

W06 Tuning in to the Barking Dog: Actionable Surveillance in an Evolving Chemical Threat Landscape

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Learning Overview: After attending this workshop, attendees will better understand how current challenges for toxicological screening in death investigation cases extend to combating the proliferation and use of unregulated chemicals as weapons and where practicing toxicologists can help contribute to an effective national surveillance network through proactive recognition of emerging chemical threats.

Impact on the Forensic Science Community: This workshop will impact the forensic science community by: (1) providing technical competence on threat agnostic approaches to recognizing and preventing or mitigating evolving chemical threats; and (2) putting this new competence into action through facilitated discussions and exercises to establish a framework for proactive information sharing and surveillance.

Since the emergence in the United States of New Psychoactive Substances (NPS) in late 2007, the United States and international forensic toxicology communities have grown increasingly savvy at recognizing this continually evolving threat. Unfortunately, as toxicological screening capabilities have advanced, so have those of enterprising chemists and businessmen and women in evading attempts at NPS regulation. Further, the widespread availability of both the starting materials and instructional materials have expanded the public health threat to an issue of prominent global security concern. Against this backdrop, steady progress toward elimination of declared stockpiles of chemical weapons in support of the Chemical Weapons Convention (CWC), a multilateral disarmament and non-proliferation treaty that entered into force in 1997, has also driven the deployment of capabilities to detect and respond to a broad range of weaponized chemicals. Despite the successes and continued progress toward chemical demilitarization, the norms against weaponizing chemicals enshrined within this treaty are challenged through continued uses of chemicals as weapons by both terrorists and states in ways that had not been envisioned during the negotiations that led to the CWC. This includes weaponization of broader types and classes of chemicals, some of which may be sourced from readily available sources, which are being combined with low-tech approaches to both making and dispersing chemical threat agents. Proliferators have diverse options to deploy chemicals as weapons, and the anonymity and the speed with which chemical structures that fall outside established regulatory control listings and control measures can be produced.

This new reality has exposed an urgent need for domestic and international decision makers to have access to technical tools and approaches that fundamentally change how they respond to and prosecute cases of alleged attacks using weaponized chemicals to effectively counter the ever-changing landscape of chemical threats. Success requires enhanced capabilities and threat agnostic approaches to generate answers at the speed of relevance. Innovative and enabling approaches are being realized by integrating capabilities in analytical toxicology, ultra-trace chemical characterization, advanced data analytics, and expertise at the technology/policy interface, but to be useful to decision makers, we also need to synthesize the information gleaned from this work to establish a functional surveillance network.

In this engaging and interactive workshop, the speakers will provide a comprehensive overview of the problem set and invite attendees to help establish nationwide surveillance to help United States decision makers actionably recognize, mitigate, and/or potentially source evolving chemical threats stemming from the global NPS trade. Speakers will discuss the chemical threat landscape and its evolution since the entry-into-force of the CWC, the many challenges faced in responding to and investigating recent domestic and international chemical incidents, and the importance of threat agnostic solutions to success. This workshop will highlight the central role of forensic investigation in combatting chemical threats and illustrate how, in combination with data collection, informatics, and enabling technology and policy, it may provide a basis for an actionable surveillance network for United States and international decision makers.

NPS Surveillance, Threat Agnostic, Untargeted Analysis