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The chemistry of beauty

What’s in all those beauty products? The truth isn’t pretty.

By [Sena Christian](#)

Twenty-six years into life and I still don’t quite grasp beauty. I know what it’s supposed to be: high cheekbones, long neck, plump lips, glossy hair, no cellulite, eternal youth. These idealistic standards are demanded of American women, what Naomi Wolf calls “the beauty myth,” the societal force that keeps women and girls vulnerable, insecure and preoccupied. And it does.

Women use an average of a dozen personal-care products a day and men use about six. Female teenagers tend to use even more. My own daily regime involves the application of 10 products, including shampoo and conditioner, toothpaste, deodorant, face wash, moisturizer, body lotion, foundation, mascara and eyeliner.

But makeup and tanning creams and teeth-whitening strips and age-defying lotions aren’t only about the outside appearance. We’re putting more and more chemical compounds into ourselves through personal-care products, with incomplete knowledge of the affect of these synthetic materials on our bodies and health, and for pregnant women, the health of their unborn babies.

You know those 12 products women use daily? That adds up to some 168 chemical ingredients, and men’s habits total about 85 ingredients. I deposit about 110 chemicals into my body every day. Add to these numbers the fact that toxins pervade our environment—our drinking water, air, food and plastics. We’re each contaminated with hundreds of industrial chemicals, including plasticizers, flame retardants, stain repellents and pesticides that have been linked to cancer, immune-system damage and reproductive and developmental toxicity.

Meanwhile, chronic illness and disease in the United States is on the rise, affecting almost one-half of



Photo By werner schnel

teensforsafecosmetics.org
www.cosmeticsdatabase.com
www.safecosmetics.org
www.cfsan.fda.gov/~dms/cos-toc.html
www.cir-safety.org

the population, according to the U.S. Centers for Disease Control and Prevention. As the use of synthetic chemicals post-World War II increased, so did infertility, birth defects in males, testicular cancer and learning disabilities. Breast cancer used to be relegated to post-menopausal women. Now young women in their 20s are afflicted.

As science tries to get a handle on the situation and figure out what direct link, if any, exists between industrial chemicals and the chronic illnesses that plague us, the beauty industry conveniently uses this uncertainty to excuse its continued use of toxic chemicals. This industry is the least regulated under the U.S. Food and Drug Administration, an agency that essentially looks the other way as companies go about their business, leaving the American public to cross our fingers and hope that when it comes to consumer safety, the \$250 billion global personal-care products industry tells us the truth.

Maybe I don't yet understand beauty, and maybe I never will. But I know one thing: I sure was interested in finding out more about all those chemicals.

The beauty industry

The fog dissipated by the time I arrived in Berkeley on a recent summer morning to meet up with Stacy Malkan, cofounder of the Campaign for Safe Cosmetics, at a coffee shop near the UC Berkeley campus.

It was here where I first thought critically about gender representations and what was meant by “the personal is political.” It was here where my mind was torn apart in women's studies classes, only to piece itself back together again as societal expectations in the post-college world weighed down on me. And I eventually gave in. Here I read the works of Andrea Dworkin, Cherrie Moraga and Angela Davis, and sought consciousness-raising of the highest order. But all I found was a handful of liberal feminists whose main political activism of the school year was performing in the annual production of *The Vagina Monologues*. My quest to find real-life feminists left me thoroughly disappointed.

Malkan looked as I expected from the cover of her book, *Not Just a Pretty Face: The Ugly Side of the Beauty Industry*—bright blue eyes, a welcoming smile. She leaned forward as she laughed, which was often, and cradled her drink. She was fresh off a 30-city book tour through 13 states to promote her book, released last October. The previous weekend she'd participated in an event in San Francisco with Teens for Safe Cosmetics, a group of teenagers from Marin County, which has one of the highest rates of breast cancer in the nation. The young women gave free manicures using water-based nail polish. Last year, the group held an event called Project Prom and wore prom dresses and tiaras with combat boots to “combat” all the toxic makeup teenagers wear for prom night.

“The most exciting part of this work is seeing young people learning about science, and organizing and lobbying and learning that they have the power to make change,” said Malkan, who obsessed over cosmetics as a teenager, exposing herself to more than 200 chemicals a day before getting on the school bus in the town of Lynn, Mass., where she grew up.

Malkan has spent the last several years working to reduce the prevalence of toxins in our lives, including those found in makeup. In 2001, she joined Health Care Without Harm, a nonprofit organization founded in 1996 after the U.S. Environmental Protection Agency identified medical-waste incinerators as a leading source of dioxin, a potent carcinogen.

Dioxin received national attention back in the late 1970s when residents of Love Canal, a neighborhood in Niagara Falls, N.Y., experienced high rates of miscarriage, birth defects and toxic material in the milk of nursing mothers. Later, a chemical-waste dump—containing dioxin—was discovered buried beneath the neighborhood.

Medical devices made of polyvinyl chloride plastic create dioxin when manufactured or burned and leach phthalates into hospital patients. Phthalates are a class of industrial chemicals linked to defects in male development. Known as “endocrine disruptors,” phthalates can block male hormones, called androgens, and the production of testosterone needed for masculinization, as shown in hundreds of animal studies.

Industry produces one billion tons of phthalates per year worldwide, and these chemicals are commonly used in toys, food packaging, vinyl flooring, pharmaceuticals, personal-care products and, of course, medical devices. So Health Care Without Harm pushed hospitals to phase out these devices, an effort that has been largely successful.

Malkan currently works for the Campaign for Safe Cosmetics, a nonprofit organization housed in the Breast Cancer Fund headquarters in San Francisco, which she co-founded with the executive director of Health Care Without Harm in 2002.

Back in 2000, the Centers for Disease Control and Prevention released a study that found seven different types of phthalates in 289 people tested. Inside everyone was dibutyl phthalate, a commonly used plasticizer and suspected teratogen that interferes with fetus development and causes birth defects. Dibutyl phthalate is the most toxic phthalate. These results surprised the scientific community. But then scientists broke down the findings by age and gender, determining something else of particular interest: Women between the ages of 20 and 40—childbearing age—had the highest levels of dibutyl phthalate in their bodies.



The author’s quest to find toxic-free products led her to the Sacramento Natural Foods Co-op for these safer alternatives.

Photo By David Jayne

Around the same time, Jane Houlihan of the Environmental Working Group, a watchdog organization based in Washington, D.C., discovered that dibutyl phthalate was a common ingredient in nail polishes. Dibutyl phthalate came to be known as part of a “toxic trio” of chemicals found in about half of the nail polishes on the market. Toluene, an aromatic hydrocarbon used as solvent in paints, paint thinners, gasoline and glue (people inhale its fumes for illegal recreational drug use) was found, along with formaldehyde, which the EPA lists as a probable human carcinogen, meaning the scientific link between the substance and cancer is compelling but inconclusive. Many companies would later voluntarily remove these chemicals from their products.

Houlihan upped the ante even more with the “Skin Deep” report she coauthored in 2005, which found that one-third of personal-care products contained at least one ingredient linked to cancer, 60 percent contained chemicals that can act like estrogen or disrupt hormones in the body, and 45 percent contained an ingredient that may be harmful to the reproductive system or a baby’s development.

Clearly, the Campaign for Safe Cosmetics has had plenty of work to keep them busy.

Malkan loves Berkeley, where she’s lived for the last four years, especially the city’s political opportunities and proximity to the state Capitol. We sat drinking coffee only a few blocks from the university campus where Tyrone Hayes, a developmental endocrinologist, discovered that atrazine—a

widely used herbicide that's been traced in drinking water—caused male frogs to grow ovaries in their testes. He later accused a corporate sponsor of the research of trying to delay and discredit his findings. The sponsor was Syngenta, the primary manufacturer of atrazine.

I love Berkeley, because over the years it's the closest I've found to a true feminist hub, although it's not quite perfect. A few years ago, I heard the word phthalate for the first time as my hippie friend Laurie scoured shelves for face moisturizer without the chemical at the Elephant Pharmacy, a local institution where a woman could obtain emergency contraception without a doctor's prescription before the FDA approved this status, or take yoga and nutrition classes—a place where my girlfriends and I felt equipped to make smart choices about our own bodies.

“We need to take an objective look at the beauty industry and what they're telling us,” Malkan said. “We trust and believe in our beauty products. But billions of dollars go into marketing to make us feel like we have to have these products in order to be whole.”

Women, and increasingly girls, are routinely held up against unattainable images of outer beauty, and we'll paint, starve and disfigure ourselves trying to get there. Forget having a strong sense of self. No, we must feel continually compelled to change into something different.

As I left Berkeley and returned to Sacramento, I remembered something I learned from one particularly insightful class of advanced feminist theory: It's OK to be pissed off.

In fact, you probably should be.

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Pretty poison

Back in the late 1800s, skin whitening was a widespread face-altering practice done by African-American women hoping to escape the psychological binds left over from slavery. Lightening creams continue to be big sellers today among both African-American and Asian women. Many of the creams contain hydroquinone, an animal carcinogen that is toxic to the brain, immune system and reproductive system. The European Union banned hydroquinone, but the United States has not.

Hair products marketed to African-American women promise to make hair stronger and more manageable. These products contain placenta extract that have estrogenic hormones. Scientists believe that women with more exposure to estrogen in their lifetime have a greater risk for developing breast cancer. Across the board, African-American women have lower rates of breast cancer than white women, with the exception of women under 40 years old; many breast cancer activists suggest this may have something to do with the frequent use of placenta-infused hair products by the younger demographic.

Along with placenta extract, phthalates and parabens also mimic estrogen and disrupt hormones in the body. Parabens are the most widely used preservative in makeup.

“Parabens have been used in cosmetics since the 1930s as a preservative. It's anti-microbial in nature, so there is a benefit. They're not just there,” said Linda Katz, a kind-sounding woman who serves as director of the FDA's Office of Cosmetics and Colors.

Parabens don't accumulate in the body, but metabolize quickly and pass through the urine, Katz explained. But when it comes to personal-care products, we don't really know the concentrations of parabens, or how they interact with other endocrine disrupters, or how many carcinogens may be

present in the product but aren't listed on the label, which is slightly disconcerting.

Between 1973 and 1998, breast cancer incidents in the United States increased by more than 40 percent, according to the Breast Cancer Fund. More than half of breast cancer cases in this country can't be explained by genetic predisposition, diet or reproductive history, so the guilty contributing factors must come from another source. We also know that breast cancer rates are significantly higher in industrialized nations than in less-developed ones. So what gives?

As breast cancer advocates suggest we consider the role of chemical compounds in our surrounding environment and toxins accumulating in our bodies as a possible risk factor, the cosmetics industry proclaims its commitment to finding a cure, distributing pamphlets about early detection, reminding women to have annual mammograms and sponsoring 5-kilometer walks/runs. Prevention is absent from the industry's conversation.

"It's appalling that we're supposed to be passively waiting for a cure when there's very little discussion about what's causing all this, and undoubtedly environmental pollutants are part of the problem," Malkan said. "All these pink flag-waving companies—Estée Lauder, Revlon and Avon—have a responsibility to do what they can to be part of the solution instead of continuing to make excuses to be part of the cause and to ask, 'What's our contribution to the toxic load?'"

Meanwhile, American girls begin puberty at an earlier age, by about one or two years, than they did a generation ago. They're menstruating and developing breasts sooner, which means they're also being sexualized at younger ages than before. Nowadays, girls wear makeup as a part of youth, not adulthood. A recent survey of almost 6,000 girls aged 7 to 19 found that 63 percent aged 10 and younger reported wearing lipstick.

Last fall, the Campaign for Safe Cosmetics commissioned an independent laboratory to test red lipsticks for lead, a neurotoxin that accumulates in the body. Exposure can cause learning, language and behavioral problems; seizures and brain damage; lowered IQ; anemia; kidney damage; and it has been linked to infertility, miscarriage and delays in the onset of puberty in girls. Pregnant women and children are more vulnerable, along with unborn babies, as lead crosses the placenta and enters the fetal brain.

The lab purchased lipsticks in four different cities from local drug stores, big-box discount chains, high-end cosmetic shops and department stores. Sixty-one percent of 33 brand-name lipsticks contained detectable levels of lead (following this report, the FDA decided to conduct its own test, but the data is not yet available).



Stacy Malkan, co-founder of Campaign for Safe Cosmetics, went from a cosmetic-obsessed teenager to an opponent of toxins in beauty products.
Photo By Sena Christian

None of the guilty lipsticks listed lead on their labels. Although federal law requires that cosmetics sold on a retail basis to consumers declare ingredients on the label, the cosmetic companies didn't do anything wrong. They didn't list lead as an ingredient because it's not one. It's a byproduct introduced through the use of other commonly used cosmetic materials, such as zinc oxide and titanium dioxide.

Want to know if your lipstick contains lead? Well, good luck. Think the levels must be minuscule at worst? Not so fast. Lipstick and other beauty products sold in this country may contain unlimited amounts of lead. It's perfectly legal.

Lipstick lobbying

This past June, Teens for Safe Cosmetics unleashed themselves in the halls of the state Capitol in Sacramento. Three determined young women marched up to their representative's office with one thing on their mind: the passage of Senate Bill 1712, a bill that would have required companies to make lipstick with the lowest possible amount of lead. The bill had already passed the Senate, and the teenagers believed it would sail through to the governor's desk. How could it not?

Seventeen-year-old Erin Schrode was one of the young women at the Capitol that day. She's the spokeswoman for Teens for Safe Cosmetics, and has been with the group since its start in 2005. Schrode, a high-school senior, is an actress and a model. She wears makeup every day, but does so in a responsible way, choosing items free of harmful chemicals. At one point during the S.B. 1712 hearings, Schrode was unexpectedly called up to testify before the Assembly.

"I looked those people right in the eyes and told them that this is one step they could take to protect the future generation," Schrode said.

The conversation with Schrode reminded me of my first and only lobbying experience in Washington, D.C. I have absolutely no idea what piece of legislation my small group of comrades was riled up about. But I remember our excitement. We had so much of it. Of course, our representatives were too busy to speak with us, but at least we voiced our opinions to their legislative aides.

Unfortunately, sometimes our voices are too small.

A few days after Schrode's visit to the Capitol, S.B. 1712 failed by one vote in the Assembly Health Committee.

"Honestly, I was shocked," Schrode said. "It seemed like such a simple step to take. I don't want to sound naive, but I don't think the government's stepping up to the plate in the way they should. Every single lipstick can be reformulated without lead."

The industry came out in full force to oppose the legislation. Proctor & Gamble sent lobbyists, along with Estée Lauder. Even Johnson & Johnson—a company that doesn't sell lipstick—made its presence known. This pack mentality protects the industry, although it may frustrate the rest of us.

"I don't understand how they're paid to defend toxic chemicals for a living," said Malkan, who also traveled to Sacramento. "They're nice people for the most part. They really believe their definition of 'safe' is right."

In terms of safety, here's the problem: Cosmetics, unlike food and pharmaceuticals, aren't subject to FDA pre-market approval. So who's tasked with substantiating the safety of ingredients in products prior to the time we consumers rub and spray the stuff all over our bodies?

Well, that would be the cosmetic firms.

You heard right: This massive \$250 billion industry polices itself. Additionally, cosmetic manufacturers aren't required to file data on ingredients or report cosmetic-related injuries to the federal government. Congress doesn't authorize the FDA to require recalls of cosmetics, although the agency may *request* them. From January 2001 to May 2008, the industry recalled 49 cosmetic products,

according to Katz. Products with untested ingredients must print the following warning label: “Warning—The safety of this product has not been determined.”

To learn more about the industry’s approach to ensuring public safety, I submitted an online question to Revlon, asking if the company’s New Complexion Oil-Free Powder contained phthalates. The response: “We do not use phthalates as an ingredient in any of our products. Certain of our products that include a fragrance may have phthalates present in minimal amounts as a component of the fragrance as phthalates are sometimes used by fragrance suppliers in formulating fragrances.” (Is it just me or does that statement contradict itself?)

Yes, it’s true. Companies are allowed to keep the ingredients of a fragrance secret, which means when you see the word “fragrance” or “perfume” on a bottle, two, five, nine or even more chemicals may exist in that product in addition to the ones listed on the label. Revlon’s response continued: “You should know that phthalates are present in many products used daily such as food packaging materials and medical devices and that there is no reliable evidence that phthalates are harmful to humans.” (This argument was echoed by Procter & Gamble in its response).



Clockwise from left: Erin Schrode of Teens for Safe Cosmetics testifies before the state Assembly; models eco-friendly clothing; protests during Project Prom. Courtesy Of erin schrode

The e-mail noted that the FDA examined phthalates and found their continued use to be safe. But according to the FDA’s Web site, the agency “reviewed the safety and toxicity data for phthalates” including Centers for Disease Control and Prevention data and Cosmetic Ingredient Review panel data, determining that there was insufficient evidence to take regulatory action. But while the FDA conducted laboratory surveys, it has not completed its own toxicology testing.

In its response, Revlon describes the Cosmetic Ingredient Review panel as “an independent scientific panel.” In case you’re interested, the CIR is a group of seven voting members tasked with reviewing the safety of cosmetic ingredients. The CIR office resides in what happens to be the headquarters of the Cosmetic, Toiletry and Fragrance Association. The CTFA—which recently renamed itself the Personal Care Products Council—is the industry’s trade association. And this group funds the CIR.

Incidentally, remember Health Care Without Harm’s campaign to phase out medical devices with polyvinyl chloride from hospitals? That effort was largely opposed by the Advanced Medical Technology Association. A woman named Pamela Bailey headed up the group during that time. She’s now president and CEO of the Personal Care Products Council. What a small world.

The FDA’s Katz sits on CIR’s panel as a nonvoting member. She told me that she mainly listens, but if asked, she’ll offer the FDA’s position or suggest the panel test particular ingredients for safety. “I won’t interfere with the process,” she said. Katz believes the CIR and cosmetics industry “are doing what is appropriate” to ensure cosmetic safety, but she also said, “Do I feel the FDA is still needed to make sure the process runs smoothly? Yes, I do.”

On its Web site, the CIR lists 796 cosmetic ingredients identified “safe as used,” and nine as “unsafe.” The term “safe as used” depends on ingredient concentration and type of product (whether the item is left on and absorbed through the skin or washed off). According to Katz, the CIR has reviewed 1,350 ingredients and expects to have 1,500 completed by the end of this year. When asked how many ingredients exist in cosmetic products—to gauge the significance of these numbers—Katz responded, “I don’t want to go there,” and advised me to check the CIR or Personal Care Products Council Web site.

I called the CIR instead, and spoke with director Alan Andersen. He put the number of ingredients assessed at 1,320. This time when I asked how many ingredients exist in beauty products sold in the United States altogether, I received a response: about 5,700. But only 1,320 of these ingredients have been assessed in the CIR’s 32 years of existence? Seriously?

Andersen acknowledged that the safety-assessment process has been slow, but said the CIR is expanding the program and speeding up the process by hiring new staff, reducing the public-comment period to 60 days and adding two chemists to the panel.

“It’s expertise we felt is needed as we move forward,” Andersen said of the chemists. The panel breaks itself into two teams with the chair overseeing both groups. Each team looks at the same ingredient data to make sure the panel doesn’t miss anything when determining safety. Andersen said the panel and FDA have an effective relationship, one in which the FDA has “tremendous input” into the process.

For instance, in June, the FDA proposed that the CIR undertake a safety assessment of a chemical called chlorphenesin, a muscle relaxant that can cause respiratory problems, vomiting and diarrhea in infants. The chemical is used in pharmaceuticals, but apparently has also been finding its way into personal-care products, specifically nipple cream for nursing mothers, and “they weren’t comfortable with that,” Andersen said. “When the FDA makes suggestions, it gets done.”

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Waiting for science

Meanwhile, science continues to throw us curveballs.

In December, a UC Davis study showed that a common antibacterial chemical known as triclocarban added to bath soaps, body washes, cleansing lotions and detergents can alter hormonal activity in rats and in human cells in the laboratory.

“I’m not saying it’s dangerous or worrisome, just that it’s interesting,” said Bill Lasley, a professor emeritus of veterinary medicine and expert of reproductive toxicology at UC Davis, who co-authored the study. I met up with him in his office, where he clarified the science for me with drawings on a whiteboard.

In the early 1990s, he explained, scientists found groups of molecules called “endocrine disruptors,” which upset the steroid process by mimicking and changing cell function. The UC Davis study, however, shows a new type of endocrine disrupter, one that causes augmentation, acting as a stimulant rather than repressor, causing the amount of gene expression that steroid hormones ordinarily cause to develop more rapidly and aggressively. Triclocarban causes increased cell division, something often linked to the development of some forms of cancer. So why not just warn of danger?

“Because we don’t know,” Lasley said. “It would be easy to be an alarmist and talk about the potential

and the potential *is* there.”

He believes, though, the discovery could eventually explain some big pathologies we don’t have answers to, such as prostate cancer, breast cancer and early breast development.

“This stuff has been around for more than 30 years and if it was so terrible to cause alarm we would have known it by now. If it has an effect, it is subtle, incipient and slow-moving,” he said.

But how come it took science so long to find something that’s been in soap for decades? Lasley acknowledged that scientists had been trapped by their own assumptions—looking solely for chemicals that blocked hormone action because that’s what they expected to find.

Products containing triclocarban have been available in this country for more than 45 years, and an estimated 1 million pounds are imported annually. But triclocarban doesn’t have to be used in bath soap and can be easily replaced with a safer alternative, Lasley said.

This is precisely what frustrates Malkan. Over the past few years, manufacturers of personal-care products reformulated some of their products for the European market, removing phthalates banned overseas. Yes, it’s a separate manufacturing stream and switching would require upfront costs, but we’re talking about a \$250 billion global industry here.

“I’ve thought about that a lot,” Malkan said. “It’s easier to keep doing things the way they’ve been doing them.”

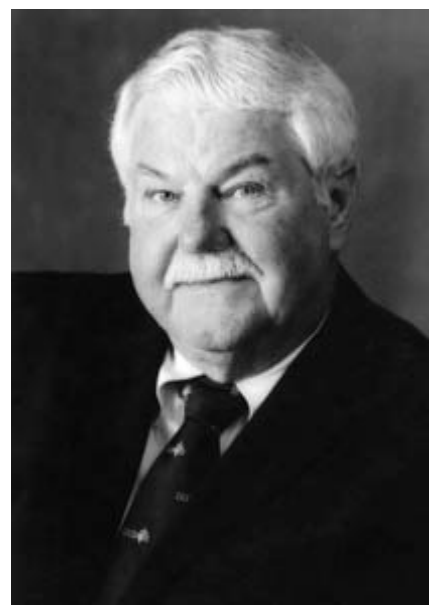
But the way we’ve been doing things has not been working. We have chemicals in our bodies. That’s not even the question.

Chemicals enter our bodies through beauty products, but also from the environment around us. We sip from water bottles leaching polyvinyl chloride and eat food from metal containers leaching bisphenol A. We put on condoms or insert diaphragms with alkylphenols, bathe enclosed in shower curtains with phthalates and turn on computers that emit polybrominated diphenyl ethers. We drink tap water laced with pharmaceuticals.

The U.S. Toxic Substances Control Act lists about 75,000 chemicals currently in use. Our country produces or imports 42 billion pounds of chemicals daily, and global production is expected to double every 25 years. But when determining the “safety” of beauty products, the federal government fails to consider this larger context.

This isn’t necessarily the FDA’s fault. For the FDA to regulate the personal-care products industry more stringently, Congress must change the law to grant the agency greater authority over cosmetics. Additionally, our government operates under a “prove harm” approach, in which a cause-and-effect relationship between a chemical and harm must be proven beyond a shadow of a doubt to necessitate regulatory action. The European Union, on the other hand, takes a precautionary approach, responding to early warning signs of harm.

So instead of preventing harm like our friends overseas, we wait. We wait for science to give us all the answers, something it may be inadequate to do. We wait for our sisters to be diagnosed with breast



UC Davis toxicologist Bill Lasley co-authored a study that found an endocrine disrupter in bath soaps.
Courtesy Of bill lasley of UC DAVIS

cancer and our fathers with prostate cancer. We wait for Congress to grant more funding and authority to the agencies tasked with protecting the common good so they can actually fulfill their responsibility to the American public. We wait for the day when outer “beauty” for women and girls means natural and real and healthy. And all the while, we wait for the beauty industry to clean up its act.

But we may not have to wait much longer. The European Union, under its REACH law (Registration, Evaluation, Authorization and Restriction of Chemicals), requires manufacturers to gather information on the properties of their chemical substances and register the data in a central database; companies must phase out the most harmful chemicals. Last month, Congress passed a bill to ban phthalates and lead from children’s toys—a major step forward for consumer safety. Consumers can also access the Environmental Working Group’s online Skin Deep database, which monitors ingredients found in more than 25,000 personal-care products.

So wake up, chemical industry: The rules of the game are changing, especially if California has anything to say about the matter.

This March, the Organic Consumers Association released a report that found almost 50 percent of personal-care products labeled “organic” or “natural” contained 1,4-dioxane, the byproduct of a petrochemical process called ethoxylation. 1,4-dioxane is a known animal carcinogen and a probable human carcinogen, according to the EPA. Following this report, California Attorney General Jerry Brown filed a lawsuit against manufacturers who failed to provide a warning about 1,4-dioxane in their products, as required by the state’s Proposition 65: The Safe Drinking Water and Toxic Enforcement Act.

Then there’s Senate Bill 484, the California Safe Cosmetics Act. With the passage of the legislation in 2005, California became the first state in the nation to regulate toxic ingredients in cosmetics. The state also established the California Environmental Contaminant Biomonitoring Program to collect information about toxins and requires companies to disclose information about any ingredients identified as causing cancer or birth defects. While disclosure may not seem like much—companies remain allowed to sell products containing ingredients that haven’t been tested for safety—the information obtained will eventually be posted online, available to the public.

“It’s a revolutionary step in the obvious direction,” Malkan said.

The body beautiful

Our heavy reliance on synthetic chemicals is costing us. A recent report commissioned by the California EPA found that chemical and pollution-related diseases in California cost us an estimated \$2.6 billion in direct and indirect costs. The report blames inadequate public policies regulating the production and use of hazardous chemicals and suggests a solution: the development of nontoxic, nonpolluting technologies. California’s Green Chemistry Initiative will get us there, as it promotes the development and subsequent use of hazardous-free chemicals that readily break down into innocuous substances in the environment.

Meanwhile, almost 1,000 companies have signed the Compact for Safe Cosmetics, pledging to be free of chemicals known or strongly suspected of causing cancer, mutation or birth defects. Popular brands Tom’s of Maine, Dr. Bronner’s, The Body Shop and Kiss My Face signed the compact. No major brands have signed on, though, meaning the number represents a small share of the market. But it reflects the rumbles of an exploding movement.

“People are starting to question what corporations are telling them and how much power they have,” Malkan said. “But it needs to happen fast, because it seems to be a race to the end. Is consciousness

going to raise quickly enough to save us? The younger generation understands this in a way that wasn't apparent to me at that age."

Third-wave feminists, like those who make up Teens for Safe Cosmetics, are leading the charge, rewriting a construction of American femininity that defines beauty as the application of a dozen chemical products a day and hundreds of dollars spent on makeup.

Last week, I visited the Sacramento Natural Foods Co-op, searching for toxic-free personal-care items. I decided to pare down my daily regime to the basics; I didn't need to use so much of that dumb crap in the first place. And as much as it pained me—all that money I'd spent—when I got home, I chucked the other chemical-laden items in my cabinet.

"The industry has so much power over our sense of self and our public space and our health," Malkan said that one morning in Berkeley. "But the real story is that *we* have the power to choose what companies we buy from and what we put on our bodies."

I believe that's what we call empowerment. And it's beautiful.