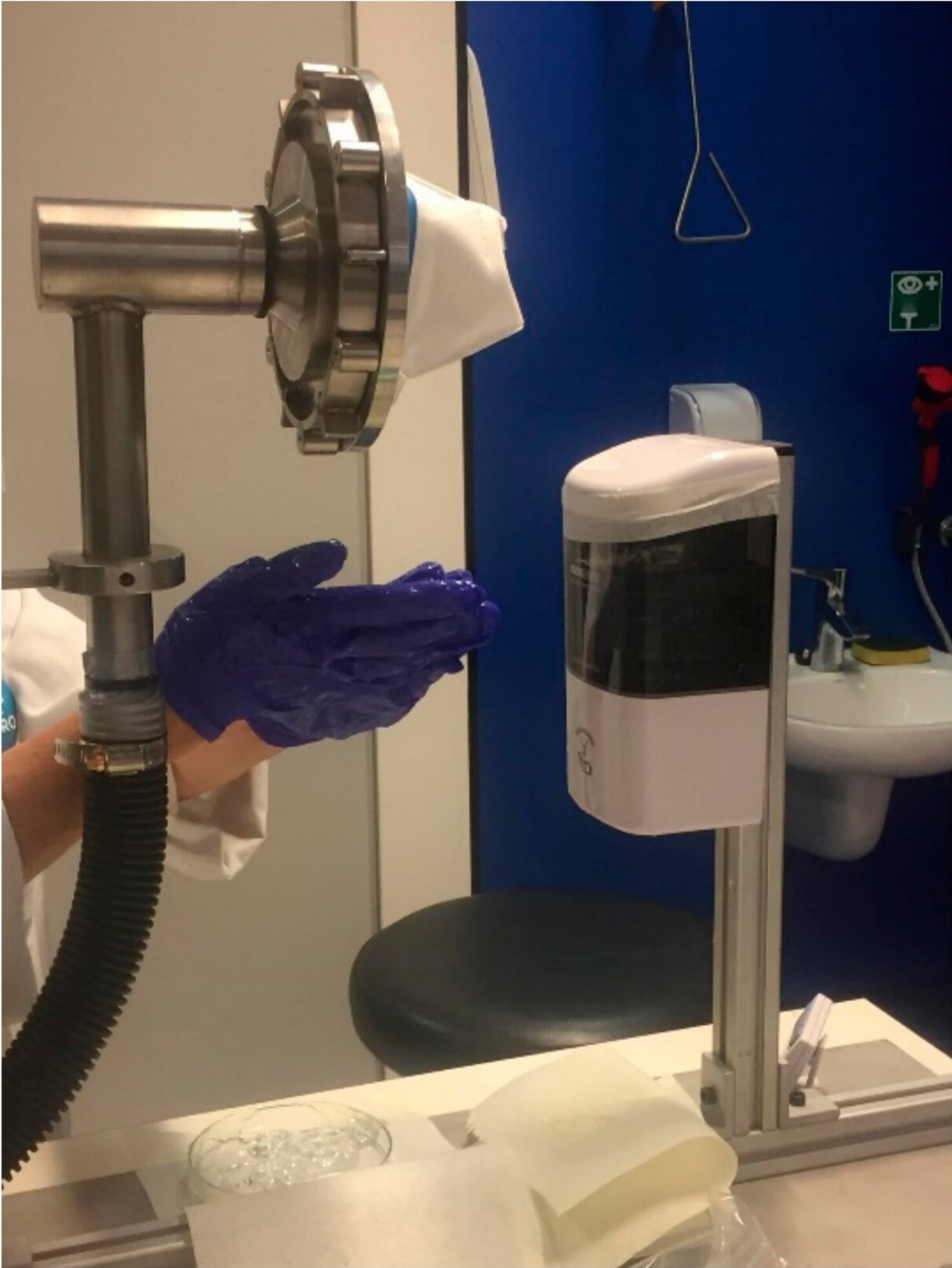


Study finds increased exposure to alcohol-based sanitizers reduces masks' effectiveness

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Experimental setup for exposing respirator test samples to alcoholic vapor (EtOH) emitted by an automatic hand sanitizer dispensing station via the release and use of gel hand sanitizer. Credit: DOI: 10.3390/ijerph19020641

With face masks remaining a regular feature for people throughout the country, there may be a temptation to get more bang for your buck by giving your mask a spray with sanitizer, or trying to extend its life by sanitizing between uses, as has been done in times of mask shortages.

However new research by CSIRO, Australia's national science agency, has shown that increased exposure to alcohol-based sanitizers actually reduces a mask's effectiveness.

The study, published in the *International Journal of Environmental Research and Public Health*, is believed to be the first of its kind in the world to investigate the impact of vapors from alcohol-based hand sanitizers and cleaning solutions on the performance of (K)N95 and P2 [face masks](#).

Researchers found that disposable respirator [masks](#) were able to retain their effectiveness after either four hours of continuous exposure to alcoholic [sanitizer](#) vapors or one direct spray of sanitizer, but any further exposure had the potential for more serious degradation.

Additionally, exposing masks to a high concentration of alcoholic vapors left them so compromised that they no longer offered protection from airborne hazards.

Lead author, CSIRO researcher, Dr. Jurg Schutz, said the study's findings will help inform people on how best to care for their single-use face masks and could be used by manufacturers to conduct further

testing.

"Single-use face masks will continue to be part of many of our lives as they provide us with a defense against COVID-19, its variants and any future pathogens, but we had been hearing stories about people trying to prolong the life of these masks by cleaning them," Dr. Schutz said.

"We started thinking about the kinds of products people have been using more during the pandemic, like alcohol-based hand sanitizer and cleaning solutions, and realized these could impact the electrostatic properties of face masks.

"These masks rely on having an electrostatic charge that attracts particles and traps them like a sticky spiderweb, but we also know this charge can be destroyed by highly-concentrated alcoholic vapors."

The researchers found masks stood up well in three common scenarios used to prevent the spread of COVID-19:

- Using [hand sanitizers](#) while wearing a mask
- Cleaning tables while wearing a mask
- Spraying a mask with sanitizer or alcohol-based cologne once

However, they found that more than one spray of sanitizer could seriously compromise the mask to the point of no longer protecting the wearer, and extended exposure to highly concentrated vapors by sealing it in a container with alcohol-based sanitizing solution, for example to "clean" a single-use mask before a second use, will actually destroy it.

The study was undertaken by the same team that established Australia's first certified testing facility for single-use surgical face masks in response to COVID-19.

As well as providing the [general public](#) with a better understanding of how to care for their single-use face masks, the team expects the findings could help inform the development of future, pandemic-improved filtration products around the world.

More information: Jürg A. Schütz et al, The Effect of Sanitizing Treatments on Respirator Filtration Performance, *International Journal of Environmental Research and Public Health* (2022). [DOI: 10.3390/ijerph19020641](#)

Provided by CSIRO

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