

The Connection Between Cosmetics and Breast Cancer

Chemical	Carcinogenic		Disrupt Hormones	Source of Exposure in Cosmetics
	Animal Mammary Gland Carcinogen ⁱ	Human Carcinogenic Risk Classification ⁱⁱ	Disrupts Endocrine System/ Estrogenic ⁱⁱⁱ	
Benzene	X	IARC Known; NTP Known		Nail polish and nail polish remover
Bisphenol A			X	Cosmetic containers/packaging
1,3-Butadiene	X	IARC Probable; NTP Known		Rubber sponges for applying cosmetics
1,4-Dioxane	X	IARC Possible; NTP Reasonably Anticipated		Petroleum-derived contaminant formed in manufacture of shampoos, body wash, children's bath products and other sudsing cosmetics
Ethylene Oxide	X	IARC Known; NTP Known		Fragrance
Musks, synthetic (xylene, ketone, ambrette, moskene, tibetene)			X	Fragrance
N-Nitrosamines like n-nitrosodi-n-butylamine		IARC Possible; NTP Reasonably Anticipated		Chemical reactions occur over time in the product to produce nitrosamines, usually found in creams, lotions, shampoos and conditioners.
Nonylphenol			X	Lotions and a wide range of other products
Parabens (butyl-, ethyl-, methyl-, propyl-)			X	Antifungal agent, preservative and antimicrobial used in creams, lotions, ointments and other cosmetics
Petrolatum (polycyclic aromatic hydrocarbons , PAHs, are common contaminants)	X	IARC Possible; NTP Reasonably Anticipated	X	PAHs are petrolatum contaminants; found in petroleum jelly, lipsticks, baby lotions and oils; found in 1 of every 14 personal care products.
Phthalates (di-n-butyl- (DBP), di (2-ethylhexyl)- (DEHP))			X	Nail polish, fragrance
Placental extract (progesterone main constituent)	X	NTP Reasonably Anticipated	X	Hair conditioners, shampoos and other grooming aids, particularly marketed to women of color
1,2-Propylene Oxide	X	IARC Possible; NTP Reasonably Anticipated		Fragrance
Titanium Dioxide (dioxin is a by-product of manufacturing and a contaminant)		IARC Known; NTP Known	X	Sunscreens and mineral make-up; use of titanium dioxide nanoparticles a possible threat to human health
Triclosan (dioxin is a by-product of manufacturing and a contaminant)		IARC Known; NTP Known	X	Antibacterial used in soaps, toothpaste, mouthwash and other personal care products
Urethane (ethyl carbamate)	X	IARC Possible; NTP Reasonably Anticipated		Hair care products (mousses, gels, sprays), sunscreens, nail polish, mascara, foundation

Note: 1,4-dioxane, PAHs, dioxin and n-nitrosamines will not appear on product labels because they are contaminants and formed in manufacturing or through chemical reactions in the product.

i. Silent Spring Institute's Science Review published in *Cancer* in 2007 includes information on 216 animal mammary gland carcinogens. www.sciencereview.silentspring.org.

ii. International Agency for Research on Cancer (IARC) carcinogenic risk classification is based on evaluation of potential tumor development at all sites, not only breast/mammary tissue. Categories include: Known, Probable, Possible and others. The National Toxicology Program (NTP), within the National Institute of Environmental Health Sciences of the National Institutes of Health, provides carcinogenicity ratings based on scientific evidence in both animals and humans. Categories include: Known, Reasonably Anticipated and others. (Report on Carcinogens, Eleventh Edition; U.S. Department of Health and Human Services, Public Health Service, National Toxicology Program.) Not all chemicals have been rated by IARC or NTP.

iii. To date, neither the NTP nor IARC have classified most endocrine disruptors as carcinogens in humans. List of endocrine disruptors from: Brody JG, Rudel RA (2003). Environmental pollutants and breast cancer. *Environmental Health Perspectives* 111: 1007-1019.