ABSTRACT
Many health care agencies are considering the use of reusable respiratory protection devices (RPDs) to mitigate an RPD shortage due to an influenza pandemic. US regulators are also considering stockpiling reusable RPDs for a pandemic. The effectiveness of cleaning alone was equivalent to both cleaning and disinfection at removing/killing influenza. Durability data indicates that HMERs and PAPRs can be cleaned up to 150 times without significant degradation to filtration efficiency and fit performance. Future work will focus on additional performance testing and evaluating the effectiveness of automated C/D procedures using a medical washer/disinfector.

METHODS
Using a cleaning and decontamination (C/D) protocol based on OSHA and manufacturer guidance, five HMER models and three PAPR models were evaluated for 1) H1N1 influenza decontamination efficacy and 2) durability after 75 and 150 cleaning and decontamination cycles. Each respirator was inoculated with ten 1-μL droplets of 9-log10TCID50 H1N1 influenza in multiple locations, allowed to dry for 25 minutes, then overlaid with ~5 mg of sebum (artificial skin oil). HMERs were cleaned and disinfected by wiping with a 0.5% Neutrawash solution, rinsing with water, soaking in 0.1% household bleach for 2 minutes, and then rinsing. PAPRs were cleaned and disinfected by wiping with a 0.5% Neutrawash solution, and then wiping with a PDI SaniCloth (quat ammonia and alcohol) disinfectant. After treatment, inoculated areas were sampled using mesh swabs that were subsequently extracted. Extracts were titered in MDCK cells using TCID50 assays according to WHO protocol.

DURABILITY STUDIES
HMERs and PAPRs were effective at removing/killing influenza while in the presence of a soiling agent. The data from this study indicates that the manual C/D protocols based on OSHA and manufacturer guidance for HMERs and PAPRs were effective at removing/killing influenza while in the presence of a soiling agent.

CONCLUSIONS
• The data from this study indicates that the manual C/D protocols based on OSHA and manufacturer guidance for HMERs and PAPRs were effective at removing/killing influenza while in the presence of a soiling agent.
• Durability data indicates that HMERs and PAPRs can be cleaned up to 150 times without significant degradation to respirator functionality and performance.

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The published material represents the position of the authors and not necessarily that of the FDA.