The Toxic Twenty Chemicals and Contaminants in Cosmetics

Chemicals and contaminants linked to cancer can be found in food, water and many other everyday products. However, no category of consumer products is subject to less government oversight than cosmetics and other personal care products. Although many of the chemicals and contaminants in cosmetics and personal care products likely pose little risk, exposure to some has been linked to serious health problems, including cancer. Since 2009, 595 cosmetics manufacturers have reported using 88 chemicals that have been linked to cancer, birth defects or reproductive harm in more than 73,000 products.¹

Many of these chemicals should be banned from cosmetics, as proposed in AB 495, the Toxic-Free Cosmetics Act. Among the toxic chemicals² that should be banned are:

- Formaldehyde, a known carcinogen.
- Chemicals that release formaldehyde.
- Mercury, which can damage the kidney and nervous system.
- Lead, a potent neurotoxin.
- Asbestos, a known carcinogen.
- Isobutylparaben, isopropylparaben, butylparaben and propylparaben.
- Toluene, which is toxic to the brain and nervous system.
- Triclosan, which affects the thyroid.
- Per- and polyfluoroalkyl substances (PFAS), which have been linked to cancer.

Many of these toxic chemicals have been banned or restricted by other nations and have been slated for removal from the store brands of major U.S. retailers, including Target, Rite Aid, Walgreens and CVS Health.³ For example, as of the end of 2019, CVS Health prohibits the use of formaldehyde, many chemicals that release formaldehyde, many parabens, dibutyl phthalate

¹ Cal. Dep’t of Pub. Health, Cal. Safe Cosmetics Program, Current Data Summary, https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/OHB/CSCP/Pages/SummaryData.aspx (last accessed Mar. 8, 2019). The California Safe Cosmetics Act of 2005 requires cosmetic manufacturers to disclose to the California Department of Public Health all products containing ingredients known or suspected to cause cancer, birth defects or other reproductive toxicity as determined by certain authoritative scientific bodies, including the Environmental Protection Agency, the National Toxicology Program and the International Agency for Research on Cancer.

² Environmental Working Group, the Toxic Twenty Cosmetic Ingredients and Contaminants, accessed at http://cdn3.ewg.org/sites/default/files/u352/Toxic%2020%20List.pdf?_ga=2.36293026.364182527.1554126027-937396664.1520601435&_gac=1.259664632.1553597903.CjwKCAjwmmfKBRRBEiwA966iZF139RiUrtNyeYyiYAnOqpk3GtURCnrAjqASrCXwDeJIoSlgOry1BoCOKcQAyD_BwE

and diethylhexyl phthalate, toluene and triclosan. Some of these are already banned from products sold in Whole Foods.4

Some of the chemicals included in AB 495 do not have to be disclosed on the package, because they are components of fragrance and so are exempt from federal labeling requirements. In particular, two phthalates included in AB 495 – dibutyl phthalate and diethylhexyl phthalate – may be included in combinations of chemicals disclosed on the label as “fragrance” but do not have to be disclosed as individual chemicals. Dibutyl phthalate is an endocrine disruptor and a developmental toxicant that harms male reproductive system development. It can cause early puberty in boys and other changes in the reproductive system. Diethylhexyl phthalate harms the reproductive system and can affect the developing fetus. It has also been classified by the International Agency for Research on Cancer as possibly carcinogenic.5

![THE 'TOXIC TWENTY' COSMETIC INGREDIENTS AND CONTAMINANTS]

<table>
<thead>
<tr>
<th>Ingredient/Contaminant</th>
<th>Health Concerns</th>
<th>Countries or Intergovernmental Organizations with Bans or Restrictions in Personal Care Products</th>
<th>Retailers With Bans or Restrictions</th>
<th>Function in Personal Care Products</th>
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<tr>
<td>Formaldehyde</td>
<td>Formaldehyde is carcinogenic; it also causes allergic reactions and irritating the eyes and respiratory system.</td>
<td>Banned: Japan—ban on formaldehyde (aqueous formaldehyde) Restricted: EU, ASEAN, Canada, Australia</td>
<td>Scheduled ban for store brand products: CVS, Rite Aid, Target, Walgreens</td>
<td>Formaldehyde is used as a hair straightener, nail hardness, and preservative.</td>
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<tr>
<td>Formaldehyde releasers</td>
<td>Formaldehyde releasers can have health effects similar to those of formaldehyde.</td>
<td>Certain formaldehyde releasers are restricted by: EU, ASEAN, Canada</td>
<td>Scheduled ban for certain formaldehyde releasers in store brand products: CVS, Rite Aid, Target, Walgreens</td>
<td>Formaldehyde releasers are chemicals that release formaldehyde over time. They are used as preservatives.</td>
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* These chemicals are on Rite Aid’s Expanded Restricted Substances List. The company screens products against this list and encourages suppliers to eliminate these chemicals.

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Many of these chemicals are rarely used in personal care products and will be easy to replace. For example, in Skin Deep®, our database of cosmetics and other personal care products, EWG found isobutylparaben and isopropylparaben in just 96 and 12 products, respectively, offered for sale since January 2017. Only three products offered for sale since January 2017 contain toluene and only 38 contain triclosan, according to EWG’s analysis. A 2018 analysis by EWG found fewer than 200 products contain one of 13 PFAS chemicals.6

The cosmetics industry has grown dramatically since 1938, when Congress last enacted cosmetics legislation. When Congress enacted the Food, Drug, and Cosmetic Act, the cosmetics industry reported approximately $1 billion in sales.7 In 2016, the personal care products industry reported more than $169 billion in sales.8 Nevertheless, only two pages of the 829-page Federal Food, Drug, and Cosmetic Act govern cosmetics, and those provisions provide the Food and Drug Administration no financial resources and sharply limit the its authority to regulate chemicals and contaminants that pose chronic risks.9 Although Congress has since given FDA the power to ensure that food additives,10 color additives11 and pesticides12 pose “no harm” from repeat exposures, Congress has not given it the same authority to regulate the chronic risks posed by chemicals and contaminants in cosmetics. Instead, FDA largely relies upon self-regulation to address the risks posed by the personal care products industry.

Consumers use a wide variety of cosmetics and personal care products. Few consumer products contribute as many chemical exposures as cosmetics and other personal care products. Each day, American women use an average of 12 personal care products that contain 168 different chemicals. Men use an average of six personal care products that contain 85 different chemicals.13 Many of these products are applied directly to the skin, the body’s largest organ, where ingredients can be absorbed directly into the bloodstream.14

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9 Section 601(a) of the FDCA (21 U.S.C. § 361(a)) states that a cosmetic is deemed adulterated if it “bears or contains any poisonous or deleterious substance which may render it injurious to users under the conditions of use prescribed in the labeling thereof, or under such conditions of use as are customary or usual.” A cosmetic is also adulterated under the 1938 FDCA if packed in unsanitary conditions that may render it “injurious to health” or its container is composed in whole or part of any poisonous or deleterious substance that may render it “injurious to health.”
Consumer use of cosmetics continues to grow dramatically. Since 2010, the U.S. cosmetics market has grown an average of 4.1 percent annually, and Internet sales have expanded to account for 8.4 percent of the total market share. In particular, cosmetic imports are also on the rise. In fiscal year 2016, 2.9 million lines of cosmetics were imported into the United States from 181 different countries. Lines of cosmetic imports doubled over the last decade, with a substantial increase after FY 2011. Cosmetic imports from China increased by 79 percent between FY 2011 and FY 2016.

Although most chemicals in cosmetics pose little or no risk, some chemicals in cosmetics have been linked to serious health problems, including cancer, reproductive and neurological harm, and developmental delays. Cosmetic chemicals enter the body through the skin, inhalation, ingestion, and internal use and pose the same risks as food chemicals. In addition to the risks posed by intentionally added ingredients, cosmetics can be contaminated with heavy metals, including arsenic, cadmium, lead, mercury and nickel.

It is banned in more than 50 nations, but asbestos can also contaminate cosmetics made with talc, such as facial powders. Although there is no formal estimate of the number of cosmetics products that contain talc, EWG found more than 2,100 products with it as an ingredient in our database and were offered for sale in the past three years. Of these, about 1,200 are loose or pressed powders that could pose a risk of being inhaled. Even small amounts of asbestos in talc can cause mesothelioma and other diseases many years after exposure.

Some chemicals used in personal care products pose risks at very low doses and can interfere with the hormone system. Research shows that “endocrine-disrupting” chemicals such as

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17 Id.


19 Geologically, talc and asbestos can be formed from the same parent rock. As a result, mined talc deposits in many parts of the world can be contaminated with asbestos fibers.

20 Cosmetics companies are not required to register and provide ingredient statements to FDA, so FDA is unable to estimate the number products that contain talc.


23 Chemicals like phthalates and triphenyl phosphate can disrupt the hormone system by mimicking or blocking a natural hormone. When an endocrine-disrupting chemical mimics a hormone, the chemical tricks the hormone’s receptor into thinking the chemical is the hormone. When the chemical blocks a hormone, the chemical can bind to a receptor and the hormone may not be activated. See Veldhoen N et al., *The bactericidal agent triclosan modulates thyroid hormone-associated gene expression and disrupts postembryonic anuran development*, Aquat Toxicol (June 2007), https://www.ncbi.nlm.nih.gov/pubmed/17011055.
parabens and phthalates may pose the greatest risk during prenatal and early postnatal development, when organ and neural systems are forming. Exposure to these chemicals has been linked to endocrine diseases and some types of cancer. For example, endocrine disruptors are known to affect how women’s bodies use estrogen and thus have been linked to breast cancer.

Many cosmetics have also been linked to acute risks, including burns and infections. Formaldehyde-based hair-straightening procedures, referred to as “keratin treatments,” have been linked to hair loss, rashes, blisters, nosebleeds, bleeding gums, and loss of taste and smell. Other cosmetics have caused hair loss. FDA continues to find cosmetics contaminated with bacteria, including body wash, face powders, shadows and lotions, or containing banned colors chemicals, including shampoos, soaps, cleaners and temporary tattoos.

Under the current law, FDA has little authority to review chemicals in cosmetics and other personal care products. Personal care products companies do not have to register with FDA, provide FDA ingredient statements, adopt Good Manufacturing Practices, or GMPs, report adverse events to FDA, or provide FDA access to safety records. FDA does not have the power to suspend registration or order recalls when products pose a risk of serious adverse health consequences or death. By contrast, manufacturers of food, drugs and medical devices must register with FDA, maintain and give FDA access to records, and report adverse events. If food, drugs or devices are unsafe, FDA can suspend production and product licenses. If unsafe food or devices reach the market, FDA can order a recall and take legal action against drug makers that do not recall their products.

To date, FDA has only banned or restricted nine chemicals due to safety concerns. By contrast, FDA, Environmental Protection Agency, or EPA, and Consumer Product Safety Commission, or CPSC, have broad authority to ensure the safety of chemicals in other consumer products. For example, FDA has the authority to review chemicals in prescription and over-the-counter drugs, and chemicals found in food, and the EPA has the authority to review chemicals in

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26 Id.


32 21 C.F.R. § 330.

pesticides used in homes and on farms and to set limits for pesticide residues on food. In 2016, Congress expanded EPA authority to review chemicals in cleaners, paints, solvents and many other consumer products.

The U.S. has also fallen far behind our international trading partners in the regulation of cosmetics. More than 40 nations have taken steps to ban or restrict, in combination, more than 1,400 chemicals or contaminants in cosmetics and personal care products, including chemicals linked to cancer, reproductive harm and neurological harm. Many of the chemicals identified in AB 495 have already been banned by other nations, including isopropylparaben and isobutylparaben, dibutyl phthalate and diethylhexyl phthalate and mercury. Other nations have restricted the presence of chemicals like formaldehyde and perfluorooctanoic acid (PFOA).

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34 7 U.S.C. §§ 136a-136d.
The cosmetics industry has long fought meaningful oversight. Since the early 1950s, it has defeated efforts by Congress to modernize cosmetics law. Since 2015, some cosmetics companies have supported giving FDA the authority and resources to review and regulate chemicals and contaminants of concern in cosmetics, and have supported requiring manufacturers to register, provide ingredient statements, adopt GMPs and report adverse events. Some companies have also supported giving FDA the power to suspend production of dangerous products and order mandatory recalls. However, other companies have not supported FDA review and oversight.


43 The following companies support bipartisan cosmetics reform legislation: Amyris (Biossance), Au Naturale, Babo Botanicals, Beautycounter, California Baby, Coalition of Handcrafted Entrepreneurs, Cote, Earth Mama Organics, Éclair Naturals, Estee Lauder Companies, EO Products, Goddess Garden Organics, Handcrafted Soap & Cosmetic Guild, Handmade Cosmetic Alliance, Herban Lifestyle, the Honest Company, Johnson & Johnson, Juice Beauty, L’Oreal, Made Of, Makes 3 Organics, Milk + Honey, MyChelle Dermaceuticals, OSEA, Peet Rivko, Procter & Gamble, Rahua, Revlon, Seventh Generation, Silk Therapeutics, SkinOwl, S.W. Basics, Tenoverten, Unilever, Vapour Organic Beauty.
Consumers overwhelmingly support federal oversight of cosmetic chemicals. Polling in 2016 conducted by American Viewpoint and the Mellman Group found that two-thirds of consumers believe chemicals in cosmetics are already reviewed by FDA.44 Three-fourths of consumers—regardless of age, race or party affiliation—support stricter oversight of chemicals in cosmetics and nearly nine in 10 consider stricter rules very important. In addition, nine in 10 consumers believe cosmetic companies should have to notify FDA if their products harm consumers, support giving FDA mandatory recall authority, and support rules ensuring cosmetics are produced in clean environments.