

Single use respirators such as N95 are important to protect staff and patients from droplet and airborne infections. However, shortages may occur during infectious disease outbreaks such as the COVID-19 pandemic which may require reuses or extended use of the respirators. Single use N95 respirators are intended to be discarded after each procedure that requires a respirator. However, N95s are designed to function for days and weeks with airflow consistent with regular breathing and if the seal between the mask and the user is maintained, the respirator will continue to provide effective protection. Action has been taken in response to COVID-19 PPE shortages. FDA has authorized methods as a mean to provide safe reuse and reprocessing of N95s. Below is the hierarchy of approved processes which have been investigated and adopted by MultiCare Health System (following processes are recommended by CDC).

Evaluation of Decontamination methods for N95s, compatible filtered face masks and effect on performance

		Description	Specifications	Comments
A	VPHP (Battelle)	Vapor Phase Hydrogen Peroxide	<ul style="list-style-type: none"> • Demonstrates acceptable performance through 20 cycles for sporicidal, viricidal without impacting performance • Degradation of strap after 30 cycle • Minimal effect to filtration, fit testing and strap integrity • 99.9999% efficiency in killing bacterial spores • Process to return the mask to original user • Can process up to 80,000 masks 	FDA approved under EUA on March 29,2020.
B	STERRAD ASP	Low heat sterilization with H2O2 vapor and Plasma	<ul style="list-style-type: none"> • Extended usability of N95 • Efficiency in killing bacterial spores • Can only be used up to 2 disinfection cycles • Process to return Mask to original user • Can process 10 masks at each disinfection cycle 	FDA approved under EUA April 12, 2020

C	Baking Method	Dry Heat at 70C for 30 min	<p>Of all the other methods:</p> <ul style="list-style-type: none"> • Had the least effect on damaging the filtering system. • Filtering effect maintained above 95% • Could be cycled 20 times without loss of filtration efficiency and mechanical deformation 	<ul style="list-style-type: none"> • Type of fabric the mask is made of can impact efficacy. <p>If mask's fluid protection layer is made up of a polymer with lower melting point, melting of the mask or parts can happen.</p> <ul style="list-style-type: none"> • Does not kill spore forming microorganism. For masks used while caring for patients with <i>C. diff</i>, masks need to be sterilized.
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1. <https://www.battelle.org/inb/battelle-ccds-for-covid19-satellite-locations>
2. <https://www.fda.gov/media/136882/download>
3. <https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/decontamination-reuse-respirators.html>
4. <https://www.n95decon.org/>
5. https://www.elsevier.com/_data/assets/pdf_file/0006/997863/COVID-ECRI-N95-Respirators_2020-03.pdf