



### PROBLEM ADDRESSED

While most data suggest that droplets or aerosols are the predominant modes for COVID-19 transmission, infection with SARS-CoV-2, the virus that causes COVID-19, may also occur after touching contaminated surfaces and transferring virus to the nose, mouth or eyes. As a result, elevated hygiene and disinfection practices have been recommended to mitigate the risk of such contact transmission. To better inform the choice and use of disinfectants by DHS operators against SARS-CoV-2, the NBACC performed studies to evaluate the effectiveness of several products to reduce SARS-CoV-2 contamination when it was in simulated respiratory fluids. Disinfectants were tested against both wet and dried virus droplets to simulate disinfection of fresh and old contamination. No pre-cleaning or wiping was done during these tests to model a high tempo operations scenario where disinfectant is simply applied onto a potentially contaminated surface without pre-cleaning or wiping.

### SUMMARY OF DISINFECTANT EFFICACY TESTING:

Active Ingredient(s)	Product/Source (Manufacturer)	Preparation Requirements	Contact Time	Effectiveness <sup>1</sup> Against SARS-CoV-2
Quaternary Ammonium Compound (QAC) 1 & 58% ethanol	Lysol® Disinfectant Spray (Reckitt Benckiser)	Ready to Use	3 min	HIGHLY EFFECTIVE
0.26% sodium hypochlorite	Clorox® Germicidal Bleach, 8.25% (The Clorox Company)	Dilute 1:32 with water	5 min	HIGHLY EFFECTIVE
70% ethanol	100% ethanol, laboratory grade chemical	Dilute with water	5 min	HIGHLY EFFECTIVE
0.017% peroxyacetic acid & 0.855% hydrogen peroxide	PeraSpray (Enviro Tech Chemical Services)	Ready to Use	10 min	HIGHLY EFFECTIVE
0.5% sodium hypochlorite & 1% acetic acid	Clorox® Germicidal Bleach, 8.25% Heinz® White Distilled Vinegar	Dilute with water	5 min	PARTIALLY EFFECTIVE
Quaternary Ammonium Compounds (QAC) 2 & 3	Micro-Chem Plus™ (National Chemical Laboratories)	Dilute 1:64 with water	10 min	PARTIALLY EFFECTIVE
70% isopropanol	CiDehol® 70 (Decon Labs)	Ready to Use	30 sec	PARTIALLY EFFECTIVE
3% hydrogen peroxide	Over the counter pharmacy grade	Ready to Use	1 min	NOT EFFECTIVE

<sup>1</sup> Highly Effective: Greater than 95% of all tested samples had no detectable virus after disinfectant treatment, in addition > 99% infectivity reduction was observed when virus detected;

Partially Effective: Between 60 to 95% of all tested samples had no detectable virus, in addition > 95% infectivity reduction was observed when virus detected;

Not Effective: All tested samples had detectable virus, highly variable infectivity reduction.

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### KEY RESULTS

- The majority of disinfectants tested were able to successfully reduce SARS-CoV-2 infectivity on surfaces
- Over-the-counter grade liquid hydrogen peroxide is not effective against SARS-CoV-2 under these test conditions and not recommended for use

### SIGNIFICANCE OF RESULTS

These results show that even without pre-cleaning or wiping, several commercially available disinfectants are capable of reducing the amount of infectious SARS-CoV-2 on surfaces when used as directed. Overall, this work provides data critical to inform decontamination, waste disposal, and risk assessments for DHS employees, health care workers, and first responders. Operational decision regarding choice of disinfectants can be informed by the following criteria: (1) disinfectant effectiveness against SARS-CoV-2, (2) required contact time, and (3) preparation requirements.

