

Live Virus Testing on Aircraft

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Abstract: The COVID-19 global pandemic has significantly encumbered many industries including air travel and aviation, with drastically fewer travelers flying today than in the past several years. In an effort to enhance safety and restore confidence in air travel, Boeing's Clean Airplane Program undertook studies to validate the efficacy of various disinfection technologies intended to combat SARS-CoV-2 – the virus that causes COVID-19 – on commercial aircraft cabin surfaces. Disinfection technologies included disinfectant wiping, antimicrobial coatings, ultraviolet light, and electrostatic sprayers. While transmission of SARS-CoV-2 through contact from surfaces may be a less common infection pathway, successful disinfection technologies applied to high-touch surfaces remain an important cornerstone to the enhancement of the safety and comfort of passengers, crew, and personnel on commercial aircraft. This paper discusses these various disinfection technologies and reviews the results from validation testing conducted by Boeing and the University of Arizona. Validation testing was performed in an airplane interior mockup, a production airplane, and laboratory settings, using both surrogate viruses, bacteriophage MS2 and human coronavirus HCoV-229E, and the novel human coronavirus SARS-CoV-2. MS2 was evaluated in an interior mockup and production airplane at Boeing's facilities. MS2, HCoV-229E and SARS-CoV-2 were evaluated in controlled laboratory environments by the University of Arizona. Results show that the airplane environment can be effectively disinfected with appropriate methods. Variations in results are seen with treatment, application and to some degree, surface materials.