

# Hair Product May Increase Risk for Uterine Disease

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## STORY AT-A-GLANCE

- › People who use popular hair straightening products may be at increased risk of uterine cancer, according to a study from the National Institutes of Health
- › Women who had used hair straightening products in the previous 12 months had a higher rate of uterine cancer than those who had never used such products
- › Women who used the products frequently — defined as more than four times in the previous year — were more than twice as likely to develop uterine cancer as those who did not use hair straightening products
- › More chemicals may be absorbed through the skin of the scalp compared to skin on the forearm, palm or abdomen; hair straighteners may also cause lesions and burns on the scalp, increasing chemical exposure
- › Among participants who had ever used hair straighteners, 59.9% were black; while racial differences in the association between straightener use and uterine cancer weren't found, it's possible that risks are higher for black women due to more frequent, and younger, use

People who use popular hair straightening products may be at increased risk of uterine cancer, according to a study from the National Institutes of Health.<sup>1,2</sup> The finding highlights longstanding concerns about the safety of chemicals used in cosmetics and personal care products. In the U.S., the beauty and personal care product market brings in more than \$169 billion in sales.<sup>3</sup>

Many of the major players prey on consumers' — and often women's — desire to boost self-esteem by altering their physical appearance. But the industry is largely unregulated and the U.S. Food and Drug Administration allows ingredients to be used in personal care products with no testing.

In fact, the “safety” law for personal care products has been in place, largely unchanged, since 1938, according to the Environmental Working Group (EWG).<sup>4</sup> Now, it's very much a buyer beware market, with people at risk of chronic diseases, including cancer, from toxins found in these commonly used skincare, makeup and hair care products — hair straightening chemicals among them.

## **Using Hair Straighteners May Double Uterine Cancer Risk**

The study included data from 33,497 U.S. women between the ages of 35 and 74, who were taking part in the Sister Study — a separate research initiative led by the NIH's National Institute of Environmental Health Sciences (NIEHS). Its purpose is to identify risk factors for breast cancer, among other health conditions.<sup>5</sup>

During a follow-up period of 10.9 years, 378 cases of uterine cancer were diagnosed. Those who had used hair straightening products in the previous 12 months had a higher rate of uterine cancer than those who had never used such products. More frequent use was associated with a greater risk.<sup>6</sup>

Women who used the products frequently — defined as more than four times in the previous year — were more than twice as likely to develop uterine cancer as those who did not use hair straightening products. The study's lead author, Alexandra White, Ph.D., head of the NIEHS Environment and Cancer Epidemiology group, said in a news release:<sup>7</sup>

*“We estimated that 1.64% of women who never used hair straighteners would go on to develop uterine cancer by the age of 70; but for frequent users, that risk goes up to 4.05%. This doubling rate is concerning. However, it is important to put this information into context — uterine cancer is a relatively rare type of cancer.”*

That being said, the researchers also highlighted the numbers needed to harm,<sup>8</sup> which was 85 for the women who had ever used hair straightening products and 42 for women who used them frequently. In other words, one additional case of uterine cancer would be expected for every 85 women who had ever used hair straighteners, compared to one additional case of uterine cancer for every 42 women who were frequent users.

## Black Women May Be Most at Risk

While uterine cancer accounts for just 3% of new cancer cases, it's the No. 1 cancer of the female reproductive system.<sup>9</sup> Incidence rates have been on the rise in recent years, particularly for aggressive subtypes of the disease and among Black women, according to a 2019 study led by Megan Clarke, Ph.D., with the National Cancer Institute's Division of Cancer Epidemiology and Genetics. Clarke explained:<sup>10</sup>

*"All of these trends — the rates of uterine cancer among black women exceeding those of white women, the higher incidence rates of nonendometrioid subtypes among black women, and the lower survival rates of black women for all uterine cancer — are very concerning. We need to continue research to further understand these racial differences and disparities, in order to help us better predict risk and work toward prevention."*

The use of hair straightening products could be one precipitating factor. The featured study found that among participants who had ever used hair straighteners, 59.9% were Black.<sup>11</sup> While the study didn't find racial differences in the association between straightener use and uterine cancer incidence, it's possible that risks are higher for Black women due to more frequent, and younger, use.

According to study author Che-Jung Chang, Ph.D., "Because Black women use hair straightening or relaxer products more frequently and tend to initiate use at earlier ages than other races and ethnicities, these findings may be even more relevant for them."<sup>12</sup>

## Previous Research Linked Straighteners to Breast Cancer

Past research suggests hair straightening products may play a role in hormone-sensitive health problems. Exposure to such products has been associated with:<sup>13</sup>

- Lower sex steroid hormone levels
- Elevated risk of uterine leiomyomata (fibroids)
- Early age at menarche
- Incident breast and ovarian cancers

In a prior study based on 46,709 women in the Sister Study,<sup>14</sup> NIEHS researchers found that women who used hair straighteners at least every five to eight weeks were about 30% more likely to develop breast cancer. They also found that, among black women, using permanent hair dyes every five to eight weeks or more led to a 60% increased risk of breast cancer.

Compounds found in hair products, including straighteners, dyes and perms, may be hormonally active and carcinogenic. Further, they're often used by adolescents, a time when breast tissue may have enhanced susceptibility to chemical exposures.<sup>15</sup>

In a study published in the International Journal of Cancer, use of hair straighteners and perms during adolescence was associated with a higher risk of premenopausal breast cancer.<sup>16</sup> Again, due to higher prevalence of use, it's possible that Black women may be disproportionately affected:<sup>17</sup>

*"Hair product use patterns vary substantially by race/ethnicity, with use of straighteners/relaxers being much more common in black women compared to white women. The pattern of use of chemical hair products has been hypothesized to be a contributor to the higher body burden of endocrine disrupting compounds observed in non-Hispanic black women compared to white women.*

*Black women are more likely than white women to be diagnosed with breast cancer at earlier ages and with hormone receptor-negative tumor subtypes, both of which are associated with lower survival. Chemical hair products have*

*been proposed to be one potential factor that may contribute to racial disparities in breast cancer.”*

## **Why Hair Straighteners May Be Particularly Dangerous**

The featured study suggested that chemical exposure due to the use of hair products may be particularly concerning, even compared to other personal care products. This is because more chemicals may be absorbed through the skin of the scalp compared to skin on the forearm, palm or abdomen.<sup>18</sup>

Chemical hair straighteners also have other side effects to the scalp, including eczema, pain, burns and inflammation, along with hair loss, damage to the hair shaft and alterations in hair color and hair composition of amino acids.<sup>19</sup> Scalp lesions and burns caused by straightening chemicals “facilitates the permeability of chemicals through the scalp,” the featured study pointed out, adding:<sup>20</sup>

*“Heating processes such as flat ironing or blow drying during straightening treatments could release or thermally decompose chemicals from the products, leading to potential higher exposures to hazardous chemicals among the users.”*

There are multiple chemicals of concern in hair straightening products, several of which could contribute to increased uterine cancer rates. This includes parabens and phthalates, which have been detected in higher concentrations in people with endometrial cancer than in those without.<sup>21</sup> Bisphenol A is another chemical of concern in the products.

This toxic chemical has been associated with altered estrous cycles and uterine disease in rats, which in turn are linked to the development and progression of endometrial cancer. Other potentially carcinogenic chemicals in hair straighteners include diethanolamine, metals and formaldehyde.<sup>22</sup>

In a survey of manufacturers of hair-straightening products in 2011, EWG found that while 15 of 16 companies said their products contained little to no formaldehyde, their

tests revealed otherwise — the products actually contained “substantial amounts.”<sup>23</sup>

## Simplify Your Routine to Reduce Chemical Exposure

It’s not only hair products that increase your risk of chemical exposures. Shampoos, conditioners, moisturizers, cosmetics and other personal care products also often contain toxic ingredients. When you use these products, you’re exposed to a combination of chemicals on a daily, or near daily, basis.

According to EWG, women use, on average, 12 personal care products a day, which expose them to 168 different chemical ingredients. Men use an average of six personal care products daily, exposing them to 85 different chemicals.<sup>24</sup>

Very few chemicals on the market are tested for safety, but even those that are tested are not necessarily safe. Part of this is because safety testing is typically done on just one chemical at a time, and under laboratory conditions. Since 2009, EWG noted, cosmetics manufacturers have reported using at least 88 chemicals — in more than 73,000 products — that are linked to health problems such as cancer, birth defects and reproductive harm.<sup>25</sup>

The way you’re actually exposed to chemicals — in combination and under countless different real-world scenarios — may increase their toxicity exponentially. It’s possible that use of personal care products and cosmetics may influence age at menopause,<sup>26</sup> along with having a baby that’s at increased risk of being small for gestational age.<sup>27</sup>

At least 11 chemicals and chemical families of concern have been uncovered that are commonly used in cosmetics and personal care products. They include:<sup>28</sup>

Butylated hydroxyanisole/butylated hydroxytoluene	Diethanolamine	Formaldehyde releasing preservatives
Coal tar dyes		

Parabens	Phthalates	1,4 dioxane
Polycyclic aromatic hydrocarbons	Siloxanes	Talc/asbestos
Triclosan		

To avoid exposure, simplify your routine and make your own personal care products using safe ingredients like coconut oil, mild soap and essential oils.

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