

2023
**CHEMICAL
SECURITY
SUMMIT**

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#ChemicalSecurity



CHEMICAL SECURITY SUMMIT

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Academic Perspective: Terrorist Organizations and Tactics

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NATIONAL CONSORTIUM FOR
**THE STUDY OF TERRORISM
AND RESPONSES TO TERRORISM**

UNCONVENTIONAL WEAPONS & TECHNOLOGY DIVISION **START**▶▶ | **UWT** The UWT logo includes three small circular icons: a biohazard symbol, a radiation symbol, and a chemical symbol.

Non-State Actor Acquisition and Use of Chemical (Weapons) and Emerging Technology Implications

Prepared for 2023 Chemical Security Summit

30 August 2023

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Agenda

- VNSAs, Technology, and Innovation
- VNSAs and Chemical Trends
- Effects of Emerging Technology on Chemical Weapons
- Key Takeaways
- Q & A

Supervillains or Luddites?



Source: Warner Bros. Pictures / Joker 2019

VS.



Source: Shutterstock

Relationship between VNSAs and Technology

- Traditionally, violent non-state actors (VNSAs) – terrorists, insurgents, transnational criminals, etc. – have tended in their use of weapons and tactics to be both:
 - Conservative
 - Imitative
- Why?
 - **Limited resources**
 - **Uncertainties**
 - **Soft targets**

VNSAs Innovate

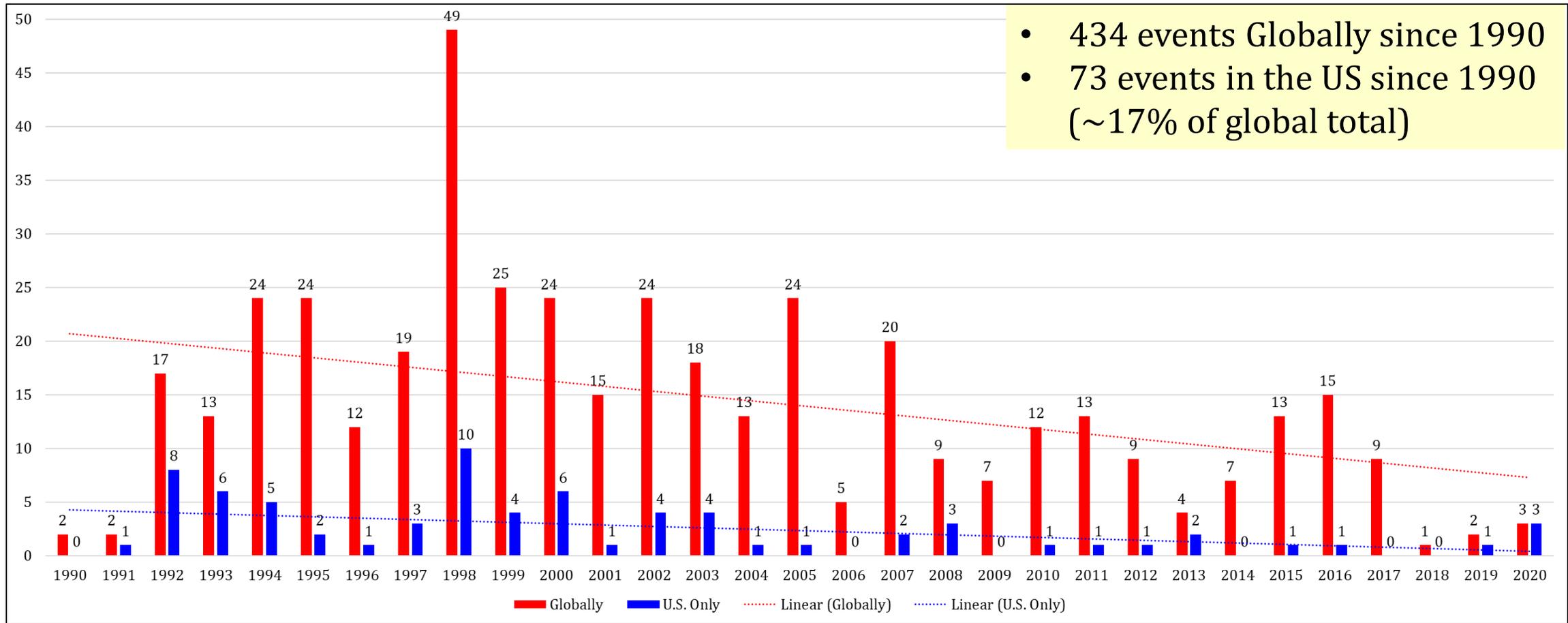
- When:
 - Existing methods insufficient to achieve aims
 - Organization has very high level of resources
 - Specific ideological orientation towards innovating technologically
 - Perceived competition
 - Costs associated with adopting new technology are lowered

Fundamental Driver of VNSA Innovation

- Perceived gap in performance between what is desired and status quo that cannot be addressed with existing means and methods

...So, assuming such a perceived gap exists, why might emerging technology like AI, synthetic biology, and autonomous systems be attractive to terrorists and other violent non-state actors?

Ideologically Motivated VNSA Plot/Acquisition/Use of Chemical (Weapons)

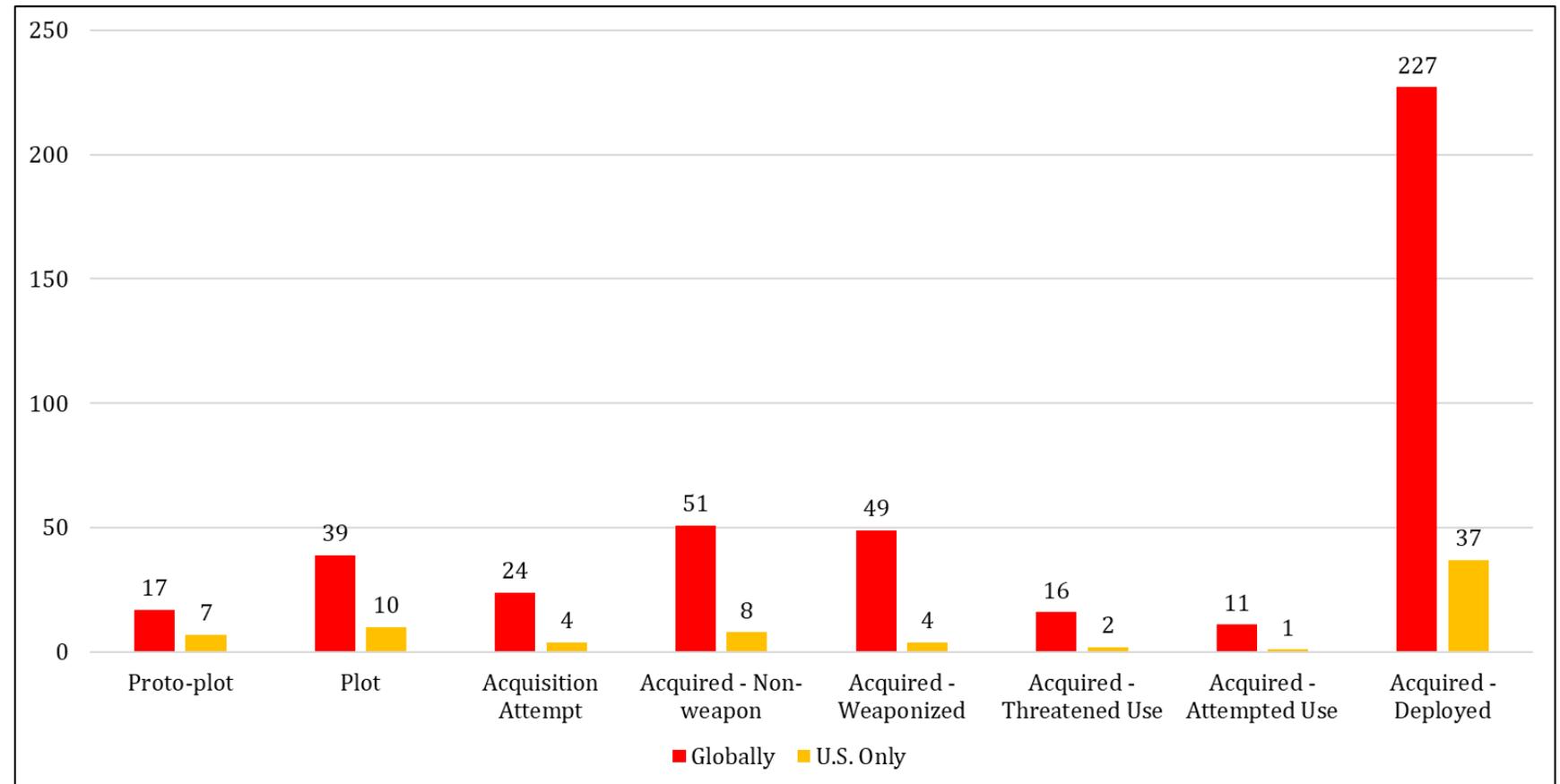


VNSA Plot / Acquisition / Use of Chemical (Weapons) Incidents

Source: VNSA CBRN Event Database (<https://cbrn.umd.edu>)

Ideologically Motivated VNSA Plot/Acquisition/Use of Chemical (Weapons)

- 434 events Globally since 1990
- 73 events in the US since 1990 (approx. 17% of global total)
- ~51% (~52% globally) resulted in deployment
- ~21% (~29% globally) resulted in acquisition



VNSA Plot / Acquisition / Use of Chemical (Weapons) Incidents

Source: VNSA CBRN Event Database (<https://cbrn.umd.edu>)

Highlights of U.S. Cases

- Planned/actual acquisition methods:
 - Production
 - Purchase
 - Theft
- Planned/actual deployment methods:
 - Latent
 - Aerosol
 - Reaction device
 - Mail
 - Explosive device rigged with chemical agent
- Planned/actual chemical agents:
 - Butyric acid
 - Cyanide (hydrogen and sodium)
 - Sarin
- Fatalities / Injuries:
 - 6 Fatalities (0 from chemical)
 - 1,110 Injuries (109 from chemical)
- Variety of actors
 - Individuals
 - Autonomous cells
 - Organized groups

Effects of Emerging Technology on Chemical Weapons

- Lowers obstacles to the acquisition of raw materials
- Facilitate the production and weaponization of harm agents
 - greater safety
 - leaving less of a footprint detectable by authorities
 - enabling cheaper production
 - lowering the required skill level of personnel involved
- Technology might provide for entirely new weapons
- **Democratization of technology and knowledge** is reducing the need for technical expertise and sophisticated research labs
- More effective, and accessible, **delivery platforms** (e.g., agricultural UAVs) may increase risk of both targeted and wide area attacks

Effects of Emerging Technology on Chemical Weapons

- Not only invention and application of new technologies
- Rather, it is the **maturati**on of existing advanced technologies
 - Transition from basic research into commercially available ‘off-the-shelf’ applications.
 - Globalization and rapid proliferation

Threat = discovery of new products and processes combined + the widespread diffusion and commercial exploitation of the resultant technologies

VNSAs and Technology: an Example

- Unmanned aircraft (drones) can be, and have been, modified to deliver both conventional and unconventional weapons
 - ISIS use of multi-copters to drop shuttlecock “bombs”
 - A Japanese man landing a small drone on the roof of the Japanese prime minister’s office
- Imagine what agro drones could do in the wrong hands
- Drone delivered weapons targeting arriving and/or staged first responders
- Implications of drone swarms



Photo Source: Shutterstock

VNSAs and Technology: an Example

- Cyber-physical attacks on critical infrastructure
 - Bad actors have used cyber means to disrupt and destroy physical critical infrastructure
 - This trend is likely to continue and become more and more prevalent globally
 - In 2014, bad actors took control of a German steel mill's furnace controls via cyber means
 - The attack resulted in the destruction of the furnace



Photo Source: Shutterstock

Key Takeaways

- Traditionally, VNSAs have tended in their use of weapons and tactics to be both:
 - Conservative
 - “Path of least resistance” – terrorists generally seek to use the easiest, cheapest, tried-and-true methods
 - Imitative
 - Terrorists often utilize the successful tactics and weapons types of other groups (albeit with some localization)
- VNSAs **DO** innovate when perceived gap in performance between what is desired and status quo that cannot be addressed with existing means and methods

Key Question When It Comes to VNSAs and Technologies

- Key question is **NOT**, “what is this technology design to do?”
- Key question **IS**, “What and how can this technology be used?”

Thank You

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