

3. HOW GREEN IS CLEAN?

Cosmetics are a boon to every woman, but a girl's best beauty aid is still a near-sighted man.—Yoko Ono

For the past few years, celebrities like Halle Berry, Lindsay Lohan, Reese Witherspoon and Salma Hayek have credited their smooth locks to a keratin based straightening process commonly referred to as the Brazilian Blowout, named for the company which first popularized the procedure in the United States. Positioned as a more natural, gentler-on-the-hair alternative to straightening curly locks and smoothing frizzy hair, thousands have flocked to salons and handed over upwards of 250 dollars for the procedure, which lasts for approximately three months. The process entails washing the hair, toweling it dry, adding the keratin solution, blowing it straight, and then flat ironing the hair at a temperature of 450 degrees to lock in the treatment.

However, there was one significant problem with all of this. Many customers and stylists found that the fumes that escaped over the course of the process—most acutely during the drying and flat ironing stages—were irritating to the eyes and causing labored breathing. A 2007 article in, of all places, the beauty magazine *Allure*, in which the publication sent salon samples of the hair smoothing solution to independent, FDA registered labs, uncovered that most types of the formulation, sold under several different names in the US, including Marcia Teixeira Brazilian

Keratin Treatment, Advanced Keratin Treatment and Agi Maxx, contained the naturally occurring toxin formaldehyde at levels significantly higher than deemed healthy.¹ In addition to causing respiratory distress, formaldehyde, best known for its use in embalming fluid, is a known human carcinogen conclusively linked to respiratory cancers and possibly even leukemia. It was also the culprit behind the illnesses linked to the Hurricane Katrina FEMA trailers. Almost as soon as residents moved into the trailers, designed to provide temporary housing to those left homeless by the hurricane, they began to suffer health problems ranging from headaches and runny noses to chronic respiratory problems and nosebleeds. In addition, local pediatricians saw an uptick in children with persistent colds, and invariably, those children were living in FEMA trailers. When the Sierra Club tested the air quality of 44 FEMA trailers in Mississippi, 40 of them had formaldehyde concentrations at levels approaching what a professional embalmer would be exposed to on the job—and at least an embalmer is given safety equipment.²

When the formaldehyde-keratin blowout problem was leaked in 2007, many of the companies went back, reformulated their products, and returned with solutions labeled “formaldehyde free.” This should have been the end of the issue. However, in September 2010, motivated by complaints from stylists, Oregon’s Occupational Safety and Health Administration (OSHA), in conjunction with Oregon Health & Science University, released two separate reports detailing their chemical analysis of the formaldehyde concentrations of two supposedly formaldehyde-free Brazilian keratin hair straightening solutions—Acai Professional Smoothing Solution and Brazilian Blowout Solution. The products tested had an average formaldehyde rate of 9.5 percent and 4.8 percent, respectively.³ For some context, if a product contains more than 0.1 percent formaldehyde, OSHA requires that the manufacturer list the formaldehyde on its material safety data sheet, to allow users of the product to take adequate protection

measures. These hair care products had 95 and 48 times more the legal disclosure limit of formaldehyde, yet were labeled as formaldehyde free.

In one way, these labels were accurate, as strictly speaking, the Brazilian Blowout did not contain formaldehyde but instead methylene glycol. However, methylene glycol readily converts into formaldehyde when water is removed. Not surprisingly, blow drying and flat ironing solution-saturated hair removes water from the solution, converting it into formaldehyde. When pressed on this issue, however, Brazilian Blowout argued that since technically methylene glycol is not formaldehyde, their products were formaldehyde free—even though following the company’s own directions for use created and thus exposed users to formaldehyde.⁴ This is the argument that Brazilian Blowout used to file suit against Oregon’s OSHA in 2010, arguing that that their studies, by measuring methylene glycol in its results, mislead consumers. This is not an argument that sat well with many of the users of the product, who filed a class action suit filed against the company for claiming that the product was free of formaldehyde, which induced application of the solution without gloves or masks, harming stylists, consumers, and the reputation of the salons that offered the service. Despite their claims that their product was formaldehyde-free, in 2011 Brazilian Blowout released a new version of the solution—Brazilian Blowout Zero—which is in fact formaldehyde and methylene glycol free.

The situation with Brazilian Blowout is more than the typical company seeking to profit regardless of the long-term effects of its products on its consumers, akin to big tobacco hiding the health effects of cigarettes; it’s actually scarier and more insidious. In the strictest definition of the truth, the keratin treatment products were clearly labeled with what they actually contained, ostensibly designed to inform the consumer. However, most of these products were designed to be sold to salons only—thus customers rarely if ever saw the labels. And even if they had seen the

labels, the list of ingredients on the back of cosmetics are often so technical and complicated that unless said consumer is also armed with an advanced degree in organic chemistry, she'd be hard pressed to make heads or tails of it. After all, how many people know that methylene glycol breaks down into formaldehyde when water is removed? Cosmetics labels are so rich with the language of chemists that it's almost impossible for the layperson to understand which products pose a potential health risk and which ones do not. Government regulation makes it even harder by allowing seemingly innocuous and straightforward words such as "fragrance" and "natural" to mask an additional—sometimes toxic—list of ingredients.

As an example, I've reproduced the label from *King of Shaves for Men Antibacterial Alpha Shave Gel* that is, upon close examination, loaded with the kinds of ingredients one would be hard pressed to coat themselves with knowingly. Propylene glycol, for example, better known as anti-freeze, is used in a variety of cosmetics, including liquid foundation makeup and deodorant, to provide moisture and to keep products from melting in high heat and freezing in the cold (the same reason we pump it into car engines). Ironically, it is actually one of the safer chemicals that appear in our cosmetics.

Aqua/Water/Eau, Aloe Vera (Aloe Barbadensis) Leaf Juice, Sodium Laureth Sulfate, Acrylates/C10 30 Alkyl Acrylate Crosspolymer, Melaleuca Alternifolia (Tea Tree) Leaf Oil, Glycerin, Triethanolamine, Cocamidopropyl Betaine, Polyacrylamide, Sodium Chloride, Triclosan, Benzophenone 4, Citric Acid, Salix Nigra (Willow Bark) Extract, Magnesium Nitrate, Sodium Benzoate, Benzyl Alcohol, Camellia Sinensis (Green Tea) Leaf Extract, Cinnamomum Camphora (Camphor) Bark Oil, Propylene Glycol, Potassium Sorbate, Magnesium Chloride, Methylchloroisothiazolinone, methylisothiazolinone, Methylparaben, Sorbic Acid (A Preservative), Limonene, CI 42090 (Blue 1), Yellow 5 (CI 19140)

Ingredient list for King of Shaves For Men Antibacterial Alpha Shave Gel

Sodium Lauryl (SLS)/Laureth Sulfate (SLES) are common ingredients found in toothpastes, shampoos and soaps. They are what give shampoo its lather and what enables toothpaste to foam—which are ultimately what many of us associate with the concept of “clean.” Contrary to popular perception, however, although SLS/SLES may strip your hair of essential oils (which is why people who dye their hair are told to avoid shampoos and conditioners that contain SLS/SLES), there isn’t sufficient evidence to indicate that they cause cancer. They are, however, a known skin irritant and their use is associated with the development of skin related problems such as contact dermatitis.⁵ A fact that is even still more ironic when one considers that products such as Dove’s Sensitive Skin Nourishing Body Wash—which, true to its name, promises to “nourish” the skin—contains sodium laureth sulfate. Similarly, the presence of sodium lauryl and sodium laureth sulfate in toothpaste has been known to trigger canker sores in predisposed individuals.

The chemical compound methylparaben belongs to a class of chemicals known as parabens that are often used as preservatives in cosmetics because they kill off bacteria and fungi. They also have the dubious distinction of being a chemical found not only in the usual places—shampoos, moisturizers, shaving gels, spray tans, sunscreen products, lipsticks, and toothpaste—but also in food, usually hidden in breakfast cereal, bread, and processed foods under the ambiguous title of “preservatives.” This wouldn’t be the problem if parabens weren’t so structurally similar to estrogen that they disrupt our body’s own internal hormonal balance, causing early puberty in girls and testicular enlargement and breast development in young boys.⁶ Estrogen has also been implicated in helping breast cancer grow—an Environmental Working Group study found that 19 out of 20 breast cancer tumors contained parabens—and in lowering the sperm count in men.⁷ Methylparaben has also been shown to age the skin—ironic given the fact that it’s often placed into products that claim anti-aging effects.⁸

Even worse, parabens along with cinnamate, benzophenone, and camphor derivatives—key ingredients in commonly used sunscreens—have been found to cause the bleaching, or death, of coral reefs. With bold blues, vibrant pinks, and of course, psychedelic corals, coral reefs are among the world's most biologically productive and diverse ecosystems. Tragically, roughly sixty percent of the world's coral reefs are currently threatened with extinction. And yet, every day, when millions of beachgoers dutifully slather on sun block to protect themselves from the sun's rays, they are at the same time contributing to the death of these critical ecosystems.⁹

Parabens are not the only commonly used personal care product ingredient that is threatening marine habitats. Triclosan, an antibacterial and antifungal agent that was originally developed in the 1970s as a surgical scrub, has spread far beyond the operating room, as its ubiquitous presence is now seen in liquid hand soaps, body soaps, shaving gels, and even, oddly, in dish washing liquid. Yet the same properties that make it so successful at keeping bacteria at bay—namely that it kills things—render it harmful to the larger environment. Studies have increasingly linked triclosan to a number of health and environmental effects ranging from skin irritation to the dioxin contamination of delicate aquatic ecosystems.¹⁰ In the ultimate boomerang effect, the triclosan that leaves our home when we wash our hands or hair or brush our teeth by trickling down our drains out to rivers, streams or the sea, converts upon exposure to the sun's ultraviolet light into dioxin. The dioxin then builds up in aquatic species, such as fish, which return to our home as dinner.

This cycle of life—the ultimate in recycling—wouldn't be problematic if dioxins were not so toxic. Perhaps you recall Victor Yushchenko, the 2004 Ukrainian presidential candidate and opposition leader, whose face was disfigured due to a mysterious disease during his presidential run? The mysterious disease was chloracne, an eruption of blackheads, cysts, boils and pustules

that are a side effect of dioxin poisoning.¹¹ And Chloracne is not the worst of dioxin's effects, which also include liver damage, diabetes, problems with thyroid functioning, diabetes and immune disorders. In children, dioxin negatively impacts sexual and tooth development. And as if that wasn't enough, dioxins also cause cancer.

Triclosan has other problems as well, as its widespread use in popular culture has hastened the speed with which pathogens have become immune not only to its effects but to a wider specter of antibiotics. And, by altering the kinds of bacteria—including the elimination of beneficial bacteria—that we have in our bodies, our use of triclosan may lead to an increase in autoimmune disorders such as allergies. Pointed out Massachusetts Congressman Edward Markey in 2010:

The proliferation of triclosan in everyday consumer products is so enormous, it is literally in almost every type of product—most soaps, toothpaste, cosmetics, clothes and toys...It's in our drinking water, it's in our rivers and as a result, it's in our bodies.... I don't think a lot of additional data has to be collected in order to make the simple decisions about children's toys and soaps that people use. It clearly is something that creates a danger.¹²

And this is just the tip of the iceberg. According to the Environmental Working Group, a mere 10 percent of the 10,500 ingredients that the FDA says are currently in use in personal care products have been evaluated by a publicly accountable institution.¹³ Even fewer have been tested to see what happens when they're applied together with other chemicals. Many chemicals that are thought to be safe when consumed alone may have nasty side effects when combined with other products. Think of the childhood experiment of making a volcano out of baking soda and vinegar. Alone each of the chemicals are harmless and inert; in

combination they're explosive. While the aforementioned keratin based straightening products are toxic enough when simply applied to the hair, that's a risk that can easily be mitigated, at least on the stylist's end, by simply wearing gloves. The heat applied in the process, however, turns the formaldehyde into gas, increasing the likelihood of problems for the user. That we not only don't test our products individually, but also that fail to test how those products react when applied with other commonly used chemicals, at the same time that we happily coat ourselves with 10 to 12 personal care products daily, exposing ourselves to some 126 chemicals that cause harm to ourselves, to wildlife and to waterways, is worrisome. A growing number of studies have found our personal care product ingredients in rivers and streams across the country, including some whose ingredients have been linked to the feminization of fish and other aquatic life.¹⁴

Based on all this, it is no wonder that there is an increasing market for "natural" or "chemical free" personal care products. Among these are tried and true brands such as Burt's Bees (now owned by Clorox) and ninety year old personal care company Weleda, as well as a growing number of relative newcomers. Method, for example, which first came to the market in 2000 selling eco-friendly housecleaning products in stylish containers, now sells hand sanitizers and body wash along with glass and toilet cleaner. Meanwhile, the distinctly homey Badger brand of personal care products was first whipped up in 1995 in the kitchen of Bill and Katie Whyte, which is likely why their products rely heavily on an impressive list of easily recognizable ingredients such as olive oil, castor oil, and beeswax.

But the question remains: How green are these products? The answer is, "it depends." No other consumption category, except for perhaps food, is as fraught with as many potential landmines as are personal care products. The problem is that "green" is not an industry defined term—there is no standard to which a company must aspire in order to achieve sustainability. In practice,

this means companies can simply list their claims and consumers are left trying to figure out what are the best “green” products to use. Thus, Tom’s of Maine (now majority owned by Colgate-Palmolive), a company which proudly declares that it doesn’t test on animals, eschews artificial colors, flavors, fragrances, and preservatives, maximizes recycled content and recyclability, and emphasizes transparency by sharing every ingredient, its purpose and its source on its website, and whose labels include mostly easy to identify ingredients, uses SLS in its products. Occupying the same market niche is Jason’s Natural (now owned by Hain Celestial), which says that its products contain “unique formulations infused with botanicals,” though the ingredient list on their toothpaste is significantly longer than that of Tom’s, and therefore harder to understand. However, it is SLS free. Ultimately, the consumer is left to choose what product to buy based on what is most in their own interest, not what best suits the planet—because it’s hard to tell which is better, if any are.

Similarly, consider L’Oreal’s EverPure line of hair care products. The name EverPure is clearly designed to evoke purity, and the brand’s bottles boast in very big letters that not only is it sulfate free but also made with “natural botanicals” and is “100 percent vegan.” This makes it seem like it might be green until you realize that EverPure products contain not only methylparaben but also butylphenyl methylpropional—an artificial fragrance whose use has been banned in many countries, including the European Union.

Speaking of fragrance, have you ever noticed that many products won’t list their actual scents and just hide behind the generic term “fragrance.” This is because companies are not obligated to list the chemicals that go into their fragrance, pushing the idea that their fragrance recipes are proprietary secrets and that divulging them would give competitors an unfair advantage. However, “fragrances” are often a source of parabens. This is the problem with labels that define themselves less by what they con-

tain and more by what they don't. By informing us, for example, that a product comes in BPA free packaging or that, as in the case of L'Oréal EverPure, that it is SLS free, most of us feel that the product is relatively safe. However, that often isn't the case.

And then of course there's the problem of genuine greenwashing, where companies simply make unsubstantiated claims on their packages. For example, knowledgeable shoppers know that the word "natural" on a label means nothing, and that "organic" without the USDA Certified logo as well as some kind of information regarding how much of the product is organic means that the product is likely anything but organic. Unfortunately, many shoppers are not that savvy and get suckered in by false claims. In June 2011, a lawsuit filed by the California based Center for Environmental Health revealed that dozens of personal care products such as shampoos, lotions, toothpastes were deliberately mislabeled as organic despite containing little to no organic ingredients, in violation of California state law. Several of the products—including some meant for children—contained the same toxic chemicals included in conventional products that are suspected of causing respiratory problems such as asthma, disrupting hormones, and causing cancer, amongst other health problems. In a public statement, Michael Green the executive Director of CEH, said

For years, organic advocates have called on personal care companies to fix their improper 'organic' labels, but our recent purchasing shows the industry is still rife with unsubstantiated organic claims. We want to encourage companies to use organic ingredients, and insure that consumers can trust organic labels to be meaningful and consistent¹⁵

The reason for this all confusion and misrepresentation is that the \$50 billion dollar personal care industry is largely un-

regulated. The law that currently governs the industry—the Food, Drug and Cosmetics Act of 1938—hasn’t been significantly updated since its inception, which is why an industry that uses more than 12,5000 chemical ingredients is given the latitude to put products on the shelves without prior FDA approval. Companies also don’t have to notify the FDA about adverse reactions, which is how L’Oreal, a French company, can get away with putting a chemical it knows is harmful in its EverPure line even as it pulls that product from use in Europe. Unless someone knows that something is problematic and raises enough attention to get it tested, consumers are in the dark. This is why getting triclosan’s use regulated has been a nightmare, as its regulation is overseen by three different government agencies.

This isn’t to say that we can’t trust any labels. The ingredient list for Badger Balms Cuticle Care, for example—Shea Butter, Extra Virgin Olive Oil, Castor Oil, Beeswax, Essential Oils of Geranium Mandarin, Lemongrass, Cardamom, Rosemary Verbena, Litsea, and CO2 Extracts of Seabuckthorn Berry, & Ginger—seems unlikely to be harmful, partially because many of the ingredients are readily identifiable, but also because it’s devoid of vague terms such as “fragrance” or “natural flavors.” It’s just important to keep in mind that no one’s really checking to make sure that these claims are true.

There is however a larger question—just because something isn’t toxic does not mean that product is sustainable. For example, can a body lotion whose main ingredient is palm oil harvested from a plantation in Southeast Asia on clear cut forest land be considered sustainable? It may not hurt marine life, but I doubt the proboscis monkey whose life is threatened by such incursions would find much solace in this fact. Similarly, while the attention on what goes into personal care products tends to focus on the belief that if they’re harmful to our bodies they can’t possibly be beneficial to the earth, in being so narrowly focused we fail to give adequate attention to the environmental cost of bring-

ing these products—even “green” products—from the field, the factory and the store to our home. While some companies have given some thought to what happens at the end of a products’ lifecycle, with companies such as Aveda selling their products in refillable containers and Garnier partnering with green manufacturing company Terracycle to recycle their products into garbage cans, benches and other plastic goods, the reality is that product packaging represents the highest environmental footprint for the health and beauty industry, and is also a significant contributor to landfills. As Allen Hershkowitz, a senior scientist at the Natural Resources Defense Council (NRDC) said in a 2007 *Time Magazine* article,

There have been some noble efforts, but it’s not the disposal of the plastic container that causes the big environmental impact. It’s the production of the bottle. The coal, the gas, the coloring agents, the heavy-metal stabilizers, the refining of the petroleum to make the plastic containers—it all creates a tremendous amount of toxic air emissions.¹⁶

Ultimately, when it comes to personal care products, the greenest thing that most of us can do is to purchase products from companies who use the fewest, easiest to understand ingredients and have the greatest transparency. We can do this by finding producers who are focused on greening their product sources, their manufacturing facilities, and their packaging. At the same time, we can also drastically reduce the ecological impact of our need to be clean and sweet smelling by simply reducing the number of products that we use. Most of use at least a dozen personal care products when in many cases half as many would easily do (there are few of us, after all, who would feel comfortable going without toothpaste). From the chemicals that go into a product, to the package, to the effort it takes to manufacture and ship those

products, each step in the chain contributes to an ever growing list of harm to humans and the planet. The easiest thing to do, the greenest thing, is to simply use less of whatever we are using.