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Program on
Breast Cancer and Environmental Risk Factors

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Breast Cancer - The Estrogen Connection Cosmetics and More

Ingredients in a wide variety of cosmetics and personal care products can mimic the effects of the hormone estrogen. Scientists are concerned that even at low levels, these environmental estrogens may work together with the body's own estrogen to increase the risk of breast cancer.

Watch the video, see [What you can do](#), and [Learn More About Cosmetics](#).

Media

[Press Release Article](#)

"New! [Cosmetics and More Handout](#)



[Breast Cancer - The Estrogen Connection: Cosmetics and More](#)
Learn about ingredients in cosmetics that are estrogen mimics.
Duration: 03:11 [Playing Now.](#)



[Breast Cancer - The Estrogen Connection: Plastics](#)
Learn about estrogenic chemicals that can leach from plastics.
Duration: 03:08



[Breast Cancer - The Estrogen Connection: In the Dump and Down the Drain](#)
Learn about preventing estrogenic chemicals from getting into the environment.
Duration: 04:06

What you can do:

Read labels

Ingredients are listed in decreasing order by weight on all personal care products.

Learn the names of environmental estrogens

- [Parabens](#)
- [Placental Extracts](#)
- [Benzophenones and other UV screens](#)

Make Choices

Choose products that do not have environmental estrogens.

Use the [Cosmetic Safety Database](#)

To find ingredients in products you use

To find products which do not have environmental estrogens

Learn More about Cosmetics

By Suzanne M. Snedeker, PhD

Ingredients in a wide variety of cosmetics and personal care products can mimic the effects of the hormone estrogen. Scientists are concerned that even at low levels, these environmental estrogens may work together with the body's own estrogen to increase the risk of breast cancer. Learn more about the environmental estrogens used in cosmetics and personal care products, including their uses, exposure, evidence of estrogenicity, and the names of these estrogenic chemicals

Parabens

- [Uses](#)
- [Exposure](#)
- [Estrogenicity](#)
- [Names to look for](#)

Placental extracts

- [Uses and estrogenicity](#)
- [Names to look for](#)

Benzophenones and other UV Screens

- [Uses](#)
- [Exposure](#)
- [Estrogenicity](#)
- [Names and estrogenicity chart](#)
- [Additional notes](#)
- [Note on Photoprotection](#)

Parabens

Uses: Parabens are used at very low levels as preservatives (typically 0.01-0.3%) in a wide variety of personal care products, including hair care, skin care, and shaving products. Frequently, more than one paraben may be used in a single product. Currently, they are NOT used in major brands of deodorants or antiperspirants (FDA, Office of Cosmetics and Colors, March 20, 2006).

Exposure: There is little information on levels of parabens in people; more information is needed. Studies conducted by the Centers for Disease Control and Prevention (CDC) did find methylparaben, ethylparaben, propylparaben, and butylparaben in human urine samples, indicating exposure despite the very low levels in products (Ye et al., *Environmental Health Perspectives*, 114(2):1843-1846, 2006; Ye et al., *J. Exposure Science and Environmental Epidemiology*, 17(6):567-572, 2007). In whole body application studies in people, Danish researchers have found that butylparaben can be absorbed through the skin (Janjua et al., *Environmental Science and Technology*, 41(15):5564-5570).

Estrogenicity: The parabens listed below are weak environmental estrogens. They also can support the growth of estrogen-dependent breast cancer cells grown in tissue culture (Byford et al., *J. Steroid Biochemistry and Molecular Biology*, 80(1):49-60, 2002; Gomez et al., *J. of Toxicology and Environmental Health, Part A*, 68:239-251, 2005).

Names to look for:

- Butylparaben
- Isobutylparaben
- Ethylparaben
- Methylparaben
- Propylparaben

Placental Extracts

Uses and Estrogenicity: Placental extracts may be contaminated with estrogens called estradiol or estrone. Placental extracts are used in relatively few personal care products, including hair conditioners, facial moisturizers and astringents.

Names to look for:

- Placental Extract
- Placental Extracts

Benzophenones and other UV Screens

Uses: Benzophenones are photoprotectors that can filter out ultraviolet-A radiation (UV-A) from the sun. Photoprotectors are commonly called "UV filters" or "UV screens." When applied to the skin, they can filter out UV-A or UV-B radiation. Sunscreen products are used in conjunction with wearing protective clothing and avoiding sun exposure to reduce exposure to UV radiation (*see note on photoprotection at the end of the article). UV screens also are found in a wide variety of other types of cosmetics and personal care products, including shampoos and conditioners, body lotions, lipstick, eye makeup, and hand sanitizers (to name a few). Hence, there is concern about possible exposures to these environmental estrogens.

Exposure: Benzophenone-3 has been detected in the urine of Americans adults and young girls in studies conducted by the CDC (Ye et al., *Analytical and Bioanalytical Chemistry*, 383(4):638-644, 2005; Wolff et al., *Environmental Health Perspectives*, 115(1):116-121, 2007; Calafat et al., *Environmental Health Perspectives*, doi:10.1289/ehp.11269 [In press, online 21 March 2008 at www.ehponline.org/docs/2008/11269/abstract.html]). Hence, there is evidence of exposure in the U.S. population. Many commonly used UV-screens can be absorbed through the skin and get into the blood (see table below).

Estrogenicity:

- Over 35 studies have evaluated the estrogenicity of UV-screens.
- The majority of the commonly used UV-screens have tested positive as weak environmental estrogens (see table below).
- Some studies have not been able to demonstrate that benzophenone-3 is estrogenic. However, when benzophenone-3 is exposed to sunlight, it changes into a more estrogenic form of the chemical. Hence, there is concern that some forms of benzophenone-3 are estrogenic (Hayashi et al., *Toxicology Letters*, 167:1-7, 2006).
- No studies were located that have evaluated whether inorganic sunscreen ingredients (zinc oxide or titanium dioxide-based products) are estrogenic or not.
- Avobenzone, a UV-A screen (other common names: Parasol 1789; Eusolex 9020, butyl methoxy dibenzoylmethane), does NOT appear to be an environmental estrogen; this has been confirmed in two studies.

Photoprotection Chemicals (UV-Screens), UV- Filter Type & Evidence of Estrogenicity

Chemical Name	Filter	Other Common Names	Estrogenicity
Benzophenone-1	UV-A	same	+ weak
Benzophenone-2	UV-A	same	+ weak
Benzophenone-3	UV-A	Oxybenzone, Escalol 567, Eusolex 4360	+/- very weak **
Benzophenone-4	UV-A	Sulisobenzene, Escalol 577	+ weak
Homosalate	UV-B	Homomethyl salicylate, HMS	+ weak
Octyl methoxycinnamate	UV-B	EMC, OMC, Escalol 557, Eusolex 2292	+ weak**
4-Methylbenzylidene camphor	UV-B	4-MBC, Eusolex 6300	+ weak**

**After full-body application to the skin, these UV screens were absorbed and appeared in the blood in 1-2 hours later in test subjects (Janjua et al., *J. European Academy of Dermatology and Venereology*, 22:456-261, 2008).

Additional Notes:

- 4-MBC (last UV screen in the table) is not used in the United States, but is extensively used in Europe and Australia.
- For an excellent review of photoprotection issues, see Lautenschlager et al., *The Lancet*, 370(9567):528-537, 2007.

***NOTE on Photoprotection:** Research shows and the FDA has stated that protection from skin cancer cannot be achieved solely with the use of sunscreens. Skin cancer prevention strategies include wearing a hat and protective clothing, avoiding being in the sun, especially during peak hours, and the correct application of sunscreens. Sunscreens should never be used to prolong the time spent in the sun. The FDA states: "FDA doesn't have any data directly linking the use of sunscreens to a reduction in the risk of developing skin cancer. Research has shown that UV exposure increases skin cancer, premature skin aging (e.g., wrinkles), and other skin damage (e.g., sunburn). Although studies have shown that limiting time in the sun, wearing protective clothing, and using sunscreens decrease UV exposure, studies have not specifically linked the use of sunscreen by itself to reduced risk of skin cancer or skin aging. To the contrary, studies have shown that some consumers increase time in the sun when wearing sunscreens, thereby increasing UV exposure." (Source: <http://www.fda.gov/cder/drug/infopage/sunscreen/qa.htm>, cited 4/28/08)

More information is available on [breast cancer and the estrogen connection](#).

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