

Study Finds Paper Towels More Hygienic

Using paper towels to dry your hands is more hygienic than using electric hand dryers that can actually increase the amount of bacteria on hands and can spread cross contamination in public washrooms, according to an independent scientific study.

The study, conducted by scientists at the University of Westminster, London, measured the number of bacteria on subjects' hands before washing and after drying them using three different methods — paper towels, a traditional warm air dryer and a new high-speed jet air dryer.

From a hygiene standpoint, paper towels are clearly superior to electric hand dryers, according to Keith Redway, a Senior Academic in the Department of Biomedical Sciences at the University of Westminster.

Study results show that drying with paper towels results in a significant decrease in the numbers of bacteria on the hands — a clear advantage compared with the increases observed for both types of electric hand dryers tested in this study — and are far less likely to contaminate other washroom users and the washroom environment.

“Indeed, these findings suggest that if either a warm air dryer or jet air dryer is the only drying method available, in terms of bacterial numbers, a washroom user could be better off not washing and drying their hands at all,” Redway says.

The study, which is available for review at www.westminster.ac.uk/~redwayk, found that paper towel drying reduced the average number of bacteria on the finger pads by up to 76 percent and on the palms by up to 77 percent. By comparison, electric hand dryers actually caused bacteria counts to increase. The study showed:

- Traditional warm air dryers increased the average number of bacteria by 194 percent on the finger pads and by 254 percent on the palms.
- Jet air dryers increased the average number of bacteria on the finger pads by 42 percent and on the palms by 15 percent.

The scientists also carried out tests to establish whether there was the potential for cross contamination of other washroom users and the washroom environment as a result of each type of drying method. They found:

- The jet air dryer, which blows air out of the unit at claimed speeds of 400 mph, was capable of blowing micro-organisms from the hands and the unit and potentially contaminating other washroom users and the washroom environment up to 2 meters away.
- Use of a traditional warm air hand dryer spread micro-organisms up to 0.25 meters from the dryer.
- Paper towels showed no significant spread of micro-organisms.

“The results of all parts of this study suggest that the use of warm air dryers and jet air dryers should be carefully considered in locations where hygiene is of paramount importance, such as hospitals, clinics, schools, nurseries, care homes, kitchens and other food preparation areas,” said Redway. “In addition, paper hand towel use is highly beneficial for improved hygiene in any other facilities open to the public, such as factories, offices, bars and restaurants.”

While consumers, healthcare institutions and businesses such as restaurants are often told that electric hand dryers are the most hygienic way to dry the hands after washing them, science says otherwise. A growing body of research, including this study by the University of Westminster and other studies as far back as 1989, suggest people could even be putting themselves at increased risk of illness by using electric hand dryers.

About the study:

A comparative study of three different hand drying methods — paper towel, warm air dryer and a new jet-air dryer — was conducted by Keith Redway and Shameem Fawdar of the School of Biosciences, University of Westminster, London, towards the end of 2008. The independent research was commissioned by the European Tissue Symposium (ETS), a trade body representing 90 percent of Europe’s tissue industry including SCA.

For the part of the experiment concerning bacteria on the hands, researchers counted the total numbers of bacteria on both finger pads and on palms. They also tested specifically for staphylococci (bacteria typically found on skin, hair and in the nose) and for coli forms which are fecal or gut bacteria.

Following a visit to a public washroom, 20 test subjects (10 male and 10 female) were asked to press their finger pads directly onto the surface of various types of agar plates before and after washing with soap and water and drying. Metal formers and swabs were used to sample bacteria from the palms of the hands before and after washing with soap and water and drying. The bacteria were then transferred to agar plates, allowed to grow and the resulting colonies counted.

To establish whether there was any potential for contamination of users and the washroom environment caused by each type of drying method, a model micro-organism (yeast) was used to artificially contaminate the hands of volunteers before they used the different methods of drying. Yeast was used as this would accurately represent the transmission of the harmful bacteria often present on hands without the risk of harming the volunteers.