Drones and CBRN Terrorism Threats and Responses

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Disclaimer

The views expressed in this presentation are those of the presenter and do not reflect the official policies or positions of any of their current or past employers or funders.
An emerging threat
But important to keep things in perspective

- Drone-pocalypse scenarios, with and without CBRN, are overblown
- Drones do and will offer terrorists new capabilities, including CBRN-related
- Drones offer authorities *significant* defensive and consequence management capabilities
Agenda

- Who am I?
- Assessing the CBRN terrorism threat
- Generalizing about CBRN terrorism with drones
- Unpacking chemical, biological, radiological, nuclear, and CBRN-like terrorism
- Generalizing about CBRN terrorism response with drones
- Speculating about the future
- Policy responses
- Q&A
Who am I?

• Chemical, biological, radiological, and nuclear weapons policy generalist at intersection of academia, think tanks, and government

• Associate Professor, Nonproliferation and Terrorism Studies Program, Middlebury Institute of International Studies at Monterey

• Former Senior Advisor, Assistant Secretary of Defense for Nuclear, Chemical and Biological Defense Programs

• Co-author of several publications on implications of drones for state and terrorist CBRN threats
Assessing the CBRN terrorism threat

- Terrorists pursue attacks based on strategy, tactics, and ideology, adapting to opportunities and barriers

- CBRN terrorism rare, large-scale CBRN terrorism mostly hypothetical

- Most terrorists lack motivation and much capability

- Motivation and capability inversely related for many, but some past and potential future outliers

- Serious threat because even less significant attacks can be consequential and more significant attacks possible
Generalizing about CBRN terrorism with drones

• Neither CBRN nor drones are novel technologies, but both developing and becoming more accessible

• Drones include aerial but potentially also other autonomous systems

• Drones add complexity to already complex CBRN attacks, further diminishing small pool of threatening actors

• Drones enable novel attacks, overcoming barriers to effective delivery

• Drones bypass ground-based defenses and enable standoff attacks

• Drones also enable indirect attacks, e.g. conventionally attacking chemical facility to cause release

• Drones may play secondary roles, e.g. intelligence, surveillance, reconnaissance, or filming propaganda

• Aerial drones have major payload size and weight constraints, all drones face targeting and remote operation challenges
Unpacking chemical

- Spectrum of chemicals from TICS to more sophisticated
- For aerial drones, payload weight and size constraints are key challenges
- CW most effective in confined spaces, harder for drones to access and operate
- Drones could enable reaching targets, or better dosing targets, in ways not feasible without them
- Drones could facilitate indirect attacks, e.g. causing release from chemical facility
Unpacking biological

- Bio includes toxins – poisons of biological origin – and pathogens, i.e. viruses, bacteria, and others (e.g. prions, fungi, etc.)
- Drones particularly suited to BW delivery, but huge challenges to surmount
- Small payloads of toxins and especially pathogens can be devastating
- Drones enable more effective dosing, response to terrain and atmospheric conditions
- Indirect bio attacks conceivable but less relevant
Unpacking radiological

- Dissemination of radioactive material in solid, powdered, liquid, or gas form
- Potentially effective for area denial, forcing costly cleanup, and/or psychological effects, less effective for harming or killing
- Drones could serve as delivery mechanisms
- Indirect attacks causing radiological releases also conceivable

Expert claims N. Korea develops drone for dirty bomb attack

17:04 December 27, 2016
Unpacking nuclear

• Outlier amid outliers, mostly because technical challenges so significant
• Improvised nuclear device heavy and bulky, requiring truck, boat, larger aircraft, or detonation in place
• Delivery mechanism could be unmanned, but given risks and challenges, less plausible
• Drones could play supporting roles in nuclear terrorism plot
CBRN-like effects without CBRN?

- Drones might enable non-CBRN attacks that equaled or exceeded consequences of many CBRN attacks
- Using drones to deliver explosive payloads might yield similar (or greater) effects to the chemical delivery scenario
- Unconventional attack modes could include flying a drone into an aircraft engine or wing to cause a crash
- Many such uses of drones would encounter some of the same barriers discussed with regard to CBRN delivery
Generalizing about CBRN terrorism *response* with drones

- Drones offer unique opportunities to identify, defend against, and manage consequences of CBRN attack
- States have far greater drone capabilities than terrorists
- For foreseeable future, drones more likely to empower state responses to CBRN terrorism than CBRN terrorists
- But state responses with drones create new vulnerabilities and terrorist drones may threaten both drone and non-drone responses
How is (and isn’t) the future likely to be different than the past?

• Terrorists are and will increasingly employ drones, mostly for non-CBRN applications
• State responders are and will increasingly employ drones, including for CBRN defense and response
• New capabilities emerging, including improved autonomy, ability to manage larger swarms, etc.
• Drones will interact with, and sometimes enhance, other changes in terrorist threats and responses to them, including readier access to destructive technologies, miniaturized sensors, etc.
Policy responses

• Incorporate and contextualize drones within broader threat assessments and response plans
• Harden key sites, e.g. chemical plants, nuclear facilities
• Build others’ capabilities and share best practices and lessons learned
Questions or comments?

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