Single-use paper towels offer a more hygienic way to dry hands after washing conclude scientists

The latest study upholds over 15 years of independent research demonstrating how air dryers disperse microbes while paper towels stop them.

BRUSSELS, 04 November 2025 A new study has found that electric hand dryers spread microbes much more than paper hand towels. It concludes that despite the advent of so-called 'newer' and 'redesigned' air dryer models, the contamination risks persist. Microbes can linger in the air up to 30 minutes after dryer use and potential for virus spread via droplets and aerosols on surfaces and in the air is considerably higher than when drying hands with paper towels.

This latest study, carried out by a team at the Leeds Institute of Medical Research, Faculty of Medicine and Health, University of Leeds, UK, and Department of Microbiology, Leeds Teaching Hospitals NHS Trust, Leeds, UK underlines how choices of hand drying method in public washrooms can mean the difference between reducing microbe spread or increasing it.

"*There is a long-running evidence base stretching back almost two decades, recording how air dryers continue to fail on hygiene*," explains leading microbiologist Professor Mark Wilcox OBE, who led the study. "*Regardless of design tweaks or technological upgrades to improve efficiency, the hygiene challenge remains the same: Drying hands with air dryers risks splattering and the inhalation of microbes*."

How we dry our hands after washing them matters as it can help to remove microbes that remain on hands following poor hand washing. The research sought to understand the infection risk by examining the potential of new electric hand dryer models to disperse droplets containing microbes and aerosolized particles. It found that the 'newer' and 're-designed' dryers were not more hygienic and that in some respects greater efficiency had worsened the situation by creating the potential for aerosols to be propelled further and longer.

Study compared three different hand drying methods

The team in Leeds compared the impact on the formation of droplets and aerosols containing viruses, surface contamination and person-to-person exposure from three different hand-drying methods: paper hand towels and two jet air dryer designs.

They used both a food dye solution and bacteriophage (virus) suspension to visually and quantitatively investigate the potential of each of the three options to disperse water droplets in the washroom environment, potentially contaminating surfaces, the user and a bystander.
The researchers also investigated whether microbes aerosolized during hand drying can contaminate the facemasks of others sharing the same space, thereby mimicking the risk of breathing in viruses for up to 30 minutes after hand drying.

Paper towels were found to be more hygienic

The scientists concluded that electric hand dryers spread microbes more than tissue paper. The highest level of microbe contaminated droplets on the floor and walls was observed using the electric hand dryer method. The research found that microbes can remain airborne for up to 30 minutes after dryer use, with wall contamination levels up to 78 times higher compared to paper towels.

The study showed significantly less splattering contamination of both masks and torso when using paper towels than electric dryers. Mask contamination of users in the hand drying area after 15 minutes showed that aerosolization was up to 100x higher with dryers than with paper hand towels. Contamination of the masks of standby users at 1m was up to 10x higher with electric dryers than with paper towels after 30 minutes.

There was also significantly less surface contamination with paper towels which reduce the risk of touch-transfer on objects such as door handles.

The study concludes that in real-world conditions, paper towels are the more hygienic drying option (compared to electric dryers) to minimise the spread of viruses and bacteria indoors.

Watch the visualisation and read the full study HERE

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