

Antiperspirants/Deodorants and Breast Cancer: Questions and Answers

Key Points

- There is no conclusive research linking the use of underarm antiperspirants or deodorants and the subsequent development of breast cancer (see Question 1).
- Research studies of underarm antiperspirants or deodorants and breast cancer have been completed and provide conflicting results (see Question 3).

1. Can antiperspirants or deodorants cause breast cancer?

Articles in the press and on the Internet have warned that underarm antiperspirants (a preparation that reduces underarm sweat) or deodorants (a preparation that destroys or masks unpleasant odors) cause breast cancer (1). The reports have suggested that these products contain harmful substances, which can be absorbed through the skin or enter the body through nicks caused by shaving. Some scientists have also proposed that certain ingredients in underarm antiperspirants or deodorants may be related to breast cancer because they are applied frequently to an area next to the breast (2, 3).

However, researchers at the National Cancer Institute (NCI), a part of the National Institutes of Health, are not aware of any conclusive evidence linking the use of underarm antiperspirants or deodorants and the subsequent development of breast cancer. The U.S. Food and Drug Administration (FDA), which regulates food, cosmetics, medicines, and medical devices, also does not have any evidence or research data that ingredients in underarm antiperspirants or deodorants cause cancer.

2. What do scientists know about the ingredients in antiperspirants and deodorants?

Aluminum-based compounds are used as the active ingredient in antiperspirants. These compounds form a temporary plug within the sweat duct that stops the flow of sweat to the skin's surface. Some research suggests that aluminum-based compounds, which are applied frequently and left on the skin near the breast, may be absorbed by the skin and cause estrogen-like (hormonal) effects (3). Because estrogen has the ability to promote the growth of breast cancer cells, some scientists have suggested that the aluminum-based compounds in antiperspirants may contribute to the development of breast cancer (3).

Some research has focused on parabens, which are preservatives used in some deodorants and antiperspirants that have been shown to mimic the activity of estrogen in the body's cells (4). Although parabens are used in many cosmetic, food, and pharmaceutical products, according to the FDA, most major brands of deodorants and antiperspirants in the United States do not currently contain parabens. Consumers can look at the ingredient label to determine if a deodorant or antiperspirant contains parabens. Parabens are usually easy to identify by name, such as methylparaben, propylparaben, butylparaben, or benzylparaben. The National Library of Medicine's Household Products Database also has information about the ingredients used in most major brands of deodorants and antiperspirants. This database is available at <http://householdproducts.nlm.nih.gov/index.htm> on the Internet.

The belief that parabens build up in breast tissue was supported by a 2004 study, which found parabens in 18 of 20 samples of tissue from human breast tumors (5). However, this study did not prove that parabens cause breast tumors (4). The authors of this study did not analyze healthy breast tissue or tissues from other areas of the body and did not demonstrate that parabens are found



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only in cancerous breast tissue (5). Furthermore, this research did not identify the source of the parabens and cannot establish that the buildup of parabens is due to the use of deodorants or antiperspirants.

More research is needed to specifically examine whether the use of deodorants or antiperspirants can cause the buildup of parabens and aluminum-based compounds in breast tissue. Additional research is also necessary to determine whether these chemicals can either alter the DNA in some cells or cause other breast cell changes that may lead to the development of breast cancer.

3. What have scientists learned about the relationship between antiperspirants or deodorants and breast cancer?

In 2002, the results of a study looking for a relationship between breast cancer and underarm antiperspirants/deodorants were reported (6). This study did not show any increased risk for breast cancer in women who reported using an underarm antiperspirant or deodorant. The results also showed no increased breast cancer risk for women who reported using a blade (nonelectric) razor and an underarm antiperspirant or deodorant, or for women who reported using an underarm antiperspirant or deodorant within 1 hour of shaving with a blade razor. These conclusions were based on interviews with 813 women with breast cancer and 793 women with no history of breast cancer.

Findings from a different study examining the frequency of underarm shaving and antiperspirant/deodorant use among 437 breast cancer survivors were released in 2003 (7). This study found that the age of breast cancer diagnosis was significantly earlier in women who used these products and shaved their underarms more frequently. Furthermore, women who began both of these underarm hygiene habits before 16 years of age were diagnosed with breast cancer at an earlier age than those who began these habits later. While these results suggest that underarm shaving with the use of antiperspirants/deodorants may be related to breast cancer, it does not demonstrate a conclusive link between these underarm hygiene habits and breast cancer.

In 2006, researchers examined antiperspirant use and other factors among 54 women with breast cancer and 50 women without breast cancer. The study found no association between antiperspirant use and the risk of breast cancer; however, family history and the use of oral contraceptives were associated with an increased risk of breast cancer (8).

Because studies of antiperspirants and deodorants and breast cancer have provided conflicting results, additional research is needed to investigate this relationship and other factors that may be involved.

4. Where can someone get more information on breast cancer risk?

People who are concerned about their breast cancer risk are encouraged to talk with their doctor. More information about breast cancer risk can be found on the NCI's Cancer Risk: Understanding the Puzzle Web site. This interactive Web site, which includes information about how to reduce breast cancer risk, can be accessed at <http://understandingrisk.cancer.gov> on the Internet.

U.S. residents may wish to contact the NCI's Cancer Information Service (CIS) (see below) with any remaining questions or concerns about breast cancer. Inquirers who live outside the United States may wish to contact the International Union Against Cancer (UICC) for information about a resource in their country. The UICC Web site is located at <http://www.uicc.org> on the Internet. Also, some countries have organizations that offer services similar to those of the U.S. CIS. A list of international cancer information services can be found at http://www.icisg.org/meet_memberslist.htm#full on the Internet.

Selected References

1. Jones J. Can rumors cause cancer? *Journal of the National Cancer Institute* 2000; 92(18):1469–1471.
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3. Darbre PD. Aluminium, antiperspirants and breast cancer. *Journal of Inorganic Biochemistry* 2005; 99(9):1912–1919.

4. Harvey PW, Everett DJ. Significance of the detection of esters of p-hydroxybenzoic acid (parabens) in human breast tumours. *Journal of Applied Toxicology* 2004; 24(1):1–4.
5. Darbre PD, Aljarrah A, Miller WR, et al. Concentrations of parabens in human breast tumours. *Journal of Applied Toxicology* 2004; 24(1):5–13.
6. Mirick DK, Davis S, Thomas DB. Antiperspirant use and the risk of breast cancer. *Journal of the National Cancer Institute* 2002; 94(20):1578–1580.
7. McGrath KG. An earlier age of breast cancer diagnosis related to more frequent use of antiperspirants/deodorants and underarm shaving. *European Journal of Cancer* 2003; 12(6):479–485.
8. Fakri S, Al-Azzawi A, Al-Tawil N. Antiperspirant use as a risk factor for breast cancer in Iraq. *Eastern Mediterranean Health Journal* 2006; 12(3-4):478–482.

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Related NCI materials and Web pages:

- National Cancer Institute Fact Sheet 2.10, *Evaluating Health Information on the Internet* (<http://www.cancer.gov/cancertopics/factsheet/Information/internet>)
- National Cancer Institute Fact Sheet 3.95, *Estimating Breast Cancer Risk* (<http://www.cancer.gov/cancertopics/factsheet/risk/estimating-breast-cancer-risk>)
- *PDQ® Prevention Summary for Patients on Breast Cancer* (<http://www.cancer.gov/cancertopics/pdq/prevention/breast/patient>)
- *What You Need To Know About™ Breast Cancer* (<http://www.cancer.gov/cancertopics/wyntk/breast>)

How can we help?

We offer comprehensive research-based information for patients and their families, health professionals, cancer researchers, advocates, and the public.

- **Call** NCI's Cancer Information Service at 1–800–4–CANCER (1–800–422–6237)
- **Visit** us at <http://www.cancer.gov> or <http://www.cancer.gov/espanol>
- **Chat** using LiveHelp, NCI's instant messaging service, at <http://www.cancer.gov/livehelp>
- **E-mail** us at cancergovstaff@mail.nih.gov
- **Order** publications at <http://www.cancer.gov/publications> or by calling 1–800–4–CANCER
- **Get help** with quitting smoking at 1–877–44U–QUIT (1–877–448–7848)

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