



Vipin K Rastogi

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Biography

Vipin K Rastogi is a Senior Research Biologist with Research and Technology Directorate at US Army - Edgewood Chemical Biological Center, at Aberdeen Proving Grounds, Maryland, USA. He has been conducting R&D for over 23 years in Chemical-Biological Warfare Agents defense area, specifically their detection and decontamination. Before joining APG, he was Assistant Research Professor at Texas A&M University, College Park, Texas. He earned his BSc and MSc in Plant Sciences from Delhi University, India, and earned his PhD from McMaster University, Hamilton, Canada.

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CURRENT CHALLENGES TO BIOTERRORISM RESPONSE

Bioterrorism was reckoned to be a stark reality since mailing of *Bacillus Anthracis* spores via USPS, right after 2001. Spores of *B anthracis*, cause anthrax disease in animals and humans, and the infectious dose varies from 1-10 to few thousands. In the event of a large-scale spore release, early detection and delineating the contaminated zones is a significant challenge. Further, rapid and effective cleanup of contaminated sites, including building interiors, is paramount to minimizing the consequence of BW release, and restoration of normalcy. For past 15 years, our lab has been focused on both early detection of bacterial pathogens and ricin toxin, and BW decontamination research. With respect to early BW detection, field detection using molecular approaches is compromised by false-negative and false-positive outcome. Further, use of hand-held assays (lateral flow tickets) must contend with high limit of detection (10,000-50,000). In the event of wide-area release, rapid sampling and sampling efficiency from diverse exterior (porous and non-porous) surfaces is a critical challenge. Some of our recent R&D and that of our collaborators at US EPA has evaluated effectiveness of both, liquid disinfectants and gaseous fumigants, on diverse range of surfaces. For example, peroxide-based approaches will be ineffective on concrete and free-chlorine-based approaches will be ineffective on wood like structures. Some of our recent work on development of a novel approach, DeconGel for BW decontamination will be presented. Based on our recent study, decontamination of vertical contaminated surfaces was found to be only partially effective, when liquid disinfectants were applied.



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