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Evaluation of an advance oxidation system in controlling healthcare-associated infections on various surfaces

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The effectiveness of reactive oxygen species (ROS) generating airPHX equipment for reducing bacterial populations of Clostridium difficile, *Methicillin* Resistant *Staphylococcus aureus* (*mRSA*) and Pseudomonas aeruginosa on three (3) common contact surfaces; stainless steel (Austenitic 316), plastic (PVC) and linoleum (floor tile) were studied. Antimicrobial resistant pathogens pose an ongoing and increasing challenge to hospitals because they cause healthcare-associated infections (HAIs) during clinical treatment of patients. Coupons of stainless steel, plastic and linoleum were inoculated with each organism placed inside an experimental chamber were continuously treated with ROS for eight different hour increments from an airPHX advanced oxidation generator. ROS levels were continuously monitored prior to removing coupons for microbiological testing. Control coupon were similarly placed in the chamber and held at environmental conditions to determine natural decay of microbial populations through time. Stainless steel coupon results after 0.5 h of ROS treatment Clostridium difficile Methicillin Resistant Staphylococcus aureus (*mRSA*) and Pseudomonas aeruginosa saw a 4.21-log, 4.42-log and 4.26-log destruction respectively. After 12 h exposure, these same organisms yielded a 6.87-log, 7.17-log and 7.71-log reduction, respectively. The other contact surfaces, plastic and linoleum displayed similar log reduction. These findings reveal that ROS treatment using the airPHX unit significantly reduces these three HAI's on common health care contact materials to > 4.2-log destruction after a 0.5 h exposure.