

Sustainability at Work

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Hand Dryers vs. Paper Towels (The run down.)

Many businesses have asked, “Which hand drying system is the best for the environment?”

To help answer the question, we researched impacts across the entire life cycle - from extracting raw materials, manufacturing, and transportation, to use and disposal. The information provided here is taken from the research cited at the end of this article. *Please note, this is not an exhaustive overview.

Note: Paper towels are not recyclable or compostable in Portland; they must go into the trash.

The short answer:

1. High-speed electric hand dryers are best, assuming one round of drying per person.
2. Paper towels are second best. But, if only one towel were used per person, it would be equal to high-speed hand dryers.

Not all electric dryers are equal! Standard (not high-speed) electric hand dryers are worse than paper towels in terms of environmental impact.

So what should you do?

If you can buy an electric hand-dryer:

Buy a high-speed dryer with a short dry time.

Read more tips on buying and installing electric dryers.

If you use paper towels:

Encourage people to use only one paper towel.

Buy sustainably made paper towels with high recycled content.

How much we use makes a big difference

The environmental impact of different hand drying systems depends on the ‘use intensity’ – whether it’s the amount of paper towels a person uses or the amount of time an electric hand-dryer runs for.

Reducing the number of paper towels used, or the time an electric hand dryer runs for, is the best way to reduce the environmental impact of these hand drying methods.

Tip: When your workplace gets a new drying system, use the opportunity to help people adopt new behaviors (<http://www.portlandoregon.gov/sustainabilityatwork/article/529773>) to lower their use intensity.

Want to dig into the data?

Score Card Key

Best: ★★★★★

Good: ★★★

Okay: ★★

Bad: ★

To help compare different drying systems we put together scorecards for high-speed dryers, standard dryers, virgin paper towels and 100% recycled content paper towels.

Ratings are assigned based on a life cycle analysis by MIT (<http://msl.mit.edu/publications/HandDryingLCA-ExecutiveSummary.pdf>).

Read below to see how different drying systems compare for global warming potential, human health, ecosystem quality, water consumption and land occupation.

Electric hand dryers

High-speed hand dryers are better than standard electric dryers across all categories.

High-Speed Dryers

Global Warming Potential: ★★★★★

Human Health: ★★★★★

Ecosystem Quality: ★★★★★

Water Consumption: ★★★

Land Occupation: ★★★★★



Standard Dryers

Global Warming Potential: ★

Human Health: ★

Ecosystem Quality: ★★★

Water Consumption: ★

Land Occupation: ★★★



The environmental impacts from hand dryers come from:

How much energy the dryer uses.

How long it needs to run to dry someone's hands.

How "carbon intense" the type of energy powering the dryer is:

High carbon, fossil fuel energy.

Or low carbon energy, such as wind power or other renewable energy.

Reducing all of these factors increases the benefit of using an electric hand dryer over paper towels.

Did you know? Standard dryers take 1.5 to 3 times as long to dry hands than a high-speed hand dryer.

Read more on buying and installing electric hand dryers. (<http://www.portlandoregon.gov/sustainabilityatwork/article/529768>)

Paper towels:

In many cases, recycled paper towels have a lower environmental impact than virgin paper towels.



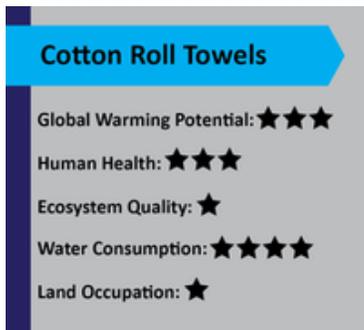
Note: The scorecard assumes two paper towels are used to dry a pair of hands. Using one towel is better.

Using just one paper towel is better than using a standard electric hand dryer or cotton towels and can be better than some high-speed hand dryers depending on dry time and how carbon intense the local energy source is.

There are lots of options on the market for recycled-content paper towels. The higher the percentage of post-consumer recycled content, the better.

If people in your office use 2 or 3 paper towels and behavior change campaigns (<http://www.portlandoregon.gov/sustainabilityatwork/article/529773>) to reduce use are not working, or if you want to reduce the amount of waste produced at your workplace, consider installing a high-speed electric hand dryer.

What about those old-school cloth rolls?



While not commonly used these days, we were curious to see how the impact of cotton roll towels compared. More common are workplaces using individual cotton towels in their kitchen or break room (<http://www.portlandoregon.gov/sustainabilityatwork/article/528206>).

The majority of impacts for cotton towels are from growing the cotton and washing the used cloth. However, per pair of hands, relatively little water is used. The impact from washing comes from heating the water and using chemical detergents.

Tips for selecting cotton towels

Buy made in the US.

The cotton is grown sustainably – organic, low water use, fair treatment of farm workers.

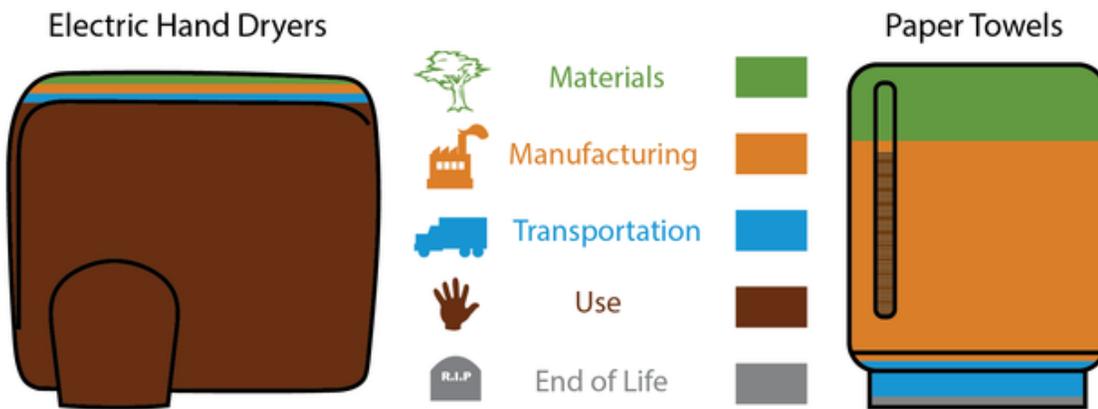
Opportunities to reduce impact

Wash with cold water to decrease the amount of energy used.

Clean with environmentally friendly detergents that are designed for cold water.

Want even more details?

Life cycle impacts of electric hand dryers and paper towels.



Above is a sample distribution of impact by life cycle stage for electric hand dryers and paper towels. The distribution of impacts is roughly the same for standard and high-speed electric hand dryers, and for virgin paper towels and recycled content paper towels.

The majority of the impact from electric hand dryers comes from the use phase. Like other electronics, the energy used to power the hand dryer drives the impact.

The majority of the impact for paper towels comes from manufacturing. It's best to reduce the number of paper towels used when drying hands to reduce the overall environmental impact.

Want more information? Get in touch (<http://www.portlandoregon.gov/sustainabilityatwork/article/446472>) with a sustainability advisor.

Quick Links:

Life Cycle Assessment of Hand Drying Systems Executive Summary

Electric hand dryers: how to switch

Paper towels: how to use less

Paper Towel Reduction Campaign Form

Paper Purchasing Guide

References:

Montalbo, Trisha, Jeremy Gregory, and Randolph Kirchain. Life Cycle Assessment of Hand Drying Systems. Tech. Materials System Laboratory, Massachusetts Institute of Technology, 19 Sept. 2011. Web.

Paper to Protect the Planet - Understanding How Recycled Content in Printing & Writing Paper - and All Grades- Reduces Energy, Water, Chemical Use, Pollution and Solid Waste, While Protecting Forests. Issue brief. Environmental Paper Network, n.d. Web. 30 Nov. 2014.

Research conducted in 2014.