

Zachary Kallenborn

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Education:

Middlebury Institute of International Studies at Monterey, Monterey, CA Graduation: May 2015
Master of Arts in Nonproliferation and Terrorism Studies
Awarded Jonathan B. Tucker Memorial Scholarship and Merit Scholarship

University of Puget Sound, Tacoma, WA Graduation: May 2013
Bachelor of Science in Mathematics and Politics and Government, focus in International Relations
Minors in History, Physics, and German

Northwest Missouri State University, Maryville, MO Graduation: May 2008
Associates of Applied Science

Experience:

Senior Consultant October 2019 – Present
ABS Group, Arlington, VA

- Developed framework to assess emerging technology risks for CBRN terrorism
- Researched, analyzed, and wrote about a wide range of critical infrastructure risks as on-site risk analyst at the National Risk Management Center, Cybersecurity and Infrastructure Agency (CISA)
- Awarded spot bonus for high-profile, high-tempo, high-impact research support on state COVID-19 policies

Freelance Researcher June 2018 - Present

- Received honorarium from National Defense University to research emerging technology and CBRN terrorism for publication and presentation to senior defense leaders
- Analyzed unmanned system threats to the homeland for the Office of Secretary of Defense (Policy)
- Researched, analyzed, and developed concepts of operations related to military use of future weapon systems and emerging technologies for publication and presentation

Analyst April 2018 – January 2019

The Cadmus Group, Washington DC

- Developed methodology to analyze large numbers of FEMA doctrine documents
- Wrote, formatted, and edited FEMA doctrine documents

Senior Associate Analyst; Talent Development Program September 2015 – September 2017

Analytic Services (ANSER), Falls Church, VA

- Conducted futures analysis, organizational strategy assessments, and systems thinking analysis for offices within the Departments of the Air Force, State, Commerce, and Homeland Security
- Awarded annual (2017) and semi-annual (2016) Alan S. Boyd award for improving company reputation

Publications:

Peer-Reviewed Publications:

- “Swarming Destruction: the CBRN Implications of Emerging Drone Swarm Technology,” *The Nonproliferation Review*, 25, January 2019, (Lead author with Philipp Bleek)
 - Included on emerging technology reading list for the National Intelligence Council
 - Cited in UK Parliamentary Office of Science and Technology Research Note
- “Avatars of the Earth: Radical Environmentalism and CBRN Weapons,” *Studies in Conflict and Terrorism*, May 2018, (Lead author with Philipp Bleek)

Other Studies and Book Chapters:

-“An Analysis of Drone Swarms as Weapons of Mass Destruction,” *USAF Center for Strategic Deterrence Studies*, May 13, 2020

- Written about and interviewed in David Hambling, “U.S. Army’s New Drone Swarm may be a Weapon of Mass Destruction,” *Forbes*, June 1, 2020. (Shared by Yahoo News)
- Written about in Peter Suci, “The U.S. Army’s New Weapon of Mass Destruction: Swarm Drones?” *The National Interest*, June 3, 2020. (Shared by Yahoo News)
- Written about in at least six foreign language press outlets.

-“Chemical and Biological Weapons,” in Brent Steel, Eds., “Science and Politics: an A-Z Guide to Issues and Controversies,” *CQ Press*, May 2014, (Lead author with Kelly Erickson)

-“Disarming Syria of its Chemical Weapons: Lessons Learned from Iraq and Libya,” *Nuclear Threat Initiative*, October 31, 2013, (Lead author with Raymond Zilinskas)

Proceedings:

-“Armed, Fully Autonomous Drone Swarms (AFADS): Weapons of Mass Destruction?” ISA International Security Studies Division Conference, October 13, 2017

“Avatars of the Earth: Assessing the Threat of Eco-Radical Chemical, Biological, Radiological, and Nuclear Terrorism,” (Lead author with Philipp Bleek), International Studies Association (ISA) Conference, March 2016

-“Complex Pore Spaces Create Record-Breaking Methane Storage System for Natural-Gas Vehicles,” (with Peter Pfeifer, et al), *Chaos: an Interdisciplinary Journal of Nonlinear Science*, 17, 2007

-“Hockey Pucks: the Energy of the Future,” (Lead author with Peter Pfeifer), 2007 Summer Undergraduate Research and Creative Achievements Forum (MU), 2007

Opinions and Commentary:

-“Swarms of Mass Destruction: The Case for Declaring Armed and Fully Autonomous Drone Swarms as WMD,” *Modern War Institute at West Point*, May 28, 2020

- Written about in Kyle Mizokami, “Should Drone Swarms be Considered Weapons of Mass Destruction?” *Popular Mechanics*, May 29, 2020.

-“AI Risks to Nuclear Deterrence are Real,” *War on the Rocks*, October 10, 2019

- Cited in National Security Commission on AI Interim Report, November 2019

-“If the Oceans Become Transparent” Proceedings of the U.S. Naval Institute, October 2019

-“A New Era of Terrorism: New Mass Casualty Terrorism Threats,” *Army Mad Scientist Laboratory*, September 26, 2019

-“A New Era of Terrorism: the Future of CBRN Terrorism,” *Army Mad Scientist Laboratory*, September 9, 2019

-“What if the U.S. Military Doesn’t Develop AI? AI Futures and U.S. Incapacity,” *War on the Rocks*, September 3, 2019

- Recommended read on podcast “AI with AI,” Center for Naval Analyses, October 18, 2019

-“The Race Is On: Assessing the US-China Artificial Intelligence Competition,” *Modern War Institute at West Point*, April 16, 2019

-“Lord of the Drones: Fellowship of the Drone,” *CBRNWorld*, February 2019, (Lead author with Philipp Bleek)

-“Drones of Mass Destruction: Drone Swarms and the Future of Chemical, Biological, and Nuclear Warfare,” *War on the Rocks*, February 14, 2019, (Lead author with Philipp Bleek)

-“Academic Paywalls Harm National Security,” *DefenseOne*, December 14, 2018

-“The Era of the Drone Swarm is Coming and We Need to be Ready for it,” *Modern War Institute at West Point*, October 25, 2018

- #8 most read article at Modern War Institute for 2018

-“Swarming Sea Mines: Capital Capability?” *Center for International Maritime Security*, August 29, 2017

- Written about in *Asia Unhedged*, “Get Ready for ‘Swarming Sea Mines’ in a Naval Conflict Near You,” *Asia Times*, August 30, 2017

Works in Progress:

-“Drone Swarm Terrorism,” draft to be completed Fall 2020, (Lead author with Gary Ackermann and Philipp Bleek).

-“InfoSwarms: Drone Swarms and Information Warfare,” under peer-review.

-“Containing the Swarm: Drone Swarms and Nonproliferation,” draft to be completed by Summer 2021.

Presentations:

-Invited speaker, “sUAS Terrorism: Theory and Threat,” Counter Unmanned Aerial System (cUAS) Summit, August – September 2020 (anticipated)

-Guest lecture, “Drone Terrorism: Theory and Threat,” *University of Albany, SUNY: EHC 360: The Legal, Ethical, and Operational Impacts of Unmanned Systems*, April 15, 2020

-Invited speaker, “sUAS Terrorism: Theory and Threat,” Counter Unmanned Aerial System (cUAS) Summit, April 1, 2020 (recorded presentation)

-Invited speaker, “Chemical and Biological Technology Watch Forum,” *Defense Threat Reduction Agency*, March 4, 2020

-Invited speaker, “Understanding the Threat: Non-State Actor Use of Unmanned Aerial Systems,” CRDF Global, October 22, 2019

-Invited speaker, “The Floating Eye: Border Security and Unmanned Aerial Vehicles,” *Customs and Border Protection – National Targeting Center*, September 18, 2019

-Special invited speaker, “Workshop on Autonomous and Remotely Operated Systems: Benefits and Challenges to Nuclear Security,” *World Institute for Nuclear Security*, April 2-4, 2019 (Presented via Skype)

-Invited speaker, “Technical Horizon Research Evolution Anticipation Tool Expert Event,” *Defense Threat Reduction Agency*, April 2, 2019

-Invited speaker, “Emergence and Convergence Workshop: the Dynamics of Technology Push and Market Pull,” *National Defense University*, October 31, 2018

-Recorded podcast, “Environmental Extremism and CBRN Weapons,” (with Philipp Bleek), *NJ Office of Homeland Security and Preparedness*, May 23, 2017

-Invited speaker, “Avatars of the Earth: Assessing the Threat of Eco-Radical Chemical, Biological, Radiological, and Nuclear Terrorism,” (with Philipp Bleek), *National Consortium for the Study of Terrorism and Responses to Terrorism (START)*, College Park, Maryland, September 2016

-Invited Presenter, “The Adoption of International Norms: Russian Landmines and the Conflict in Chechnya,” 18th Annual Conference for Students of Political Science, April 2010

-Poster Presentation, “Hockey Pucks: the Energy of the Future,” University of Missouri, 2007

Press:

-Interviewed and quoted in Gerrard Cowan, “Boats of the Future,” *Shephard Media*, Naval Warfare, No. 2, 2020

-Interviewed and quoted in front-page article in the San Francisco Examiner: Jonah Owen Lamb, "SF Bomb-making Case: What Someone Can Do with Illegal Toxins," *San Francisco Examiner*, 12 June 2014.

Peer Reviewer:

The Nonproliferation Review

Professional Activities:

Fellow/Policy Advisor

December 2016 – September 2017

IT Acquisition Advisory Council (IT-AAC), Arlington, VA

-Researched and reported on defense industrial base and acquisition policy developments for IT-AAC leadership, leading to successful meetings with White House officials and other senior government leaders

Participant

April 2019 – June 2019

Integrated Discovery of Novel and Emerging Technologies (IDENT) Project

-Won second place overall in Countering Weapons of Mass Destruction expert knowledge competition to assist the Defense Threat Reduction Agency in identifying important emerging technologies