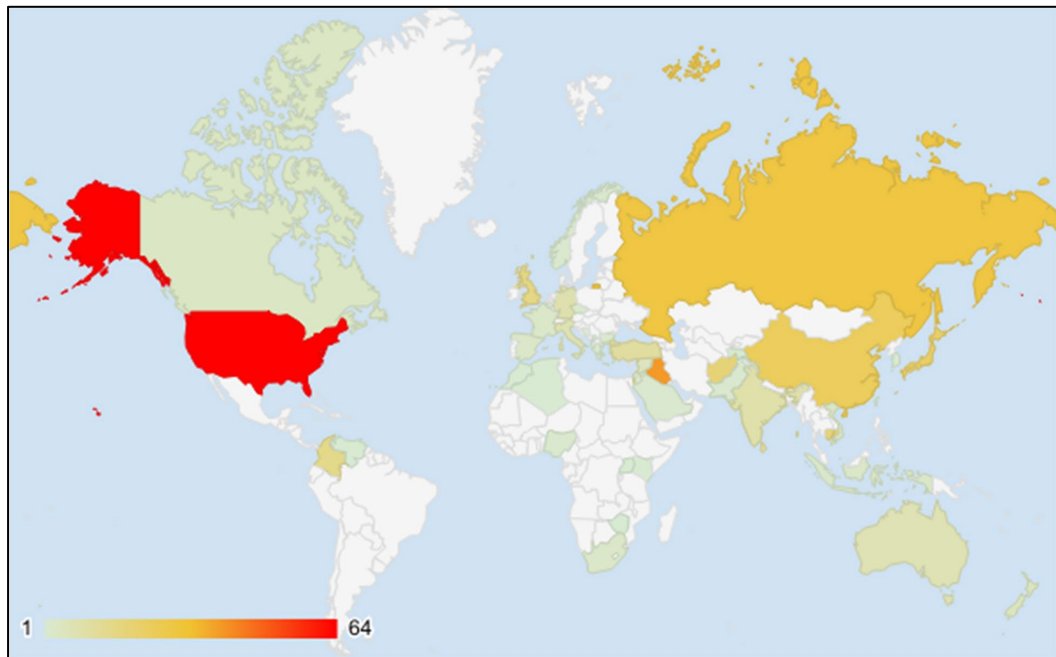
2024 Threat Assessments

Common Findings:

- ▶ The threat of chemical terrorism is persistent and increasing
- ▶ Emerging technologies like artificial intelligence (AI) will continue to present novel approaches for attack
- ▶ Global threat landscape impacted by environmental change and geopolitical instability
- ▶ Domestic violent extremists, nation-state actors, and ransomware groups all see U.S. critical infrastructure as attractive target



Intended Chemical Terrorism Targets



Geographic distribution of actual or intended target countries of chemical terrorism events (where known) recorded from 1990 to 2020.

SOURCE: POICN Database (Binder and Ackerman, 2020).

- ▶ Terrorists continue to circulate instructions for procuring/producing **toxic weapons**
- ▶ Domestic Violent Extremists (DVEs) called for **physical attacks** on critical infrastructure this year
- ▶ Adversarial governments developing artificial intelligence (AI) technology to **undermine U.S. cyber defenses**
- ▶ Cyber and physical espionage enable attackers to **pre-position for future attacks**



Emerging Threats

We face a persistent and evolving threat

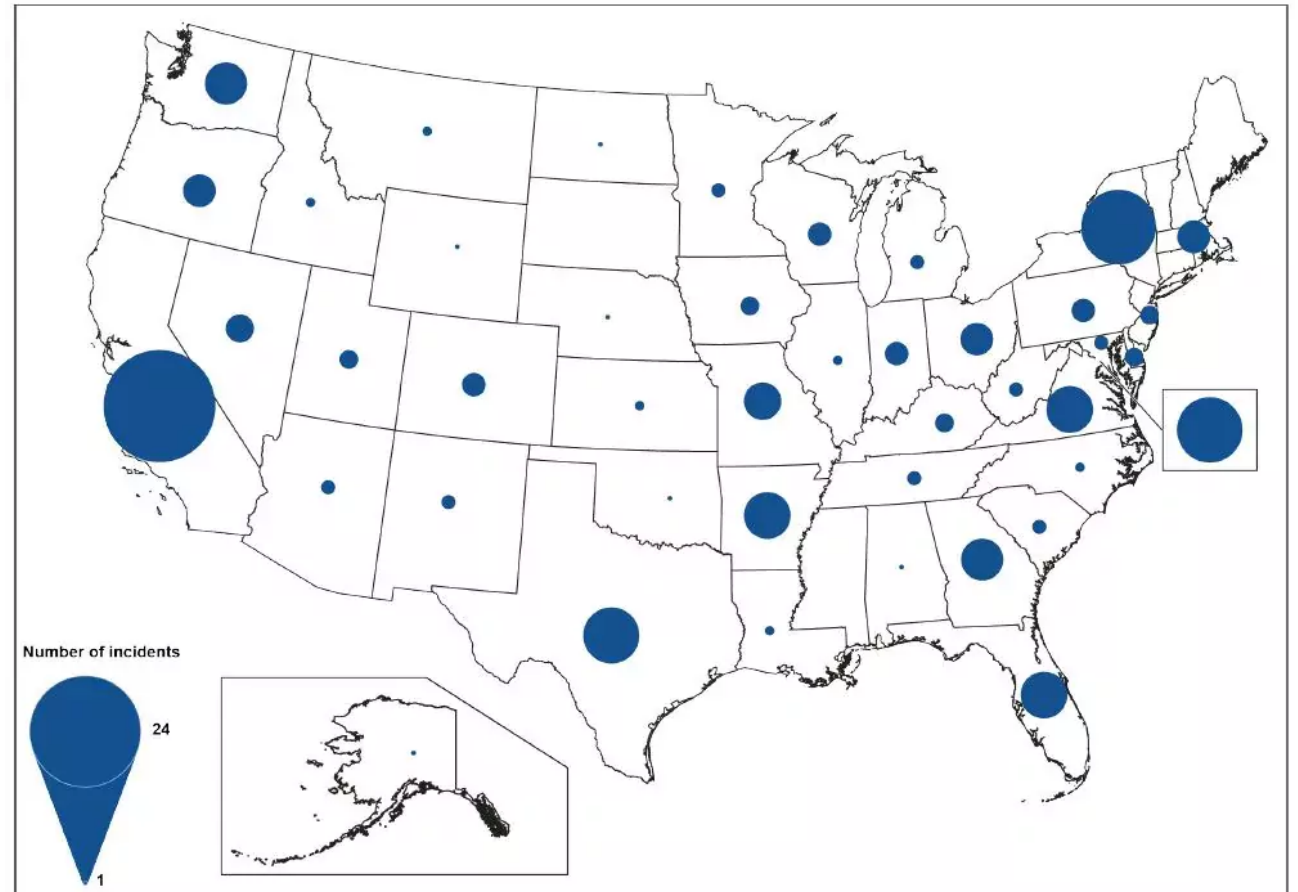
A successful attack at a facility with dangerous chemicals could not only disrupt vital services, but also potentially cause a significant number of deaths and injuries.



U.S. Threat Landscape

Domestic terrorism is generally defined by the Department of Homeland Security (DHS) as:

- ▶ Involving criminal acts dangerous to human life or potentially destructive of critical infrastructure or key resources; and
- ▶ Appears intended to coerce a civilian population or influence/affect the conduct of government.

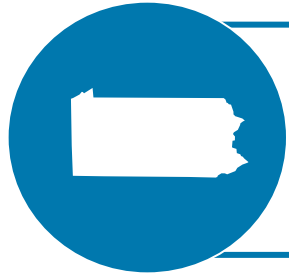


Source: GAO analysis of Department of Homeland Security Counterterrorism Mission Center data. | GAO-23-104720



Domestic Terrorism Incidents by State 2010 through 2021
GAO-23-104720

Chemical Incidents in the News



Philadelphia, PA (August 2023) A juvenile who identified with known terrorist groups was arrested after FBI agents observed him purchasing materials that can be used to make improvised explosive devices (IEDs).
- Philadelphia District Attorney's Office

Sussex, WI (November 2023) Charges brought for possession of improvised explosives. Chemicals included ammonium nitrate, potassium nitrate, flash powder, sulfur, Loctite, Tannerite, and remnants of commercial fireworks.
- CBS 58 Newsroom



Nashville, TN (December 2020) Vehicle-borne IED detonates, injuring eight people, damaging dozens of buildings in the surrounding area, and resulting in days-long communication service outages.
- Tennessean



Explosive Chemical Accidents and Attacks



Port of Beirut Explosion, 2020



World Trade Center Bombing, 1993



Oklahoma City Bombing, 1995



Visualizing the Impact of a Toxic Release

Bhopal, India: Release of Toxic Gas Methyl Isocyanate (MIC), December 2-3, 1984

Memorial in Bhopal



Consequences

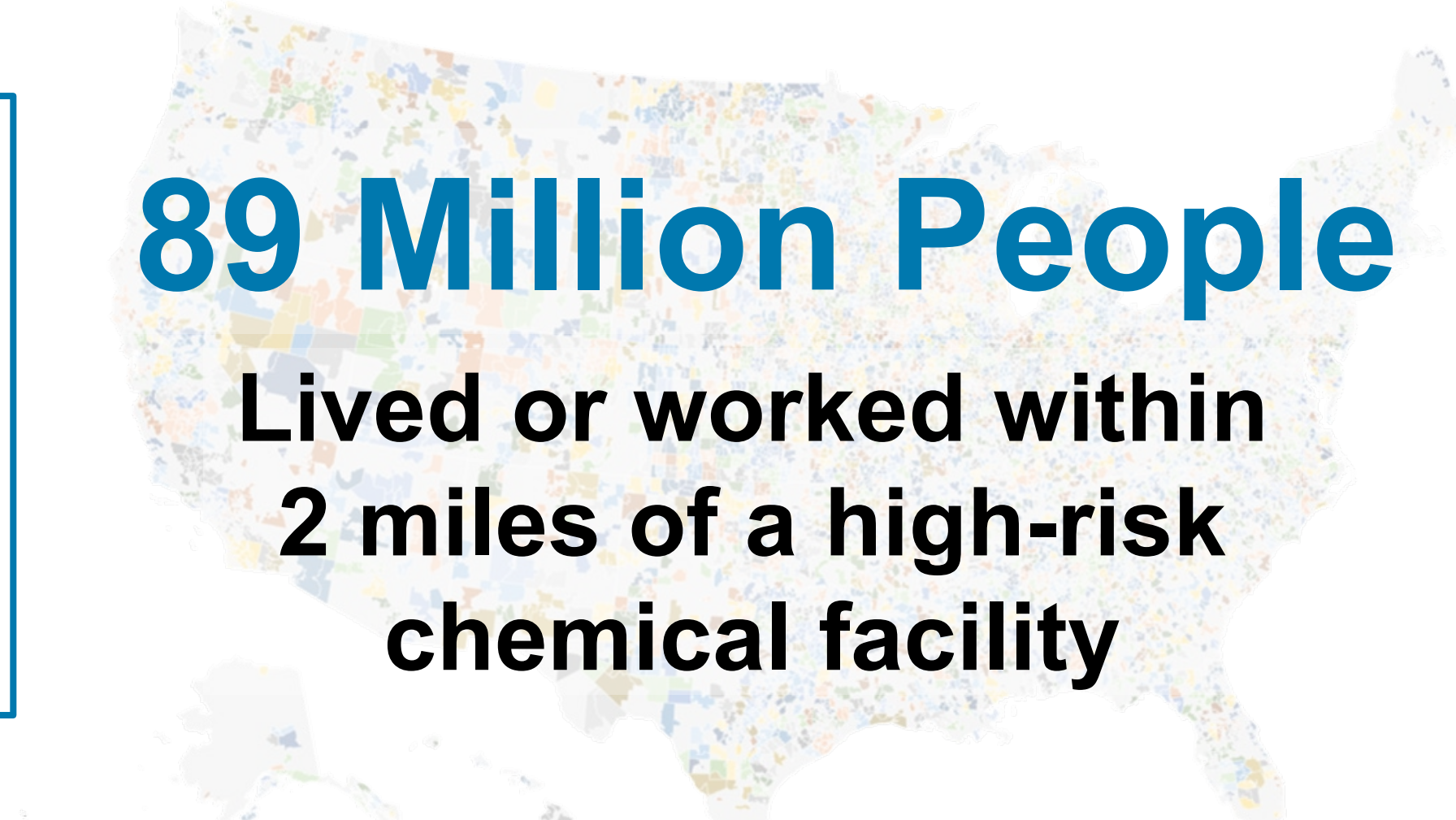
- ▶ Initial death count: 2,000-8,000* in first 2 weeks
- ▶ Final death count: **3,700-16,000***
- ▶ Over 550,000 non-fatal injuries
- ▶ 100,000-150,000 survivors in 2024 still struggling with long-term effects
 - ▶ Nerve damage, birth defects, respiratory issues, lost or impaired vision
 - ▶ Higher rates of cancer and tuberculosis
 - ▶ Miscarriage rate 7x national average



* Estimates vary. Official death count 3,787

The State of Chemical Security in 2023

- ▶ More than 45,000 unique registered facilities under CFATS
- ▶ More than 3,200 facilities deemed high-risk by DHS
- ▶ More than 2,300 communities with high-risk facilities

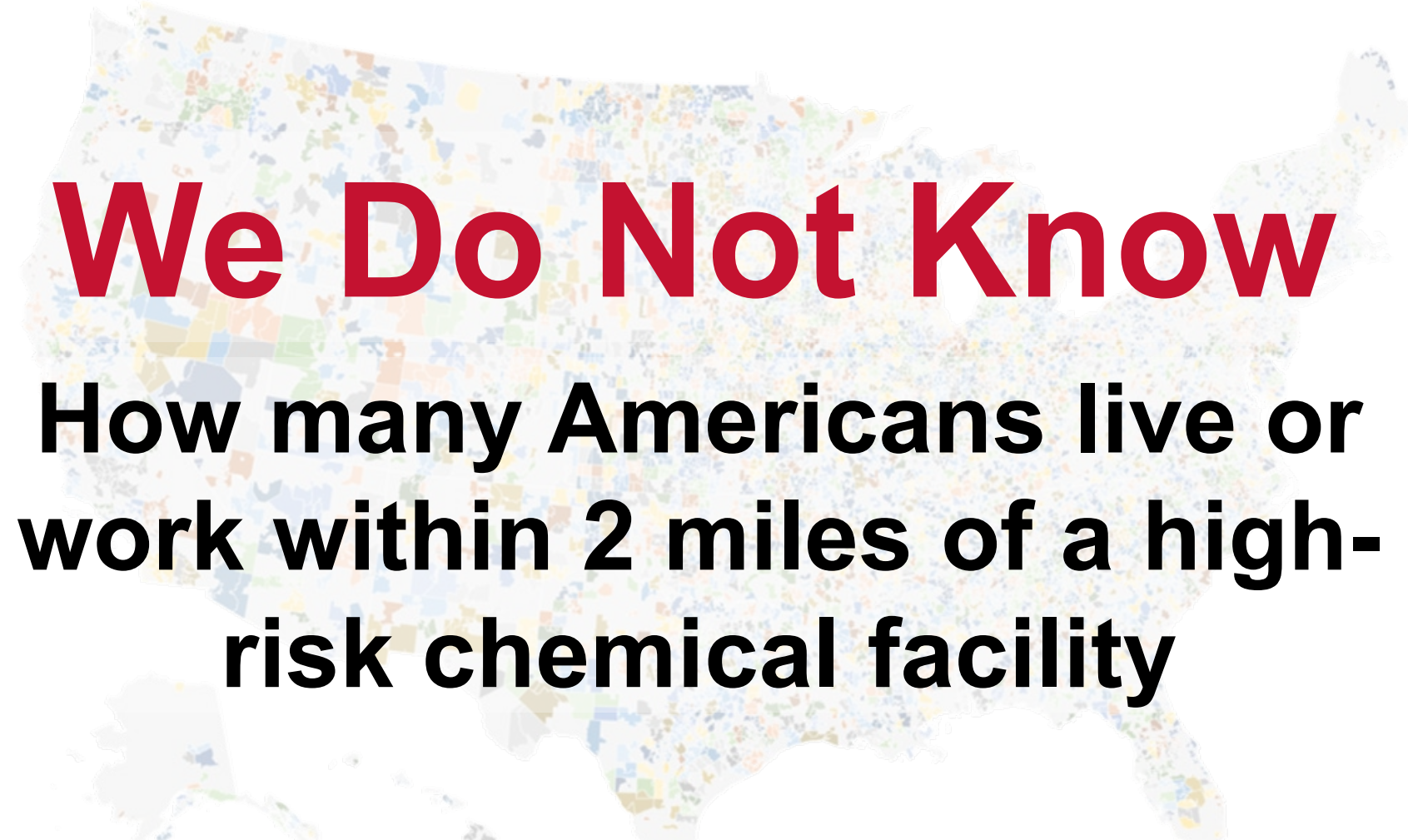


89 Million People
Lived or worked within
2 miles of a high-risk
chemical facility



The State of Chemical Security in 2024

- ▶ **Unknown #** of facilities that possess dangerous chemicals
- ▶ **Unknown #** of communities with high-risk facilities
- ▶ **Unknown risk** to local emergency first responders



We Do Not Know
How many Americans live or work within 2 miles of a high-risk chemical facility



CFATS – Snapshot as of July 27, 2023

Between 2008-2023, CISA completed...

14,105

Inspections at High-Risk Facilities

10,196

Compliance Assistance Visits

4,269

Security Plan Approvals

108

Enforcement Actions

494,611

**Names vetted against
the Terrorist Screening
Database (TSDB)**



Without CFATS – Snapshot as of July 11, 2024

Since July 2023, we have conducted...

0

Inspections at High-Risk Facilities

0

Compliance Assistance Visits

0

Security Plan Approvals

0

Enforcement Actions

100,000

Names not vetted in
TSDB for terrorist ties
—and counting



Impacts of CFATS Lapse on National Security

Do Compliance Inspections Work?

In the past year, CISA has not performed an estimated **1,650** inspections at high-risk chemical facilities.

Historically, **35%** of inspections identified at least one security concern that required remediation in order to comply with CFATS regulations.

Bottom Line

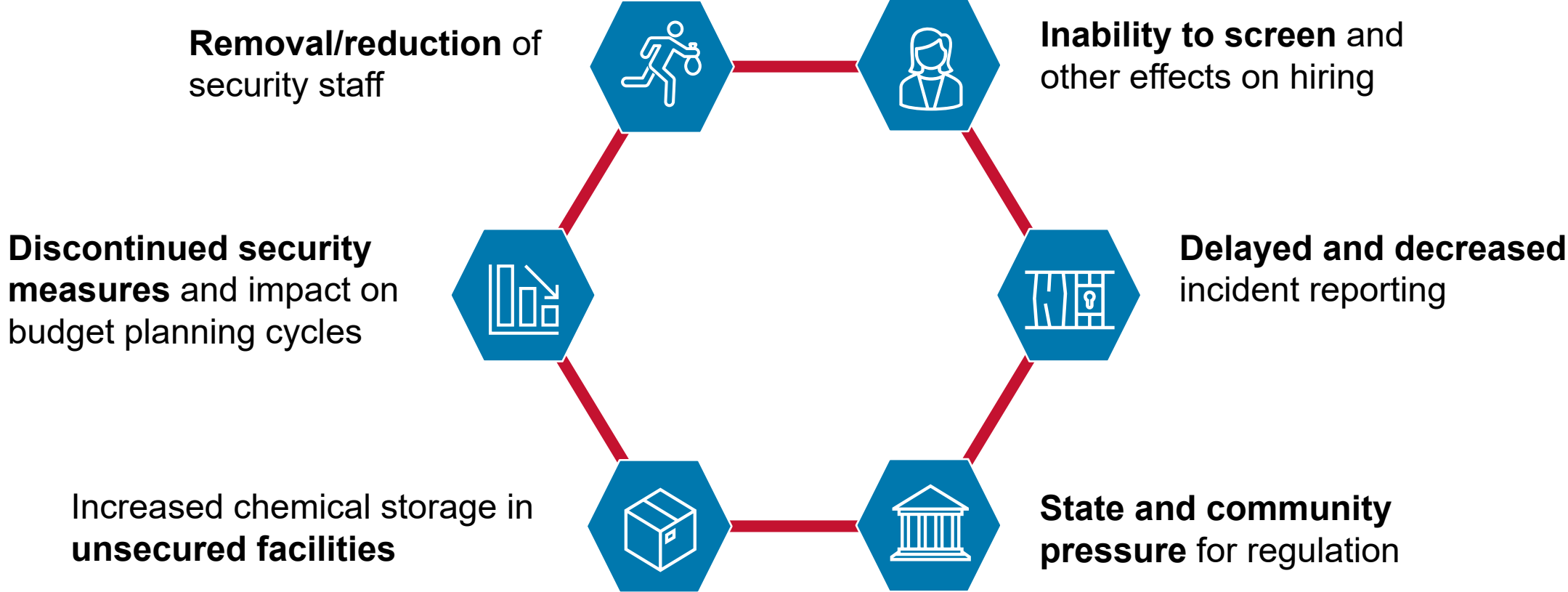
This means roughly **577** high-risk chemical facilities across the U.S. may have at least one undiscovered security gap that could be exploited by a terrorist or other bad actor.*

With over 3,200 high-risk facilities across the U.S., this means that more than **1 in 6 high-risk facilities** with dangerous chemicals in the U.S. could have an exploitable security gap.

*An additional **440** facilities would likely have submitted Top-Screens during this period.



Industry Impacts



CISA Chemical Security Challenges

Resource Impacts

- ▶ Budget
- ▶ Federal staff turnover
- ▶ Contract support reduced and modified

Challenges After Reauthorization

- ▶ Inspection backlog
- ▶ Top-Screen and Security Plan backlog
- ▶ Terrorist ties vetting backlog
- ▶ Notice of Proposed Rulemaking (NPRM) delays
- ▶ Cascading impacts on related programs and projects (e.g., Chemical Security Cybersecurity Performance Goals)



ChemLock Services and Tools

- ▶ Using CISA's chemical security expertise to help all facilities that possess dangerous chemicals
- ▶ Available to any facility, regardless of whether it was formerly tiered under CFATS
- ▶ Scalable, customizable resources that can be tailored to each facility's specific circumstances and needs

-  On-Site Assessments and Assistance
-  ChemLock Resources
-  Exercises and Drills
-  Training Courses
-  Special Access to CISA Services



Security Gaps Identified Through ChemLock



Intrusion Detection Systems



Cybersecurity Controls and Reporting



Access Control



Camera Systems



Inventory Controls



Password Management



Insider Threat Program



Visitor Escort Policy



Employees or On-Site Security Personnel



Leading the World in Chemical Security

- Global Congress on Chemical Security and Emerging Threats
 - 300 representatives, 80 countries, 7 international organizations
 - Co-implemented with FBI, DTRA, INTERPOL, and Global Affairs Canada
- G7 Global Partnership Chemical Security Working Group
- Global Homemade Explosive Precursor Testing Project (GHPTP)
 - International testing collaboration to set baseline scientific knowledge
- Bilateral/Multilateral Engagements
 - Chemical security and risk assessment advisory support to the government of the Philippines
 - Canada-US Regulatory Coordination Council
 - EU-US Explosives Experts Forum
 - Support to State Department-led capacity building activities



G7 Global Partnership Chemical Security Working Group



2023 Global Congress Participants in Bangkok, Thailand



2024 Seminar Agendas

Coming Up Today, July 11, 2024:

- ▶ Transnational Threats Impacting Chemical Security
- ▶ Federal Partner Priorities for Addressing Emerging Chemical Threats
- ▶ Impacts of Artificial Intelligence on Chemical Security

Next Week, July 18, 2024:

- ▶ “Wicked Problems” in Chemical Security
- ▶ Response Strategies for Hazardous Chemical Incidents
- ▶ Drone Policy and Use Impacts to Global Critical Infrastructure
- ▶ Tactics and Resources for Management Physical and Cyber Threats





Kelly Murray
Associate Director
CISA Chemical Security

CFATS@hq.dhs.gov

ChemLock@cisa.dhs.gov

cisa.gov/chemical-security