

International Safety Assessments of Parabens

Wondering what the U.S. and global science community has found on this issue? Here are studies weighing in on the established safety record of parabens in skin-care products:

The American Cancer Society has concluded, based on its research findings, that the scientific and medical research does not support a claim that the use of parabens in cosmetics can increase an individual's risk of developing breast cancer.

The FDA began studying the effects of parabens in response to the outcry of their potential estrogenic effect and link to breast cancer. The FDA found that parabens are safe for use in cosmetics, and it also says that, based on the weight of all the current scientific evidence, there is no reason for consumers to be concerned about the use of products containing parabens.

The Scientific Committee on Consumer Safety: Final Opinion on Parabens, which is the official statement by the European Union on the unequivocal safety of parabens in skin care, cosmetics and personal care products. This summary of decades of long-term and short-term safety data reinforced the EU's previous decision that parabens are safe in personal care products.

Health Canada, the Canadian FDA-equivalent, also finds that, "Currently, there is no evidence to suggest a causal link between parabens and breast cancer."

The Personal Care Products Council, a US organization that reviews and assesses the safety of ingredients used in cosmetics in an open, unbiased and expert manner, consolidated more than 265 studies in *The Journal of Toxicology* that noted a women's daily cosmetic regimen using products that contain parabens caused no adverse reproductive effects and confirmed the safety of parabens.

Other research has even refuted the long-held belief that parabens are among the more sensitizing preservatives in cosmetics, stating that "...these ubiquitous compounds have withstood four decades of extensive skin testing conducted by a variety of organizations, both North American and European, and now, it seems parabens have shown to be one of the least sensitizing preservatives in commercial use."

Naturally occurring parabens

Blueberries... but will that work? It turns out that this approach won't necessarily protect you from parabens either.

Certain parabens are found in numerous plants around the world. This finding makes perfect sense of course, as plants have evolved anti-microbial agents in order to protect them from fungal or microbial attack (we've already seen this in chamomile and even in green tea as part of my cosmeceutical series).

Plants which are particularly well-known for their naturally occurring parabens include blueberries, mango, barley, strawberries, black currants, peaches, carrots, onions, cocoa beans, vanilla, to name but a few well-known foodstuffs. In fact, according to some research (see Anthony Dweck's *Paraben Compendium*) 4-hydroxybenzoic acid (which forms the basis of parabens) is the most widely distributed aromatic organic acid in the vegetable kingdom. In other words, they're everywhere.

Antiperspirants and Breast Cancer Risk

The claims

For some time, an email rumor suggested that underarm antiperspirants cause [breast cancer](#). Among its claims:

- Cancer-causing substances in antiperspirants are absorbed through razor nicks from underarm shaving. These substances are said to be deposited in the lymph nodes under the arm, which are not able to get rid of them by sweating because the antiperspirant keeps you from perspiring. This causes a high concentration of toxins, which leads to cells mutating into cancer.
- Most breast cancers develop in the upper outer quadrant of the breast because that area is closest to the lymph nodes exposed to antiperspirants. (Think of the breast as a circle divided by vertical and horizontal lines that cross at the nipple. Each of the 4 sectors you divide the breast into is called a quadrant. The upper outer quadrant of each breast is the part closest to the arm pit.)
- Men have a lower risk of breast cancer because they do not shave their underarms, and their underarm hair keeps chemicals in antiperspirants from being absorbed.

All of these claims are largely untrue.

Questions about antiperspirants and breast cancer

Do antiperspirants increase a person's risk of breast cancer?

There are no strong epidemiologic studies in the medical literature that link breast cancer risk and antiperspirant use, and very little scientific evidence to support this claim.

In fact, a carefully designed epidemiologic study of this issue published in 2002 compared 813 women with breast cancer and 793 women without the disease. The researchers found no link between breast cancer risk and antiperspirant use, deodorant use, or underarm shaving.

A study published in 2003 looked at responses from questionnaires sent out to women who had breast cancer. The researcher reported that women who were diagnosed with breast cancer at a younger age said they used antiperspirant and started shaving their underarms earlier and shaved more often than women who were diagnosed when they were older. But the study design did not include a control group of women without breast cancer and has been criticized by experts as not relevant to the safety of these underarm hygiene practices.

Probably, in general, younger women are more likely than older women to shave their underarms and use antiperspirants, whether or not they develop breast cancer later. For instance, most women born in the 1950s and 1960s might have started shaving earlier and using antiperspirants more often than women born in the 1930s and 1940s. Many women may also shave and use antiperspirants less often as they get older. These are more likely explanations of the researcher's findings than the suggestion that these practices cause cancer. Of note, the study asked about underarm products that

the women were using at the time the questions were answered, not what they used before they developed breast cancer.

Does using antiperspirant after shaving allow chemicals to enter the body from the armpit and increase breast cancer risk?

Razor nicks may increase the risk of skin infection. If the underarm skin is already broken or infected, it is possible that some antiperspirants could cause slight irritation. But it is unlikely that this is a major source of carcinogens (cancer-causing substances) that get into the body and reach the breast cells.

Should I be concerned about parabens?

Parabens are chemicals used as preservatives and as food additives. They can be found in many types of make-up (like lipstick, mascara, concealer, and foundation) and skin care products (like lotion, shaving products, and sunscreen). Parabens can be absorbed through the skin.

Intake of parabens is a possible concern because studies have shown that parabens have weak estrogen-like properties. Estrogen is a female hormone known to cause breast cells (both normal and cancerous) to grow and divide. And some conditions that increase the body's exposure to estrogen (like not having children, late menopause, obesity, etc.) have been linked to an increased risk of breast cancer.

In 2004, a small study found traces of parabens in some samples of breast cancer tumors. But there are some important points about the study findings:

- The researchers looked only for the presence of parabens in breast cancer samples. The study did not show that parabens caused or contributed to breast cancer development in these cases – it only showed that they were there. What this meant is not yet clear.
- Although parabens have weak estrogen-like properties, the estrogens that are made in the body are hundreds to many thousands of times stronger. So, natural estrogens (or those taken as hormone replacement) are much more likely to play a role in breast cancer development.
- Parabens are widely used as preservatives in shampoo, lotions, other cosmetics, and even foods. This study did not contain any information to help find the source of the parabens found in the breast tissue – it's not clear if they might have come from antiperspirants or from some other source.

Most people are exposed to parabens. In fact, studies have found some form of parabens in the urine in up to 99% of people in the US. But so far, studies have not shown any direct link between parabens and any health problems, including breast cancer. There are also many other compounds in the environment that mimic naturally produced estrogen.

Although at this time there are no clear health risks from parabens in food, drugs, cosmetics, and skin care products, people concerned about exposure to parabens can avoid products containing them. Consumer products containing parabens are required to list them as ingredients. Most parabens have names containing the word "paraben," making them easy to find. According to the US Food and Drug Administration, most major brands of antiperspirants and deodorants do not currently contain parabens.

Should I be concerned about aluminum in antiperspirants?

Aluminum-based compounds are the active ingredients in antiperspirants. They block the sweat glands to keep sweat from getting to the skin's surface. Some research has suggested that these aluminum compounds may be absorbed by the skin and cause changes in estrogen receptors of breast cells. Because estrogen can promote the growth of both cancer and non-cancer breast cells, some scientists have suggested that using the aluminum-based compounds in antiperspirants may be a risk factor for the development of breast cancer.

But it isn't clear that much aluminum is absorbed through the skin. One study that looked at the absorption of aluminum from antiperspirants containing aluminum chlorohydrate applied to the underarms found that only a tiny fraction (0.012%) was absorbed. The actual amount of aluminum absorbed would be much less than what would be expected to be absorbed from the foods a person eats during the same time.

It also doesn't seem that breast cancer tissue contains more aluminum than normal breast tissue. A study that looked at women with breast cancer found no real difference in the concentration of aluminum between the cancer and the surrounding normal tissue.

At this point, no clear link has been made between antiperspirants containing aluminum and breast cancer.

Do antiperspirants keep a person from sweating cancer-causing toxins out through their underarm lymph nodes?

Lymph nodes help clear out bacteria, viruses, and other possible threats to the body, but the lymph nodes do not release waste or toxins through sweating. In fact, lymph nodes are not connected to sweat glands. Sweat glands are located in the skin, not in the lymph nodes. Most cancer-causing substances that enter the body are removed from the blood by the kidneys and by the liver. Substances removed by the kidneys are released into urine, while those taken by the liver are released into bile. The bile then mixes with and is eliminated with feces.

Are there lymph nodes in the upper outer quadrant where most breast tumors occur?

Lymph nodes can be found throughout the breasts and have an important role. The underarm (axillary) nodes filter most of the liquid lymph flowing out of the breast before it goes back into the body's bloodstream. These nodes are under the arm, in the upper outer quadrant of the breast, and near the collarbone.

The breast quadrants are not actually all the same size. About half of all breast cancers develop in the upper outer part of the breast, probably because there is more breast tissue in this area. The number of breast cancers in the upper outer part of the breast is in proportion to the amount of breast tissue in that area.

There is no evidence to suggest that the location of cancers within the breast is related to using antiperspirants or underarm shaving.

Are men less likely to get breast cancer because antiperspirant gets caught in their underarm hair and is not absorbed by their skin?

Men are much less likely than women to develop breast cancer, mostly because men have much less breast tissue than women. Women have about 100 times more breast tissue than men and are about 100 times more likely to develop breast cancer.

Hormones also play a role. Men with metabolic or genetic conditions that lead to increased estrogen levels have an increased risk of developing breast cancer.

Underarm hair and antiperspirant absorption have not been linked to male breast cancer risk.

Why does my doctor tell me not to use antiperspirant or deodorant on the day of my mammogram?

You are asked to not use antiperspirant or deodorant on the day you get a mammogram because many of these products contain aluminum. This metal can show up on a mammogram as tiny specks. These specks can look like microcalcifications, which are one of the things doctors look for as a possible sign of cancer. Not using these products helps prevent any confusion when the mammogram films are reviewed.

How did the rumor about antiperspirants get started and spread?

We don't know who started this rumor. Most people who forwarded the email did so with good intentions. We do know that this rumor has been posted on some websites that sell deodorants that are not antiperspirants, so some people might benefit financially from spread of this misinformation.

How can I learn more about breast cancer risk factors and ways to find breast cancer early, when treatment works best?

Women concerned about breast cancer can learn about risk factors for breast cancer and possible strategies to reduce breast cancer risk in [Breast Cancer Risk and Prevention](#).

You can also talk to your doctor, nurse, or other health care providers. The American Cancer Society has information about all aspects of breast cancer, from causes and prevention, to diagnosis and treatment. Contact us at 1-800-227-2345 or visit our website, www.cancer.org.

- [Written by](#)
 - [Additional resources](#)
 - [References](#)
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PARABENS: ARE THEY REALLY A PROBLEM?

Whether it is a cleanser, lotion, toner, blush, foundation, or mascara, without preservatives like parabens these everyday items would become overloaded with bacteria, mold, and fungus, making them harmful to skin, eyes, and mucous membranes. Good to know: parabens aren't the enemy!

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Whether it is a cleanser, lotion, toner, blush, foundation, or mascara, without preservatives these everyday items would become overloaded with bacteria, mold, and fungus, making them harmful to skin, eyes, and mucous membranes. However, as necessary as preservatives are to the safety of cosmetics, they've had their share of woes over the years. Today, parabens are generating buzz for allegedly being bad ingredients. But do parabens deserve their bad, media-fueled reputation? Let's get to the surprising facts!

Should You Avoid Parabens?

In a word, no. Despite the media frenzy surrounding parabens, the published research and global cosmetic regulatory organizations are making that answer clear: parabens, **especially in the small amounts used in personal-care products, do not pose a significant health risk.** There is no legitimate reason for consumers to avoid cosmetic products that contain parabens. According to these studies, parabens are "fully metabolized before they enter the blood stream." In a review of the estrogenic activity of parabens, the author concluded that based on maximum daily exposure estimates, **"it was impossible that parabens could increase the risk associated with exposure to estrogenic chemicals."** We repeat: Impossible.

Parabens may come in the form of butylparaben, ethylparaben, isobutylparaben, methylparaben, or propylparaben, and in a misunderstanding of a [2004 research study](#), they were mistakenly linked to breast cancer when their metabolites (not parabens themselves) were detected in breast cancer tissue samples.

But not so fast! Soon after the panic over parabens began, the researcher who conducted the 2004 study (P. Darbre) responded in *Journal of Applied Toxicology* to the media-drawn connection between parabens and cancer with a clear statement, "No claim was made that the presence of parabens had caused the breast cancers." In fact, as the considerable global research has exhaustively demonstrated, parabens are broken down, metabolized and excreted harmlessly by the body. That statement refutes the crux of the scare tactics being used to convince you parabens are bad ingredients.

Another cause for suspicion? Parabens are phytoestrogens, producing a weak estrogenic effect on the body, but whenever the effect of an ingredient is evaluated perspective is critical. That is, how do tiny levels of parabens in skin care stack up against other phytoestrogens that occur naturally in food or the estrogenic effects of commonly consumed medicines? In-vivo testing demonstrated parabens were **10,000 times weaker** than naturally occurring phytoestrogens, such as those found in the foods and medicines we consume every day.

Parabens vs. Other Natural Ingredients

We often think of plants as being benign and cast suspicion only on synthetic ingredients (often misbranded as “chemicals” when in fact every ingredient is composed of chemicals), but human endocrine-disrupting sources have their origin in plants, such as marijuana, or in medicines such as acetaminophen. Despite what many “natural/organic” brands lead consumers to believe, parabens actually have a very “natural” origin. They are formed from an acid (p-hydroxy-benzoic acid) found in raspberries and blackberries. What’s ironic is that “natural” brands often have to resort to using more synthetic preservatives to avoid using parabens—a direct contradiction to their own marketing!

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- *The Scientific Committee on Consumer Safety: Final Opinion on Parabens*, which is the official statement by the European Union on the unequivocal safety of parabens in skin care, cosmetics and personal care products. This summary of decades of long-term and short-term safety data reinforced the EUs previous decision that parabens are safe in personal care products.
- *Health Canada*, the Canadian FDA-equivalent, also finds that, “Currently, there is no evidence to suggest a causal link between parabens and breast cancer.”
- *The Personal Care Products Council*, a US organization that reviews and assesses the safety of ingredients used in cosmetics in an open, unbiased and expert manner, consolidated more than 265 studies in *The Journal of Toxicology* that noted a women’s daily cosmetic regimen using products that contain parabens caused no adverse reproductive effects and confirmed the safety of parabens.

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Toxicology Letters reported in December 2013 that in references to parabens causing health issues "Overall, despite of 20 years of research a human health risk from exposure to low concentrations of exogenous chemical substances with weak hormone-like activities remains an unproven and unlikely hypothesis."

Bottom Line

Ironically, parabens are naturally occurring chemicals. It's ironic because many natural skin-care brands claim ingredients like parabens are dangerous, when in fact parabens have exhaustive safety data AND are naturally produced by vegetables and fruits. Foods such as soy, beans, flax, cherries, blueberries, carrots, and cucumbers produce parabens and other chemicals that mimic estrogen—to a much greater degree than the miniscule amounts of parabens used in skin care, hair care, and makeup.

Despite this fact, when was the last time you read a media report or received a forwarded e-mail about the breast cancer risk from cucumbers, beans or berries? In contrast, you've likely seen media reports or emails regarding parabens and their link to estrogenic activity. The truth is that on a global scale, there is an exhaustive degree of scientific and medical studies demonstrating the safety of parabens used in skin care and cosmetics. So the next time you read a story that vaguely indicates parabens are unsafe, think twice before you believe the hype and remember the facts—the tiny levels used in your personal care products are not harmful.