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Beauty and the (Chemical) Beast

Abigail Novak

It's advice nearly every patient has heard at least once in their life: you need to lose weight. Often, this is prescribed as a combination of a healthy diet and exercise. However, 'fad diets', so-called due to their fluctuating popularity from societal trends, are seen as quick and easy diet modifications that produce weight loss quickly. For some, these diets are not sustainable and can lead to dangerous cycles of losing weight, easing restrictions, and re-gaining weight that was lost. Weight-cycling is a dangerous effect of fad diets, and the long-term physical and psychological effects of weight cycling can ultimately lead to worse health outcomes. With each cycle of losing and regaining weight, both the body and mind undergo great stress, the cardiovascular and metabolic systems within the body become less efficient and can develop long term complications. Instead, targeting a healthy, well-balanced diet recommended by clinicians can prevent weight cycling and protect against the negative health effects of obesity.

Keywords: cosmetics, personal care products, ingredients, Food, Drug, and Cosmetic Act (FC&C)

The consumer search for "clean" household products is beginning to see an upward trend as evidence of the dangers of certain chemical ingredients becomes more widely known to the public. Personal care products (PCPs) and cosmetics make up a considerable number of commodities that consumers use on a regular basis and are typically considered necessities with a long-standing history. PCPs are defined as externally used products that provide UV protection, body cleanliness, oral hygiene, or prevention of body odor. Frequently, cosmetics are considered a PCP.¹ In the United States, cosmetics are defined as products applied externally for the purpose of altering appearance, cleansing, or promoting attractiveness.² Women use an average of 12 personal care cosmetic products a day, while men use an average of 6.³ Put into an economic perspective, the cosmetic industry was valued at \$341.1 billion in 2021, and is expected to reach \$560.50 billion by the year 2030. This equates to a 5.1% yearly growth in 19 years.² Despite these increases, the US Food and Drug Administration (FDA) does not take much action on the safety of cosmetics or PCPs until they have been used by consumers, cause an adverse reaction, and are reported to the FDA.³ For these reasons, it is important for consumers to be aware of the risks associated with certain ingredients, what manufacturers must do prior to placing a cosmetic on the market, and what resources are available assess ingredients or read safety reviews.

BACKGROUND

Cosmetics have a long history in the lives of humans. Even 6000 years ago, the ancient Egyptians were using oils, creams, and ointments as a means of sun protection, anti-aging, and decreasing body odor. Their use continued with the Romans and are still present in the 21st century.⁴ Since then, the cosmetic industry has

become a multibillion-dollar industry and continues to grow every year. With this timeline in mind, many would conclude that using deodorant, make-up, toothpaste, and other products are "free of risk". However, that is not the current reality.

One of the earliest cited examples of toxic cosmetics in the US came forward around 1860 when a skin complexion product was found to contain dangerous amounts of lead.⁵ Lead is classified as a heavy metal and these metals can accumulate in the body. This leads to health problems such as cancer, kidney damage, liver damage, skin irritation, vomiting, and anemia.¹ Despite known risks, cosmetics were not included in the Pure Food and Drug Act of 1906 due to their limited economic contribution, minimal use, and lack of necessity.⁵ This exclusion forced the general population to bear the consequences in the 1920s and 1930s as the cosmetic industry grew. During this time, hundreds of products came to market without much oversight. As a result, products were found to contain dangerous ingredients such as thallium, also known as rat poison, that had the potential to cause nerve pain, and aniline dye, which caused permanent blindness and even death.^{5,6}

These events led to the creation of the Food, Drug, and Cosmetic Act (FD&C) in 1938, the government's first attempt to demonstrate federal action on cosmetics.⁵⁻⁷ This act remains as the main form of cosmetic regulation in the US. The FD&C broadly mandates cosmetics to be unadulterated and correctly branded.⁵⁻⁷ While the existence of the FD&C was brought about by consumer safety reports, companies were not and are still not required to report adverse drug events. Even with the FD&C, the reporting of adverse events caused by cosmetics or PCPs remains voluntary.²

CURRENT REGULATION

The FD&C does not include an FDA review of cosmetic ingredients. Therefore, the Personal Care Products Council (PCPC) worked with the FDA to create the Cosmetic Ingredient Review (CIR), serving as the industry's review board.^{6,7} As of 2018, there have been a total of 11 cosmetic ingredients deemed unsafe in the US market and an additional 9 chemicals have been banned. While this may seem significant, it's minimal compared to other countries. Europe has banned 1,400 ingredients.⁶ Even though the US labels an ingredient unsafe, it does not mean it is not found in products. Mercury, for example, was banned by the FDA in 1990, but it was still seen in cosmetic products in 2010.⁷ Further, many heavy metals have been banned from being purposely incorporated into PCPs or cosmetics in the US. Evidence of any of the following heavy metals in a cosmetic product would be considered adulteration under the FD&C: lead, mercury, cadmium, antimony, chromium, nickel, arsenic, and cobalt.⁹ However, there is no guarantee that manufacturers will not market a banned product. Most of the ingredient safety in the US falls directly on manufacturers and distributors, leaving room for unsafe ingredients to slip through, as was seen with mercury.

Heavy metals are not the only concern in products. Other chemicals that cause concern include hydroquinone, parabens, phthalates, formaldehydes, oxybenzone, coal tar, and triclosan. They all have the potential to negatively impact the reproductive and immune systems or have a high allergy risk.⁹ Some cosmetic companies are offering a way in which consumers can feel more confident in their products and avoid products that may contain these harmful substances. For example, Sephora® created their *Clean* program in which products without harmful chemicals are awarded a "clean seal."⁹ However, buying products from just one specific company is not ideal. The public needs a viable way to choose their cosmetics and PCPs.

Ultimately, consumers are responsible for deciphering labels, product seals, and marketing tools themselves to determine which products are safe. Since this can be overwhelming, consumers often purchase "natural" products. It is an innate preference to choose something perceived to be from nature rather than synthetically created. A study published in 2020 found that 45% of people think the word "natural" on a label indicates that it is verified to be of natural sources.¹⁰ However, this is not always the case, and is solely based on the discretion of the manufacturer.

WHAT TO LOOK FOR

With minimal regulatory oversight, it is important for consumers to know what to look for when purchasing cosmetics and PCPs. One helpful resource is the Environmental Working Group's (EWG) Skin Deep Cosmetics Database.⁹⁻¹¹ This database has evaluated around 70,000 ingredients and rated products based on a hazard score of 0 to 10 with 1 to 2 being "low hazard"

and 8 to 10 being "high hazard". Another database is the California Safe Cosmetics Program (CSPC) that allows consumers to search specific chemicals or products for information on cancer risk, birth defects, and reproductive harm. It is also one of the few databases to assess flavors and fragrances found in cosmetic products.¹¹

Attempting to choose the right cosmetics and PCPs can be a daunting task for consumers when considering that safety has not been proven. Ingredient lists can be full of unfamiliar chemical names, and labels can make claims that encourage consumers to purchase them. However, there are multiple resources that can help consumers make knowledgeable and educated choices. Although the cosmetic and PCP industries are regulated by companies, consumers can create a form of personal regulation by assessing product ingredients, safety ratings, manufacturers, product label claims, and adverse event reporting. The final choice is up to each individual consumer.

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