

Virtuous Cycles by Emily Main



Back in the day when washboards and clotheslines were the norm, a tub full of water and a bar of lye soap, sunlight, wind and a lot of elbow grease were the only things needed to clean, bleach and dry a load of clothes. But today's modern conveniences—mega-sized washers designed to launder for an NFL team, dryers that bake your clothes, detergents with their own muddy footprints—have upped the eco demands of this unavoidable task.

Awash in Chemicals

Thanks to government trade-secret laws, manufacturers of cleaners aren't required to disclose ingredients on product labels, making it difficult for consumers to choose an environmentally preferable and healthier alternative.

Although phosphates, still used in dishwashing detergents and known to promote algae growth that in turn suffocates aquatic life, have been phased out of laundry detergents, health risks remain with other laundry chemicals, most notably nonylphenol ethoxylates (NPEs). NPEs are surfactants (chemicals that help other ingredients penetrate dirt and grime) that belong to a class of hormone-disrupting compounds called alkylphenol ethoxylates (APEs). Unfortunately, "It's added to lots of cleaning agents," says Jason Marshall, lab manager at the Toxics Use Reduction Institute.

Popular because they're inexpensive, petroleum-derived NPEs break down in the environment into nonylphenol, which harms the reproductive abilities and survival of fish. They also aren't easily removed by wastewater-treatment facilities; Sierra Club has detected NPEs in 61 percent of U.S. streams tested. Linear alkylbenzene sulfonate (LAS), a common surfactant used instead of or in conjunction with NPEs and often listed on ingredients as "anionic surfactants," doesn't fare much better environmentally. Like phosphates, LAS can deprive water of oxygen and kill aquatic life.

Fortunately, NPEs are slowly being phased out in the U.S., thanks to European Union efforts to remove them, says Marshall. "Companies don't want to make four different products with four different formulations," he says.

Environmental and health concerns aside, detergents containing NPEs are less effective than those without, according to *Consumer Reports* tests. Still, detergent manufacturers have yet to find a perfectly healthy replacement for LAS, NPEs and other APE surfactants. Alcohol ethoxylates derived from plant and vegetable oils have a lighter impact but are created using a process called "ethoxylation," which produces the probable human carcinogen 1,4-dioxane as a byproduct. Present in very small amounts in the final product, dioxane poses a serious cancer risk when inhaled at high levels in occupational settings.

Besides surfactants, petroleum-based synthetic dyes, fragrances and other chemicals are often added to detergents for aesthetic appeal. Synthetic fragrances may contain hormone-disrupting phthalates, which prevent the scent from dissipating but also provoke asthma and other respiratory problems (see "Body Burdened" www.thegreenguide.com/doc/109/cdc). A study published online at *Environmental Health Perspectives* this March suggested that phthalates also may be responsible for increased obesity in men. Optical brighteners, fluorescent chemicals used to make clothing appear cleaner, can rub off fabrics onto skin and cause rashes.

Detergents aren't the only beasts to contend with. In 2005, chlorine-based bleaches caused 19,581 poisonings in U.S. children under 6 years of age, according to the American Association of Poison Control Centers. After disappearing down drains, chlorine reacts with environmental organic matter, creating harmful organochlorines such as dioxin. In 2000, testing found high levels of dioxin in San Francisco Bay fed in part by bleach from residential laundry use.

Also, those seemingly innocuous floral fabric softeners emit, among other chemicals, neurotoxic toluene and trimethylbenzene, styrene (a possible carcinogen), the respiratory irritants phenol and xylene, and thymol, which can cause abdominal distress, according to a study in the May 2000 issue of the *Journal of Toxicology and Environmental Health*. But safer alternatives abound; see the checklist (right) for ideas.

When picking detergents or bleach, less is best. "People should choose the simplest product that works well for them," says Philip Dickey, staff scientist at the Washington Toxics Coalition. "None of [the fragrances, dyes or brighteners] have any effect on how clean clothing is, in terms of removing soil and stains," he adds.

Don't be fooled either by undefined, non-verified labels such as "non-toxic," "biodegradable" and "organic" (only meaningful on food and some personal care products). When possible, choose products that disclose all ingredients on labels, as many eco-friendly product manufacturers do, and look for words that indicate what's not in the cleaner, i.e., "chlorine-free" and "no NPEs."

Water, Water Everywhere

Alongside those chemicals swirling down the drain, the machines in your laundry room may be washing resources and money away. Washing machines can use as much as 40 gallons of water per load, whereas Energy Star-rated machines use around half that.

Water conservation is crucial—and no longer just in the West. The U.S. Geological Survey (USGS) reports that cities nationwide are placing undue stress on groundwater supplies to support population and industrial growth, and that stress can lead to increased pumping that causes saltwater pools to infiltrate freshwater supplies. The World Wildlife Fund last March listed the Rio Grande as one of the world's 10 top rivers at risk, largely due to excessive water extraction that led to saltwater intrusion from the Gulf of Mexico; increased salinity has already displaced 32 of the river's 121 native marine species. "In any area of increased population, there'll be an increased demand for water," says Lynn Torak, USGS hydrologist, noting that most of the Atlantic seaboard, from Long Island, New York, into the Florida peninsula, faces this problem.

Switching from liquid detergents to powders is another easy way to reduce your water burden. "Laundry liquids contain a significant amount of water, presently 70 to 80 percent, soon to be reduced to 40 to 60 percent in double and triple compact concentrates," says Martin Wolf, director of product and environmental technology at Seventh Generation. "It costs energy and packaging to bring this water to the consumer," he says; that's unnecessary when your machine will add water on its own.

Live Free AND Dry

What's the most efficient, conservative—and free—tool in your laundry room? Sunlight. Not only is it a natural bleaching agent and disinfectant but line drying a single load of clothes saves approximately 2.6 kWh of electricity and prevents 3.35 pounds of carbon dioxide from entering the atmosphere.

Even so, line drying laundry isn't always practical. To tread lightly, and dryly, opt for a dryer with more efficient settings, such as a moisture sensor, which shuts the dryer off automatically when fabrics are dry, and an air-dry feature, which dries your clothes with cold air, cutting down on energy use and wrinkles. Also, set your washer on the fastest spin cycle—front-loading washers have the advantage of faster spin times—reducing the water in your clothes beforehand. Energy Star doesn't yet rate dryers, but *Consumer Reports* has found that gas dryers are cheaper to run and have a lighter eco impact.

To protect your health, avoid dryer sheets, which may be treated with the same harmful chemicals as those in liquid fabric softeners. These sheets and similar reusable cloths are also made from synthetic, petroleum-based chemicals that don't biodegrade in landfills. Some companies have introduced reusable products that will soften clothes and eliminate static cling; among the most advertised are dryer balls made from polyvinyl chloride, which releases

carcinogenic dioxin during production and may release hormone-disrupting phthalates during use. Instead, reduce static cling by drying natural fibers and synthetics separately, or add one-fourth of a cup of white vinegar to the wash cycle.

One Last Wrinkle

Irons can consume up to 1,800 watts of energy, and if used for two hours, one iron emits 4.8 pounds of carbon dioxide. Line drying clothes, air drying with cold air or removing them from the dryer immediately will keep wrinkles to a minimum.

Furthermore, irons and ironing-board covers may be treated with perfluorooctanoic acid (PFOA), which is used to prevent sticking and stains. Also used on clothes that claim to be stain- and wrinkle-repellent, PFOA is a persistent chemical that has been detected in the blood of virtually all Americans (see www.thegreenguide.com/blog/worrywart/386). It was found in 2004 to cause cancer in lab animals, and while DuPont, the only manufacturer of PFOA in the U.S., disputed those findings, the company agreed to eliminate the chemical by 2015.

To prevent your cleaning chores from getting too dirty, choose the alternative laundry products listed in our checklist (above). And if you're inspired to return to simpler times, that bucket and washing board are still worthy options. Plus, spring's warmer weather freshens up line-dried clothes better than any chemical.

Six Suggestions for a Lighter Load

1 - Greener Laundry Detergent

Seventh Generation (www.seventhgeneration.com), Ecover (www.ecover.com) and Bi-O-Kleen (www.bi-o-kleen.com) make both powder and liquid laundry detergents without problematic chemicals. They also disclose ingredients; opt for "fragrance free" alternatives where available, as even essential oil fragrances can irritate sensitive skin.

2 - DIY Detergent Concoctions

For a base, use Vermont Sunshine (\$12.98/32 oz.; www.vermontsoap.com) or Dr. Bronner's (\$14.49/32 oz.; www.drbronner.com) liquid castile soaps or Dri-Pak Pure Soap Flakes (\$9.95/1-lb. bag; www.msodistributing.com). Combine them with washing soda, which cuts grease (because it's caustic, always wear gloves when handling); borax, which removes stains (this can cause vomiting if ingested, so keep away from pets and kids); baking soda, which reduces static and softens fabrics; or white vinegar, which softens fabrics, reduces static and bleaches clothes.

3 - Chlorine-free Bleach

Hydrogen peroxide-, percarbonate- and oxygen-based bleaches come in liquid and powder forms. Ecover Non-Chlorine Bleach Liquid (\$5.59) and Powder (\$4.09; www.kokogm.com); Bio-Pac Non-Chlorine Bleach Powder (\$55.20/10-lb. bulk; www.bio-pac.com). Or choose plain hydrogen peroxide, available in the first-aid section of drugstores.

4 - Efficient Washer/Dryer

The Whirlpool front-loading LHW0050P is the most energy- and water-efficient washer currently rated by Energy Star (\$799). The matching LEW0050P electric dryer has energy-saving features like moisture sensors and an air-dry option (\$599; www.whirlpool.com). The single-unit LG WM3431HW All-in-One Washer Dryer consumes fewer resources during manufacture and is Energy Star-rated at 56 percent more efficient than federal standards (\$1,497; www.lgwasherdryer.com).

5 - Outdoor "Dryers"

Abundant Earth's drying racks are made with wood scraps and new wood from second-growth, not old-growth, forests (\$23-\$76; www.abundantearth.com). String Rawganique's mildew-resistant 12 mm-diameter organic hemp rope between two sturdy objects for a clothesline (\$40/about 72 feet; www.rawganique.com).

6 - Natural Fiber Baskets

Choose non-synthetic, petroleum-free laundry baskets and bags: Baska willow baskets (\$6.99) and hampers (\$16.99; www.ikea.com); Rectangular (\$50) or Oval (\$60) Palm Leaf Baskets with smooth interiors to prevent snags (www.containerstore.com); Acme Bags Organic Cotton Messenger bag (\$14.95; www.reusablebags.com).