

# Oxybenzone can cause breast cancer to become more aggressive.

## Oxybenzone increases metastasis of cancer cells.

Darbre and Alamer (2017) Effects of exposure to six chemical ultraviolet filters commonly used in personal care products on motility of MCF-7 and MDA-MB-231 human breast cancer cells in vitro. *J Applied Toxicology*. DOI: 10.1002/jat.3525.

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Phiboonchaiyanan et al (2016) Benzophenone-3 increases metastasis potential in lung cancer cells via epithelial to mesenchymal transition. *Cell Biol Toxicol* DOI: 10.1007/s10565-016-9368-3.

In et al (2015) Benzophenone-1 and nonylphenol stimulated MCF-7 breast cancer growth by regulating cell cycle and metastasis-related genes via an estrogen receptor A-dependent pathway. *J. Toxicol. Environ. Health* 78:492-505 (Benzophenone-1 is metabolized from oxybenzone in the liver).

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Harvey & Darbre (2004) Endocrine disruptors and human health: could estrogenic chemicals in body care cosmetics adversely affect breast cancer incidence in women? *J Applied Toxicology* 24:167-176.

Nakagawa et al (2000) Metabolism and toxicity of benzophenone in isolated rat hepatocytes and estrogenic activity of its metabolites in MCF-7 cells. *Toxicology* 156:27-36.

# Oxybenzone pollutes breast milk

## Poisoning your infant?



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Marie et al (2016) Changes in cosmetics use during pregnancy and risk perception by women. Intl. J Environ Res Public Health. 13:383-399.

Rodrigues-Gomes et al (2015) Determination of benzophenone-UV filters in human milk samples using ultrasound-assisted extraction and clean-up with dispersive sorbents followed by UHPLC-MS/MS analysis. Talanta 134:657-664.

Hines et al (2015) Concentrations of environmental phenols and parabens in milk, urine, and serum of lactating North Carolina women. Reprod Toxicol 54:120-128.

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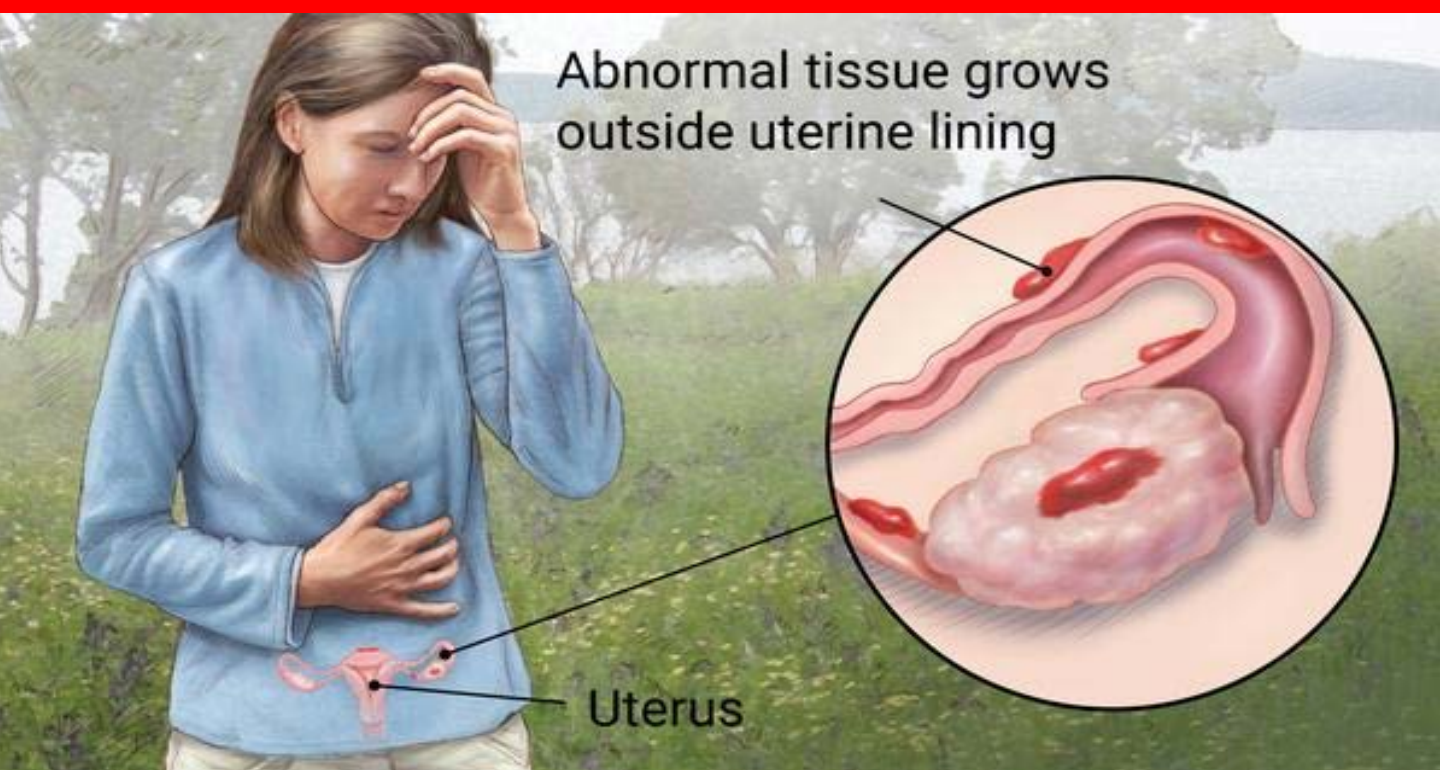
Schlumpf et al (2010) Exposure patterns of UV filters, fragrances, parabens, phthalates, orhanoclor pesticides, PBDEs, and PCBs in human milk: **correlation of UV filters with use of cosmetics**. Chemosphere 81:1171-1183

Schlumpf et al (2008) Endocrine active UV filters: developmental toxicity and exposure through breast milk. Chimia 62:345-351.

Hany & Nagel (1995) Detection of sunscreen agents in human breast milk. Dtsch Lebensm Rundsch 91:341-345.

# Oxybenzone & Octinoxate and Women's Uterine Diseases

## Correlated with Endometriosis



Wang et al (2016) Recent Advances on endocrine disrupting effects of UV filters. *Int J Environ Res Public Health* doi: 10.3390/ijerph13080782.

Chow & Mahalingaiah (2016) Cosmetics use and age at menopause: is there a connection? *Fertility and Sterility* 106:976-990.

Pollack et al (2015) Bisphenol A, benzophenone-type ultraviolet filters, and phthalates in relation to uterine leiomyoma. *Environ Res*. DOI: 10.1016/j.envres.2014.06.028.

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Somigliana et al (2010) 'Here comes the sun': pigmentary traits and sun habits in women with endometriosis. *Human Reproduction* 25:728-733.

Suzuki et al (2005) Estrogenic and anti-androgenic activities of 17 benzophenone derivatives used as UV stabilizers and sunscreens. *Toxicol Appl Pharmacol* 203:9-17.

Silva et al (2002) Something from "nothing" – eight weak estrogenic chemicals at concentrations below NOECs produce significant mixture effects. *Environ Sci Technol* 36:1751-1756.

# UV chemicals threaten male sexual health

## Correlated with reduced sperm viability

Scinicariello & Buser (2016) Serum testosterone concentrations and urinary Bisphenol A, Benzophenone-3, triclosan and paraben levels in male and female children and adolescents: NHANES 2011-2012. *Environ Health Perspect* 124:1898-1904.

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Buck Louis et al (2014) Urinary concentrations of benzophenone-type ultraviolet radiation filters and couples' fecundity. *Am J Epidemiol* 180:1168-1175.

Kortenkamp et al (2014) Mind the gap: can we explain declining male reproductive health with known anti-androgens? *Reproduction* 147:515-527.

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# Oxybenzone causes Hirschsprung Deformity In newborns!

## UV chemicals from sunscreens are Endocrine Disruptors!



Ghazipura et al (2017) Exposure to benzophenone-3 (oxybenzone) and reproductive toxicity: a systematic review of human and animal studies. *Reprod Toxicol* 73:175-183.

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Bae et al (2016) Couples' urinary concentrations of benzophenone-type ultraviolet filters and the secondary sex ratio. *Sci Total Environ* 543:28-36.

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Wnuk et al (2017) Apoptosis Induced by the UV Filter Benzophenone-3 in Mouse Neuronal Cells Is Mediated via Attenuation of  $E\alpha/P\text{pary}$  and Stimulation of  $E\beta/G\text{pr}30$  Signaling. *Molecular Neurobiology*.  
<https://doi.org/10.1007/s12035-017-0480-z>

Wnuk et al (2017) Benzophenone-3 impairs autophagy, alters epigenetic status, and disrupts retinoid X receptor signaling in apoptotic neuronal cells. *Molecular Neurobiology*.  
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# UV Chemicals can be mutagenic and potentially carcinogenic!

## Octinoxate & Oxybenzone can damage your DNA!



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Necasova et al (2017) New Probabilistic Risk Assessment of Ethylhexyl Methoxycinnamate: Comparing the Genotoxic Effects of Trans- and Cis-EHMC. *Environ Toxicol.* 32:569-580..

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