



Paper Towels vs. Air Dryers

EXECUTIVE SUMMARY

The question of 'Paper towels vs air dryers - which is better?' has been circulating for many years, and there are multiple ways to answer this question depending on what metrics you are interested in. Multiple studies have researched the effectiveness of hand hygiene and often conclude paper towels remove additional bacteria as compared to air dryers, making them the more hygienic option. Paper towels also provide greater convenience with less wait time than air dryers, making them the preferred option by users. Paper towels can minimize the chance of a user becoming impatient with air dryers and leaving with moist hands or wiping hands on clothes to dry, which are not hygienic options. However, if you are interested in cost, some analysts have determined that paper towels cost as much as 2-20 times more than air dryers.

Air dryers can also produce noise levels in excess of the OSHA permissible exposure level, depending on the amount of time that a person is exposed according to public health research studies. There is also research that proves air dryers can suck in germs and bacteria and re-distribute them on newly washed hands and escape when restroom doors are opened. Regarding COVID-19, research suggests that air dryers may spread more germs, making paper towels the more effective option to reduce viral transmission.

In the end, much of the research lacks evidence and is inconclusive when determining if paper towels or air dryers are the better option. An organization must determine what their priorities are and the preferences of their users when making the decision of air dryers vs paper towels for their facilities.

RECOMMENDATION(S)

→ Does one method work better than the other for hygienic maintenance of hands after washing?

There are opinions on both sides of this debate. The CDC states, "there is not enough evidence to determine if using a clean towel or an air hand dryer to dry your hands is more effective...both ways are effective ways to dry your hands." However, the CDC does highlight the importance of making sure hands are dried completely after washing, which often favors paper towels, as people sometimes get impatient with air dryers and do not fully dry their hands or wipe their hands on their clothes for drying completion.

In addition, The World Health Organization prefers hand drying with a single-use towel, the use of paper towels in the healthcare environment is believed to provide a superior infection control result. The Mayo Clinic concluded that "from a hygiene viewpoint, paper towels are superior to electric air dryers...and should be recommended in locations where hygiene is paramount, such as hospitals or clinics."

→ What is the impact of both methods on the skin's health?

The habit of washing hands is thought to have improved during the COVID-19 pandemic, with hand hygiene being at the forefront of communication in every industry group and in the community. However, little is known about the impact of paper towels versus air dryers in the commercial space regarding the integrity of the skin.

In the healthcare space, there are plenty of studies to indicate that healthcare workers experience skin irritation due to frequent hand washing, and it is suggested that using paper towels, as opposed to air dryers, helps to reduce skin irritation.

→ What is the impact of hand dryers on airflow and does it matter?

Yes, impact on airflow matters. A scientific abstract conducted by the University of Connecticut proved that hot-air dryers do suck in germs (e.g., bacteria, viruses, and spores) from restroom fans and air dryers, which "could be dispersed throughout buildings and may travel between rooms" when people open restroom doors. In addition, flushing toilets can cause aerosolized mist containing pathogens, which can be sucked into hand dryers and distributed onto newly washed hands.

→ How do the two compare in terms of cost, energy, and maintenance?

There are several factors to consider when conducting a cost analysis of paper towels versus air dryers (e.g., facility size, restroom traffic, equipment choice, maintenance costs). All these factors must be considered for your specific facility before a true conclusion can be made. However, there are studies that show that over the long-term, air dryers can be 2-20 times more cost-effective than paper towels.

→ Which do most users prefer?

Given the choice, 75% of people prefer paper towels to air dryers. However, providing both paper towels and air dryers is a way to accommodate all user preferences.

SOURCES:

Reynolds, K., Sexton, J., Norman, A. and McClelland, D. (2021), Comparison of electric hand dryers and paper towels for hand hygiene: a critical review of the literature. *J. Appl. Microbiol.*, 130: 25-39. <https://doi.org/10.1111/jam.14796>

Ansari, S.A., Springthorpe, V.S., Sattar, S.A., Tostowaryk, W. and Wells, G.A. (1991) Comparison of cloth, paper, and warm air drying in eliminating viruses and bacteria from washed hands. *Am J Infect Control* 19,243-249.

Luz del Carmen, H., Aslanzadeh, J., Feinn, R., Joseph, G., Murray, T.S., Setlow, P. Deposition of Bacteria and Bacterial Spores by Bathroom Hot-Air Hand Dryers Applied and Environmental Microbiology, Apr 2018, 84(8) e00044-18; DOI: 10.1128/AEM.00044-18

<https://www.cdc.gov/handwashing/faqs.html#drying-hands>

<https://facilitymanagement.com/restroom-paper-towels-air-dryers/>

Mayo Clinic released an abstract in 2012; "The Hygienic Efficacy of Different Hand-Drying Methods: A review of the Evidence", Huang, C, et al

"Comparison of electric hand dryers and paper towels for hand hygiene", published August 14, 2020, by authors Reynolds, KA, and Sexton, JD, et al

John Ross, The Bacterial Horror of Hot-Air Hand Dryers (May 2018) the University of Connecticut study

<https://info.debgroupp.com/blog/75-of-people-prefer-paper-towels-to-hot-air-dryers>

Noise and Health: A Bimonthly Inter-disciplinary International Journal, "Hand dryer noise in public restrooms exceeds 80 dBA at 10ft (3m)"; Berkowitz, S.

