CONCURRENT SESSION 3 – BIOLOGICAL AGENT SAMPLING & ANALYSIS METHODS

Evaluation of Outdoor Surface Sample Collection and Analysis Methods for USCG Assets

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Following a bioterrorist attack, materials contaminated with biological agent pose significant health threats. EPA is expected to respond to outdoor contamination incidents to characterize and remediate the impacted sites, and thus, determining the performance of available sampling and analysis methods for outdoors is a high priority need. The performance of the methods may, in part, depend on the outdoor surface being sampled and analyzed. The United States Coast Guard (USCG) bases and assets may become contaminated during a large-scale outdoor biological incident. To determine compatibility with currently existing sampling approaches, and to develop improved (i.e., non-traditional) sampling methods, surfaces common to USCG assets (marine grade aluminum, non-skid tread, glass, gravel, and bilge water) were sprayed or directly spiked with barcoded *Bacillus thuringiensis* subspecies kurstaki (Btk T1B2) spores. Surfaces were then exposed to outdoor environmental conditions (but not direct sunlight or precipitation) for up to 180 days, then sampled using traditional methods. Prior to outdoor exposure (Day 1), Btk T1B2 spore recoveries from inoculated surfaces using traditional sampling methods (e.g. sponge-sticks, vacuum filter cassettes, grab samples) were 37 – 41 % (sponge-sticks), 25 – 26 % (gravel and bilge water), and < 1 % (vacuum filter cassettes). Spore recovery from surfaces using non-traditional sampling methods was highest when a physical wiping of the surface was incorporated with the washdown method, 18 – 19% recovery with squeegee or bristle brush compared to < 8% for washdown methods without a physical wipe. Detection and/or quantification of Btk T1B2 via either culture or Rapid Viability PCR (RV-PCR) method was adversely affected between the 30-day and 90-day sample collections. Non-traditional methods are plausible sample collection methods that can yield a composite sample over a relatively larger surface area than traditional sampling methods.