

Not all valved N95 masks are the same when filtering exhaled air, study finds

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Although respirators with one-way exhalation valves can make wearing a mask more comfortable, their use as a way to prevent the spread of COVID-19 in public has been discouraged. The thinking is that valves do not effectively filter particles as exhaled air passes through them, but

few studies actually have looked at this. Now, researchers report in ACS' *Environmental Science & Technology Letters* that one valved N95 mask performed substantially better than another.

Face coverings filter out [particles](#), helping decrease the transmission of respiratory diseases. And as COVID-19 community levels shift, masks will still be needed in some settings. But previous studies haven't provided clear guidance on how valved respirators impact the spread of exhaled particles. Either the sample size has been very low—in one instance, only a couple of people wore one brand of valved mask—or they have been performed under idealistic wearing conditions. So, Christopher Cappa and Jessica Hazard wanted to know what would happen if 10 volunteers spoke while wearing different mask types, including two different valved respirators. Cappa and Hazard also asked the volunteers to wear the coverings as they would in the [real world](#).

The participants read a passage aloud with and without [face coverings](#), including one unvalved and two valved N95 respirators, as well as a surgical mask. The unvalved N95 respirator kept 98% of respiratory particles from being emitted, but the valved N95s were variable—one provided almost no benefit, while the other's performance was generally on par with that of a surgical mask. Surprisingly, some participants emitted more particles when wearing the ineffective valved N95 compared to when they weren't wearing a facial covering. The researchers attributed this finding to sloughed facial skin cells or debris, or a greater speaking intensity when wearing facial coverings. Based on their data, the researchers recommend that valved masks be avoided in favor of masks that are more efficient at filtering out respiratory particles when the goal is to protect [public health](#).

More information: Performance of Valved Respirators to Reduce Emission of Respiratory Particles Generated by Speaking, *Environmental Science & Technology Letters* (2022). [DOI: 10.1021/acs.estlett.2c00210](https://doi.org/10.1021/acs.estlett.2c00210)

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