

References: Table of cosmetics and personal care product ingredients BCUK recommends avoiding

1. Triclosan & Triclocarban

- (1) Dann, A. B. and Hontela A. (2011). Triclosan: environmental exposure, toxicity and mechanisms of action. *Journal of Applied Toxicology*. 31(4): 285-311. <https://www.ncbi.nlm.nih.gov/pubmed/21462230>
- (2) Ahn, K. et al. (2008). In Vitro Biologic Activities of the Antimicrobials Triclocarban, Its Analogs, and Triclosan in Bioassay Screens: Receptor-Based Bioassay Screens. *Environmental Health Perspectives* 116(9): 1203-1210. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2535623/>
- (3) Christen, V. et al. (2010). Some flame retardants and the antimicrobials triclosan and triclocarban enhance the androgenic activity in vitro. *Chemosphere*. 81(10):1245-52. <https://www.ncbi.nlm.nih.gov/pubmed/20943248>
- (4) UN list of endocrine disruptors. https://wedocs.unep.org/bitstream/handle/20.500.11822/25634/edc_report2.pdf?sequence=1&isAllowed=n [Accessed October 22, 2018]
- (5) Lee, H.- R. et. al. (2014). Progression of Breast Cancer Cells Was Enhanced by Endocrine-Disrupting Chemicals, Triclosan and Octylphenol, via an Estrogen Receptor-Dependent Signaling Pathway in Cellular and Mouse Xenograft Models. *Chemical Research in Toxicology* 27(5): 834-842. <https://www.ncbi.nlm.nih.gov/pubmed/24684733>
- (6) Giuliano, C. A. and Rybak, M. J. (2015). Efficacy of triclosan as an antimicrobial hand soap and its potential impact on antimicrobial resistance: a focused review. *Pharmacotherapy*. 35(3): 328-336. <https://www.ncbi.nlm.nih.gov/pubmed/25809180>
- (7) Johnson, P. I. et al. (2016). Application of the Navigation Guide systematic review methodology to the evidence for developmental and reproductive toxicity of triclosan. *Environment International* 92-93:716-28. [https://www.ncbi.nlm.nih.gov/pubmed/?term=Johnson%2C+P.+I.+\(2016\)+triclosan](https://www.ncbi.nlm.nih.gov/pubmed/?term=Johnson%2C+P.+I.+(2016)+triclosan)
- (8) Nowak, K. et al. (2019) Immunomodulatory effects of synthetic endocrine disrupting chemicals on the development and functions of human immune cells. *Environment International* 125: 350-364. <https://www.sciencedirect.com/science/article/pii/S0160412018319615>

2. Methylisothiazolinone (MIT) & Methylchloroisothiazolinone (CMIT)

- (1) Kassotis, C.D. et al. (2015). Endocrine-Disrupting Activity of Hydraulic Fracturing Chemicals and Adverse Health Outcomes After Prenatal Exposure in Male Mice. *Endocrinology*. 156(12):4458-73. <https://academic.oup.com/endo/article-lookup/doi/10.1210/en.2015-1375>
- (2) Urwin, R. et al. (2015). Methylchloroisothiazolinone and methylisothiazolinone contact allergy: an occupational perspective. *Contact Dermatitis* 72(6): 381-386. <https://www.ncbi.nlm.nih.gov/pubmed/25810132>
- (3) Scientific Committee Of Consumer Safety and Giménez-Arnau A. M. (2016). Opinion of the Scientific Committee on Consumer safety (SCCS) - Opinion on the safety of the use of Methylisothiazolinone (MI) (P94), in cosmetic products (sensitisation only). *Regulatory Toxicology and Pharmacology* 76: 211-212. <https://www.ncbi.nlm.nih.gov/pubmed/?term=scientific+opinion+methylisothiazolinone>
- (4) Delos Santos, N. et al. (2016). Effects of the biocide methylisothiazolinone on *Xenopus laevis* wound healing and tail regeneration. *Aquatic Toxicology* 181:37-45. <https://www.ncbi.nlm.nih.gov/pubmed/27810491>

3. Formaldehyde and formaldehyde-releasing preservatives

- (1) Patel, K. G. et al. (2003). Alteration in thyroid after formaldehyde (HCHO) treatment in rats. *Industrial Health* 41(3): 295-297. <https://www.ncbi.nlm.nih.gov/pubmed/12916763>
- (2) Coyle, Y. M. et al. (2005). An ecological study of the association of environmental chemicals on breast cancer incidence in Texas. *Breast Cancer Research and Treatment* 92(2):107-114. <https://www.ncbi.nlm.nih.gov/pubmed/15986119>
- (3) Soffritti, M. et al. (2002). Results of long-term experimental studies on the carcinogenicity of formaldehyde and acetaldehyde in rats. *Annals of the New York Academy of Science* 982:87-105. <https://www.ncbi.nlm.nih.gov/pubmed/12562630>

- (4) International Agency for Research on Cancer (2012). WHO International Agency for Research on Cancer: IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Volume 100F. Formaldehyde. <http://monographs.iarc.fr/ENG/Monographs/vol100F/mono100F-29.pdf> [Accessed January 23, 2018].
- (5) National Research Council of the National Academies (2014). Review of the Formaldehyde Assessment in the National Toxicology Program 12th Report on Carcinogens. The National Academies Press, Washington. <https://www.nap.edu/catalog/18948/review-of-the-formaldehyde-assessment-in-the-national-toxicology-program-12th-report-on-carcinogens> [Accessed January 16, 2019]
- (6) Flyvholm, M.A. and Menne, T. (1992). Allergic contact dermatitis from formaldehyde. A case study focusing on sources of formaldehyde exposure. Contact Dermatitis 27(1):27-36. <https://www.ncbi.nlm.nih.gov/pubmed/1424588>
- (7) Jacob, S. E. and Steele, T. (2007). Avoid Formaldehyde Allergic Reactions in Children. Pediatric Annals 36(1):55-56. <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.566.3154&rep=rep1&type=pdf>
- (8) Scientific Committee on Consumer Safety (SCCS) OPINION ON Quaternium-15 (cis-isomer), Colipa no. P63 (2011). http://ec.europa.eu/health/scientific_committees/consumer_safety/docs/sccs_o_077.pdf [Accessed 26 February, 2019]

4. Parabens (ethyl/butyl/methyl paraben)

- (1) Darbre, P. D. and Harvey, P. W., (2008). Paraben esters: review of recent studies of endocrine toxicity, absorption, esterase and human exposure, and discussion of potential human health risks. Journal of Applied Toxicology. Volume 28, pp. 561-578. <https://www.ncbi.nlm.nih.gov/pubmed/18484575>
- (2) Pugazhendhi, D. et al. (2005) Oestrogenic activity of p-hydroxybenzoic acid (common metabolite of paraben esters) and methylparaben in human breast cancer cell lines. Journal of Applied Toxicology 25(4):301-319. <https://www.ncbi.nlm.nih.gov/pubmed/16021681>
- (3) Prusakiewicz, J. J. et al. (2007). Parabens inhibit human skin estrogen sulfotransferase activity: possible link to paraben estrogenic effects. Toxicology. 232(3):248-56. <https://www.ncbi.nlm.nih.gov/pubmed/17306434>
- (4) UN list of endocrine disruptors. https://wedocs.unep.org/bitstream/handle/20.500.11822/25634/edc_report2.pdf?sequence=1&isAllowed=n [Accessed October 22, 2018]
- (5) Darbre, P. D. et al. (2014) Parabens can enable hallmarks and characteristics of cancer in human breast epithelial cells: a review of the literature with reference to new exposure data and regulatory status. Journal of Applied Toxicology 34: 925-938. <https://www.ncbi.nlm.nih.gov/pubmed/25047802>
- (6) Pan, S. et al. (2016) Parabens and human epidermal growth factor receptor ligand cross-talk in breast cancer cells. Environmental Health Perspectives 124: 5 563-569. <https://www.ncbi.nlm.nih.gov/pubmed/26502914>
- (7) Lillo, M. A. et al. (2016) Methylparaben stimulates tumor initiating cells in ER+ breast cancer models. Journal of Applied Toxicology 37: 417-425. <https://www.ncbi.nlm.nih.gov/pubmed/27581495>
- (8) Candidate List update: Four new hazardous chemicals to be phased out. <https://echa.europa.eu/-/candidate-list-update-four-new-hazardous-chemicals-to-be-phased-out> [Accessed July 20, 2020]

5. Butylated hydroxytoluene (BHT) and butylated hydroxyanisole (BHA)

- (1) Pop, A. et al. (2016). Individual and combined in vitro (anti)androgenic effects of certain food additives and cosmetic preservatives. Toxicology in vitro 32: 269-277. <http://www.sciencedirect.com/science/article/pii/S0887233316300121>
- (2) Hughes, P. J. et al. (2000). Estrogenic alkylphenols induce cell death by inhibiting testis endoplasmic reticulum Ca²⁺ pumps. Biochemical Biophysical Research Communications 277(3): 568-574. <http://www.sciencedirect.com/science/article/pii/S0006291X00937100>
- (3) Yang, X. et al. (2018). Synthetic Phenolic Antioxidants Cause Perturbation in Steroidogenesis in Vitro and in Vivo. Environmental Science and Technology 52: 850-858. <https://www.ncbi.nlm.nih.gov/pubmed/29236469>
- (4) Pop, A. et al. (2018). Estrogenic and anti-estrogenic activity of butylparaben, butylated hydroxyanisole, butylated hydroxytoluene and propyl gallate and their binary mixtures on two estrogen responsive cell lines (T47D-Kbluc, MCF-7). Journal of Applied Toxicology 38(7): 944-957. <https://www.ncbi.nlm.nih.gov/pubmed/?term=breast+cancer+Butylated+hydroxyanisole>
- (5) UN list of endocrine disruptors. https://wedocs.unep.org/bitstream/handle/20.500.11822/25634/edc_report2.pdf?sequence=1&isAllowed=n [Accessed October 22, 2018]
- (6) Yamaki, K. et al (2007). Enhancement of allergic responses in vivo and in vitro by butylated hydroxytoluene. Toxicology and Applied Pharmacology 223(2): 164-72. <https://www.ncbi.nlm.nih.gov/pubmed/17604070>

- (7) Pop, A. et al. (2013). Evaluation of the possible endocrine disruptive effect of butylated hydroxyanisole, butylated hydroxytoluene and propyl gallate in immature female rats. *Farmacia* 61 (1): 202-211. <http://www.revistafarmacia.ro/201301/art-18-2013-1-pop-202-211.pdf>
- (8) Lanigan, R. S. and Yamarik, T. A. (2002). Final Report on the Safety Assessment of BHT. *International Journal of Toxicology* 21 (2): 19-94. <https://www.ncbi.nlm.nih.gov/pubmed/12396675> [Accessed February 28, 2019]
- (9) Shearn, C. T. et al. (2011). Protein damage from electrophiles and oxidants in lungs of mice chronically exposed to the tumor promoter butylated hydroxytoluene. *Chemico-Biological Interactions* 192(3): 278-286. <http://www.ncbi.nlm.nih.gov/pubmed/21536018>
- (10) Jeong, S. H. et al. (2005). Effects of butylated hydroxyanisole on the development and functions of reproductive system in rats. *Toxicology* 208(1):49-62. <https://www.ncbi.nlm.nih.gov/pubmed/15664432>
- (11) Anes (2016). Justification Document for the Selection of a CoRAP Substance: 2,6-di-tert-butyl-p-cresol. <https://echa.europa.eu/documents/10162/7ddd8e5-d66c-4fad-b502-86cfd2298bc> [Accessed March 5, 2019]
- (12) Anes (2015). Justification Document for the Selection of a CoRAP Substance <https://echa.europa.eu/documents/10162/790923db-fdee-478c-ba20-7d2fa8e60962> [Accessed March 5, 2019]

6. Lillial

- (1) Coster, S.D., and Larebeke, N.V., (2012). Endocrine-Disrupting Chemicals: Associated Disorders and Mechanisms of Action. *Journal of Environmental and Public Health* Volume 2012 Article ID 713696, 52 pages. <https://www.hindawi.com/journals/jep/2012/713696/>
- (2) Charles.A.K. and Dabre. P.D., (2009). Oestrogenic activity of benzyl salicylate, benzyl benzoate and butylphenylmethylpropional (Lillial) in MCF7 human breast cancer cells in vitro. *Journal of applied toxicology*. 29(5):422-34. <https://www.ncbi.nlm.nih.gov/pubmed/19338011>
- (3) SCCS opinion on the safety of Butylphenyl methylpropional (p- BMHCA) in cosmetics products. cosmetic products. https://ec.europa.eu/health/sites/health/files/scientific_committees/consumer_safety/docs/sccs_o_213.pdf [Accessed February 28, 2019]
- (4) EU community rolling action plan 2-(4-tert-butylbenzyl)propionaldehyde. <https://echa.europa.eu/information-on-chemicals/evaluation/community-rolling-action-plan/corap-table/-/dislist/details/Ob0236e1807e3518> [Accessed October 25, 2018]

7. Benzyl salicylate

- (1) Charles, A. K. and Dabre, P.D. (2009). Oestrogenic activity of benzyl salicylate, benzyl benzoate and butylphenylmethylpropional (Lillial) in MCF7 human breast cancer cells in vitro. *Journal of applied toxicology*. 29(5):422-34. <https://www.ncbi.nlm.nih.gov/pubmed/19338011>
- (2) Zhang. Z. et al. (2012). The estrogenic potential of salicylate esters and their possible risks in foods and cosmetics. *Toxicology Letters* 209(2): 146-53. <https://www.ncbi.nlm.nih.gov/pubmed/22197706>
- (3) Fernández-Canga, P. et al. (2017). Contact allergy to benzyl salicylate. *Contact Dermatitis* 76(5): 315-316. <https://www.ncbi.nlm.nih.gov/pubmed/28386976>
- (4) Justification for selection of a CoRAP substance: benzyl salicylate. https://echa.europa.eu/documents/10162/13628/corap_justification_204-262-9_de_6976_en.pdf/1a20cdb7-4e37-0d5a-8d75-cf4e0f855be9 [Accessed October 24, 2018]

8. Synthetic musks (tonalide, galaxolide, musk xylene, musk ketone)

- (1) Gomez, E. et al. (2005). Estrogenic activity of cosmetic components in reporter cell lines: parabens, UV screens, and musks. *Journal of toxicology and environmental health*. 68(4):239-51. <https://www.ncbi.nlm.nih.gov/pubmed/15799449>
- (2) Bitsch, N. et al. (2002), Estrogenic activity of musk fragrances detected by the E-screen assay using human mcf-7 cells. *Archives of environmental contamination and toxicology*. 43(3):257-64. <https://www.ncbi.nlm.nih.gov/pubmed/12202919>
- (3) Ayuk-Takem, L. et al. (2014). Inhibition of Polyisoprenylated Methylated Protein Methyl Esterase by Synthetic Musks Induces Cell Degeneration. *Environmental Toxicology* 29(4):466-77. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3654042/>
- (4) Carlsson, G. et al. (2000). The impact of musk ketone on reproduction in zebrafish (*Danio rerio*). *Marine Environmental Research* 50(1-5):237-241. <https://www.ncbi.nlm.nih.gov/pubmed/114460697>

9. Methyl salicylate

- (1) Zhang, Z et al. (2012). The estrogenic potential of salicylate esters and their possible risks in foods and cosmetics. *Toxicological Letters* 209(2): 146-153. <https://www.ncbi.nlm.nih.gov/pubmed/22197706>

- (2) Danish centre on endocrine disruptors (2018). List of Endocrine Disrupting Chemicals: Final report Appendix 1 http://cend.dk/files/DK_ED-list-final_appendix1_2018.pdf [Accessed February 28, 2019]
- (3) EU Community rolling action plan (France). Justification for the selection of a candidate CoRAP substance: methyl salicylate <https://echa.europa.eu/documents/10162/1e4f8a34-0c9b-4e7e-9d81-45d8b46b7583> [Accessed February 27, 2019]
- (4) ECHA decision on substance evaluation: methyl salicylate. Helsinki, 19 December, 2018. <https://echa.europa.eu/documents/10162/33c6a077-5847-6fad-30c6-51399b7aeb72> [Accessed February 27, 2019]

10. Benzyl Benzoate

- (1) Charles, A. K. and Darbre, P. D. (2009). Oestrogenic activity of benzyl salicylate, benzyl benzoate and butylphenylmethylpropional (Lilial) in MCF7 human breast cancer cells in vitro. *Journal of Applied Toxicology* 29(5): 422-34. <https://www.ncbi.nlm.nih.gov/pubmed/19338011>
- (2) Toxnet Toxicology Data Network Benzyl Benzoate. <http://toxnet.nlm.nih.gov/cgi-bin/sis/search/a?dbs+hsdb:@term+@DOCNO+208> [Accessed February 28, 2019]
- (3) Koçkaya, E. A. and Kılıç, A. (2014). Developmental toxicity of benzyl benzoate in rats after maternal exposure throughout pregnancy. *Environmental Toxicology* 29(1): 40-53. <https://www.ncbi.nlm.nih.gov/pubmed/21922633>

11. Diethyl phthalate

- (1) Zhou, C. (2017). Exposure to an Environmentally Relevant Phthalate Mixture Causes Transgenerational Effects on Female Reproduction in Mice. *Endocrinology*. 158(6):1739-1754. <https://www.ncbi.nlm.nih.gov/pubmed/28368545>
- (2) UN list of endocrine disruptors. https://wedocs.unep.org/bitstream/handle/20.500.11822/25634/edc_report2.pdf?sequence=1&isAllowed=n [Accessed October 22, 2018]
- (3) Janet, M. G. et al. (2017). State of the evidence 2017: an update on the connection between breast cancer and the environment. *Environmental Health* 16: 94. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5581466/>
- (4) López-Carrillo, L. et al. (2010). Exposure to phthalates and breast cancer risk in northern Mexico. *Environmental Health Perspectives* 118: 539-544. <http://www.ncbi.nlm.nih.gov/pubmed/20368132>
- (5) Hsieh, T.-H. et al. (2012). Phthalates induce proliferation and invasiveness of estrogen receptor-negative breast cancer through the AhR/HDAC6/c-Myc signaling pathway. *FASEB Journal* 26(2): 778-787. <https://www.ncbi.nlm.nih.gov/pubmed/22049059>
- (6) Thomsen, A. M. L. et al. (2017). Female exposure to phthalates and time to pregnancy: a first pregnancy planner study. *Human Reproduction* 32(1): 232-238. <https://academic.oup.com/humrep/article/32/1/232/2527533>
- (7) Kim, S. M. et al., (2015). Diethyl phthalate exposure is associated with embryonic toxicity, fatty liver changes, and hypolipidemia via impairment of lipoprotein functions. *Toxicology In Vitro*. 30(1 Pt B):383-93. <https://www.ncbi.nlm.nih.gov/pubmed/26423653>
- (8) ECHA Substance Information <https://echa.europa.eu/substance-information/-/substanceinfo/100.001.409> [Accessed October 20, 2018].

12. Cyclosiloxanes Decamethylcyclopentasiloxane (D5); Octamethylcyclotetrasiloxane (D4); Cyclomethicone [mixture of cyclosiloxanes, which may include dodecamethylcyclohexasiloxane (D6)]

- (1) McKim J. M. Jr. et al. (2001). Potential estrogenic and antiestrogenic activity of the cyclic siloxane octamethylcyclotetrasiloxane (D4) and the linear siloxane hexamethyldisiloxane (HMDS) in immature rats using the uterotrophic assay. *Toxicological Science* 63(1): 37-46. <https://academic.oup.com/toxsci/article/63/1/37/1703135>
- (2) Quinn et al. (2007). Effects of octamethylcyclotetrasiloxane (D4) on the luteinizing hormone (LH) surge and levels of various reproductive hormones in female Sprague–Dawley rats. *Reproductive Toxicology* 23(4): 532-540. <https://www.sciencedirect.com/science/article/pii/S0890623807000342>
- (3) Klaunig, J. E. et al (2016). Biological relevance of decamethylcyclopentasiloxane (D5) induced rat uterine endometrial adenocarcinoma tumorigenesis: Mode of action and relevance to humans. *Regulatory Toxicology and Pharmacology* 74: S44-S56. https://ac.els-cdn.com/S027323001530009X/1-s2.0-S027323001530009X-main.pdf?tid=d56935a1-797d-43da-a5ef-e53ef7d4221e&acdnat=1551109486_0980a3f3b07cecc2f753b70b89803eb

- (4) Farasani, A. and Darbre, P. D. (2017). Exposure to cyclic volatile methylsiloxanes (cVMS) causes anchorage-independent growth and reduction of BRCA1 in non-transformed human breast epithelial cells. *Journal of Applied Toxicology* 37(4): 454-461. <https://www.ncbi.nlm.nih.gov/pubmed/27601420>
- (5) Jean, J. A. and Plotzke, K. P. (2017). Chronic toxicity and oncogenicity of octamethylcyclotetrasiloxane (D4) in the Fischer 344 rat. *Toxicology Letters* 279: 75-97. <https://www.sciencedirect.com/science/article/pii/S037842741730228X?via%3Dihub>
- (6) Young L. J. and Morfeld, P. (2016). Statistical considerations for a chronic bioassay study: Exposure to Decamethylcyclopentasiloxane (D5) and incidence of uterine endometrial adenocarcinomas in a 2-year inhalation study with Fischer rats. *Regulatory Toxicology and Pharmacology* 74: S44-S56. <https://www.ncbi.nlm.nih.gov/pubmed/26772617>

13. Methylbenzylidene camphor

- (1) Jimenez-Diaz, I. et al (2013). Simultaneous determination of the UV-filters benzyl salicylate, phenyl salicylate, octyl salicylate, homosalate, 3-(4-methylbenzylidene) camphor and 3-benzylidene camphor in human placental tissue by LC-MS/MS. Assessment of their in vitro endocrine activity. *Journal of Chromatography B* 936: 80-87. <https://www.ncbi.nlm.nih.gov/pubmed/24004914>
- (2) UN list of endocrine disruptors. https://wedocs.unep.org/bitstream/handle/20.500.11822/25634/edc_report2.pdf?sequence=1&isAllowed=n [Accessed February 18, 2019].
- (3) Durrer, S. et al. (2005). Estrogen Target Gene Regulation and Coactivator Expression in Rat Uterus after Developmental Exposure to the Ultraviolet Filter 4-Methylbenzylidene Camphor. *Endocrinology* 146(5): 2130-2139. <https://academic.oup.com/endo/article/146/5/2130/2499806>
- (4) Durrer, S. et al. (2007). Estrogen Sensitivity of Target Genes and Expression of Nuclear Receptor Co-Regulators in Rat Prostate after Pre- and Postnatal Exposure to the Ultraviolet Filter 4-Methylbenzylidene Camphor. *Environmental Health Perspectives* 115(1): 42-50. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2174398/>
- (5) Opinion on the safety of 4-Methylbenzylidene Camphor (4-MBC) https://ec.europa.eu/health/ph_risk/committees/04_sccp/docs/sccp_o_141.pdf
- (6) Quintaneiro, C. et al. (2019). Toxicity effects of the organic UV-filter 4-Methylbenzylidene camphor in zebrafish embryos. *Chemosphere* 2018: 273-281. <https://www.ncbi.nlm.nih.gov/pubmed/30472611>

14. Padimate O

- (1) Krause et al. (2012). Sunscreens: are they beneficial for health? An overview of endocrine disrupting properties of UV-filters. *International Journal of Andrology* 35(3): 426-436. <https://www.ncbi.nlm.nih.gov/pubmed/22612478>
- (2) Schlumpf, M. et al. (2001). In Vitro and in Vivo Estrogenicity of UV Screens. *Environmental Health Perspectives*. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1240241/pdf/ehp0109-000239.pdf>
- (3) Pont, A. R. et al. (2004). Active ingredients in sunscreens act as topical penetration enhancers for the herbicide 2,4-dichlorophenoxyacetic acid. *Toxicology and Applied Pharmacology* 95(3): 348-354. <https://www.ncbi.nlm.nih.gov/pubmed/15020197>

15. Benzophenones (BP) BP-3, BP-4, BP-5

- (1) Wang, J., et al. (2016). Recent Advances on Endocrine Disrupting Effects of UV Filters. *International Journal of Environmental Research and Public Health* 13(8): 782. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4997468/>
- (2) UN list of endocrine disruptors. https://wedocs.unep.org/bitstream/handle/20.500.11822/25634/edc_report2.pdf?sequence=1&isAllowed=n [Accessed October 22, 2018]
- (3) Kerdivel, G. et al. (2013). Estrogenic Potency of Benzophenone UV Filters in Breast Cancer Cells: Proliferative and Transcriptional Activity Substantiated by Docking Analysis. *PLoS One* 8(4): e60567. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3617139/>
- (4) LaPlante, C. D. et al. (2018). Oxybenzone Alters Mammary Gland Morphology in Mice Exposed During Pregnancy and Lactation. *Journal of the Endocrine Society* 2(8): 903-921. <https://www.ncbi.nlm.nih.gov/pubmed/30057971>
- (5) Alamer, M. and Darbre, P. D. (2018). 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. *Journal of Applied Toxicology* 38(2): 148-159. <http://centaur.reading.ac.uk/73144>

16. Homosalate

- (1) Schreurs, R. et al. (2002). Estrogenic activity of UV filters determined by an in vitro reporter gene assay and an in vivo transgenic zebrafish assay. *Archives of toxicology*. 76(5-6): 257-61. <https://www.ncbi.nlm.nih.gov/pubmed/12107642>
- (2) Rehfeld et al. (2016). Chemical UV Filters Mimic the Effect of Progesterone on Ca²⁺ Signaling in Human Sperm Cells. *Endocrinology* 157: 4297–4308. <https://academic.oup.com/endo/article/157/11/4297/2758398>
- (3) Alamer, M. and Darbre, P. D. (2018). 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. *Journal of Applied Toxicology* 38: 148-159. <http://centaur.reading.ac.uk/73144>
- (4) Schlumpf, M. et al. (2010). Exposure patterns of UV filters, fragrances, parabens, phthalates, organochlor pesticides, PBDEs, and PCBs in human milk: correlation of UV filters with use cosmetics. *Chemosphere* 81: 1171-1183. <https://www.ncbi.nlm.nih.gov/pubmed/21030064>
- (5) Pont, A. R. et al. (2004). Active ingredients in sunscreens act as topical penetration enhancers for the herbicide 2,4-dichlorophenoxyacetic acid. *Toxicology Applied Pharmacology* 195: 348-354. <http://www.ncbi.nlm.nih.gov/pubmed/15020197>

17. Octinoxate

- (1) Schlumpf et al. (2001) In Vitro and in Vivo Estrogenicity of UV Screens. *Environmental Health Perspectives* 109:3 239-244. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1240241/pdf/ehp0109-000239.pdf>
- (2) Axelstad M, et al. (2011). Effects of pre- and postnatal exposure to the UV-filter Octyl Methoxycinnamate (OMC) on the reproductive, auditory and neurological development of rat offspring. *Toxicology and applied pharmacology* 250(3): 278-290. <https://www.ncbi.nlm.nih.gov/pubmed/21059369>
- (3) Krause M, et al. (2012). Sunscreens: are they beneficial for health? An overview of endocrine disrupting properties of UV-filters. *International Journal of Andrology*, 35(3): 424-436. <https://www.ncbi.nlm.nih.gov/pubmed/22612478>
- (4) Lorigo, M. et al. (2018). Photoprotection of ultraviolet-B filters: Updated review of endocrine disrupting properties. *Steroids* 131: 46-58. <https://www.sciencedirect.com/science/article/pii/S0039128X1830014X?via%3Dihub>
- (5) Alamer, M. and Darbre, P.D. (2018). 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. *Journal of Applied Toxicology* 38(2): 148-159. <https://www.ncbi.nlm.nih.gov/pubmed/28990245>

18. Ethylhexyl salicylate

- (1) Kunz, P. Y. and Fent, K. (2006). Multiple hormonal activities of UV filters and comparison of in vivo and in vitro estrogenic activity of ethyl-4-aminobenzoate in fish. *Aquatic toxicology* 79: 305-324. <https://www.ncbi.nlm.nih.gov/pubmed/16911836>
- (2) Kunz, P. Y. et al. (2006). Comparison of In Vitro and In Vivo Estrogenic Activity of UV Filters in Fish. *Toxicological Sciences* 90(2): 349–361. <https://academic.oup.com/toxsci/article/90/2/349/1658390>
- (3) Rehfeld et al. (2016). Chemical UV Filters Mimic the Effect of Progesterone on Ca²⁺ Signaling in Human Sperm Cells. *Endocrinology* 157: 4297–4308. <https://academic.oup.com/endo/article/157/11/4297/2758398>
- (4) Mortz, C. G. et al. (2010). Allergic contact dermatitis from ethylhexyl salicylate and other salicylates. *Dermatitis* 21(2): 7-10. <https://www.ncbi.nlm.nih.gov/pubmed/20233542>

19. p-phenylenediamine

- (1) Bharali, M. K. and Dutta, K. (2012). Testicular toxicity of para-phenylenediamine after subchronic topical application in rat. *International journal of environmental health research*, 22(3): 270-278. <https://doi.org/10.1080/09603123.2011.634388>.
- (2) Heikkinen, S. et al. (2015). Does Hair Dye Use Increase the Risk of Breast Cancer? A Population-Based Case-Control Study of Finnish Women. *PLOS One* 10(8):e0135190. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4532449/>
- (3) IARC (2010). IARC Monographs on the Evaluation of Carcinogenic Risks to Humans volume 99 Some Aromatic Amines, Organic Dyes, and Related Exposures. <https://monographs.iarc.fr/wp-content/uploads/2018/06/mono99.pdf> [Accessed February 28, 2019]
- (4) Zanoni, T. B. et al. (2015). The oxidation of p-phenylenediamine, an ingredient used for permanent hair dyeing purposes, leads to the formation of hydroxyl radicals: Oxidative stress and DNA damage in human immortalized keratinocytes. *Toxicology Letters* 239: 194-204. <https://www.ncbi.nlm.nih.gov/pubmed/26456176>

20. Aluminium in antiperspirants

- (1) Darbre, P. D. (2006). Metalloestrogens: an emerging class of inorganic xenoestrogens with potential to add to the oestrogenic burden of the human breast. *Journal of Applied Toxicology* 26(3): 191-197. <http://www.ncbi.nlm.nih.gov/pubmed/16489580>
- (2) Gonzalez-Suarez, I. et al. (2005). Aluminium posttranscriptional regulation of parathyroid hormone synthesis: a role for the calcium-sensing receptor. *Kidney International* 68(6): 2484-2496. <https://www.sciencedirect.com/science/article/pii/S0085253815511575>
- (3) Darbre, P. D. et al. (2013). Aluminium and breast cancer: Sources of exposure, tissue measurements and mechanisms of toxicological actions on breast biology. *Journal of Inorganic Biochemistry* 128: 257-261. <https://www.ncbi.nlm.nih.gov/pubmed/23899626>
- (4) Linhart, et al. (2017) Use of Underarm Cosmetic Products in Relation to Risk of Breast Cancer: A Case-Control Study. *EBioMedicine* 21: 79-85. <https://www.ncbi.nlm.nih.gov/pubmed/28629908>
- (5) Mandriota, S. J. et al. (2016). Aluminium chloride promotes tumorigenesis and metastasis in normal murine mammary gland epithelial cells. *International Journal of Cancer* 139 (12): 2781–2790. <http://onlinelibrary.wiley.com/doi/10.1002/ijc.30393/full>
- (6) EC (2014). Opinion on the safety of aluminium in cosmetic products. SCCS/1525/14 Revision of 18 June 2014. http://ec.europa.eu/health/scientific_committees/consumer_safety/docs/sccs_o_153.pdf [Accessed February 28, 2019]
- (7) EC (2020). Scientific opinion on consumer safety: Opinion on the safety of Aluminium in cosmetics products. Submission II. 3-4 March, 2020 https://ec.europa.eu/health/sites/health/files/scientific_committees/consumer_safety/docs/sccs_o_235.pdf [Accessed July 13, 2020]