PASCC
Research in Progress FY18

IMPROVING EXPERT ELICITATION ON NON-TRADITIONAL CHEMICAL THREAT AGENTS USING A COMBINED RISK ASSESSMENT, DELPHI AND BAYESIAN TRUTH SERUM METHODOLOGY

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ABSTRACT:

Amidst unprecedented access to and diffusion of transdisciplinary/convergent scientific knowledge, practical advice that can distinguish between interesting scientific discoveries and fieldable technological capabilities is increasingly important. The use of expert elicitation will be increasingly important for ensuring scientific competency for international disarmament efforts for weapons of mass destruction, such as the Chemical Weapons Convention. Here we describe a novel, mixed-methods approach to elicitation of expert consensus on the topic of non-traditional chemical threat agents and the gaps in response knowledge to address them. To determine an initial set of chemical threat agents, we employ a risk assessment augmented with supervised machine learning and Bayesian Truth Serum (BTS) scoring. We will then leverage the strengths of the Delphi method with the novel addition of BTS to determine expert assessment of the gaps in response knowledge to address the identified chemical threats. Our approach will provide a transparent, systematic, and scientifically rigorous risk assessment and expert consensus framework on the topic of chemical threats, as well as make a contribution to the field of expert elicitation through the provision of high-quality expert consensus suitable to rapid-cycling during emergent events due to the ability of the BTS to quickly and objectively identify expertise.

Research in Progress describes ongoing PASCC research. For more information please contact INSS@usafa.edu.

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PROJECT ON ADVANCED SYSTEMS AND CONCEPTS FOR COUNTERING WEAPONS OF MASS DESTRUCTION