

To: Chair Lyons and Senate Committee on Health and Welfare

Contact:

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### S.25 Toxics in Cosmetics

CHCC refers to Vermont's list of Chemicals of High Concern to Children

EWG Score is the 1-10 toxicity score determined by the Environmental Working Group.

Table 1. Proposed chemicals to prohibit from personal care products.

| <b>Chemical</b>                   | <b>VT action?</b>                                   | <b>EU or CAN ban?</b> | <b>Other states ban?</b>                            | <b>Retailer ban?</b>   |
|-----------------------------------|---|-----------------------|---|--|
| <a href="#">Ortho-phthalates:</a> | All ortho-phthalates banned in food packaging; CHCC |                       | Proposed ban in WA for <b>all ortho-phthalates.</b> | CVS Health (brand), Target, Rite Aid, Sephora, Walmart, Walgreens (brand), Whole Foods. Applies to all ortho-phthalates. |
| DEHP (117-81-7)                   | CHCC  | EU, CAN               | Ban in CA and MD.                                   |  |
| BBP (85-68-7)                     | CHCC  | EU                    |   |  |
| DBP (84-74-2)                     | CHCC  | EU                    | Ban in CA and MD.                                   |  |

|                                     |  |                                 |                                    |  |
|-------------------------------------|--|---------------------------------|------------------------------------|--|
| DIDP (26761-40-0)                   | CHCC   | EU, CAN                         |                                    |  |
| DnHP (84-75-3)                      | CHCC   |                                 |                                    |  |
| DINP (28553-12-0)                   | CHCC   |                                 |                                    |  |
| DNOP (117-84-0)                     | CHCC   |                                 |                                    |  |
| DEP (84-66-2)                       | CHCC   |                                 |                                    |  |
| DIBP (84-69-5)                      | CHCC (added 2019)  |                                 |                                    |  |
| DPNP (131-18-0)                     | CHCC (added 2019)  |                                 |                                    |  |
| DCHP (84-61-7)                      | CHCC (added 2019)  |                                 |                                    |  |
| <a href="#">PFAS</a>                | Banned in food packaging, ski wax, rugs and carpets, firefighting foam | Ban of class proposed in Europe | Ban in CA, proposed ban in WA.     | Walgreens, Wholefoods, Sephora   |
| <a href="#">Formaldehyde</a>        | CHCC   | EU, CAN (restricted)            | Ban in CA and MD.                  | CVS Health (brand), Target, Rite Aid, Sephora, Walmart, Walgreens (brand), Whole Foods |
| Formaldehyde releasing agents (FRA) |  | CAN                             | Quaternium-15 (CAS no. 51229-78-8) | CVS Health (brand), Target, Walgreens (brand) - some, Whole Foods - some, Sephora      |

|  |                                       |         |   |  |
|--|---------------------------------------|---------|---|--|
|  |                                       |         | banned in CA and MD.<br><br>Proposed ban of all FRAs in WA. |  |
| <a href="#">Arsenic and Arsenic releasing agents</a> | CHCC list                             | EU, CAN |   |  |
| Methylene glycol                                     |                                       | EU      | Ban in CA and MD. Proposed in WA.                           | CVS Health (brand), Target, Whole Foods  |
| <a href="#">Mercury and mercury compounds</a>        | CHCC list                             | EU, CAN | Ban in CA and MD. Proposed in WA.                           | Whole foods  |
| <a href="#">Styrene</a>                              | CHCC list, banned from food packaging | EU      |   | Whole Foods, CVS Health (brand)  |
| <a href="#">1,4 dioxane</a>                          | CHCC list                             | CAN     | Restricted contaminant in NY                                | CVS Health (brand), Target, Walgreens (brand)  |
| Cadmium and cadmium compounds                        | CHCC list                             |         |   |  |
| Octamethylcyclotetrasiloxane                         | CHCC list                             | EU      |   | Target   |
| <a href="#">Toluene</a>                              | CHCC list                             |         |   | Target, Rite Aid, Sephora, Walmart, Walgreens (brand)                                  |
| <a href="#">Parabens:</a>                            |                                       |         |   | CVS Health (brand), Target, Rite Aid, Sephora, Walmart, Walgreens (brand), Whole Foods |

|   |           |                      |  |   |
|---|-----------|----------------------|--|---|
| Isobutylparaben                             |           | EU                   | Ban in CA and MD.                            |   |
| Isopropylparaben                            |           | EU                   | Ban in CA and MD.                            |   |
| Phenylparaben                               |           | EU                   |  |   |
| Propylparaben                               | CHCC list |                      |  |   |
| Butylparaben                                | CHCC list |                      |  |   |
| Pentylparaben                               |           | EU                   |  |   |
| Benzylparaben                               |           | EU                   |  |   |
| <a href="#">Lead and lead compounds</a>     | CHCC      |                      | WA proposed                                  |   |
| <a href="#">Asbestos</a>                    |           | EU, CAN (restricted) |  |   |
| <a href="#">Ethyl acrylate</a>              |           | EU                   |  |   |
| <a href="#">Methyl methacrylate</a>         |           | CAN                  |  |   |
| <a href="#">Triclosan</a>                   |           | CAN (restricted)     | WA proposed. FDA ban in anti-microbial soaps | CVS Health (brand), Target, Rite Aid, Walmart, Walgreens, Whole Foods |
| <a href="#">Methylisothiazolinone</a>       |           | EU, CAN              |  | CVS Health (brand), Sephora, Whole Foods                              |
| <a href="#">Methylchloroisothiazolinone</a> |           | EU, CAN              |  | CVS Health (brand), Sephora, Whole Foods                              |

|  |  |                      |                   |             |
|--|--|----------------------|-------------------|-------------|
| <a href="#">m-phenylenediamine and its salts</a> |  | EU, CAN              | Ban in CA and MD. | Whole foods |
| o-phenylenediamine and its salts                 |  | EU                   | Ban in CA and MD. | Whole foods |
| <a href="#">p-phenylenediamine and its salts</a> |  | EU, CAN (restricted) |                   | Target      |

**Appendix 1:** Health Risks associated with the chemicals proposed.

- Phthalates (see Table 1 for the 11 chemicals in this class)
  - The European commission has determined that there is sufficient evidence that DBP and DEHP leads to endocrine disruption in living organisms. The European Chemicals Agency classifies DEHP and DBP as reproductive toxicants. The National Toxicology Program and U.S. Environmental Protection Agency report that DEHP is reasonably to be anticipated to be a human carcinogen based on sufficient evidence of carcinogenicity of animal studies. Two decades of research suggest that phthalates disrupt hormones, which can lead to harm during critical periods of development.
- PFAS
  - Potential contamination with perfluorooctanoic acid (PFOA) is associated with cancer; mammary cancer; reproductive toxicity, endocrine disruption and environmental bioaccumulation and persistence. PFOA has been found in body fluid samples from 99.7 percent of the U.S. adults. The International Agency for Research on Cancer has designated PFOA as a possible carcinogen. FOA exerts effects on the endocrine system, disrupting estrogen receptors, thyroid receptors, steroid hormones, and male testosterone levels. Both PFOA and PFOS have been associated with changes to the immune response, including inflammation.
  - According to the European Chemicals Agency, ([ECHA](#)), there is evidence to suggest that exposure to PFASs can lead to adverse health effects in humans. In particular there are indications that the long-chain substances PFOS and PFOA can cause reproductive and developmental, liver and kidney, and immunological effects in laboratory animals.
- Formaldehyde
  - Formaldehyde is a known carcinogen. A 2014 study found that formaldehyde initiates and promotes tumor formation. Formaldehyde in cosmetics is widely understood to cause allergic skin reactions and rashes in some

people. A 2009 review of the literature on occupational exposures and formaldehyde shows a link between formaldehyde and leukemia.

- When formaldehyde is present in personal care products, people can be exposed by inhaling the formaldehyde that is off-gassed from the product, by ingesting it or by absorbing it through the skin.
- Formaldehyde releasing agents AKA FRAs (EWG Score: 5-9)
  - Though FRAs don't directly cause cancer, the formaldehyde released from FRAs has been linked to cancer.
  - Most irritation from FRPs is in response to formaldehyde being released; however some of the FRPs can trigger a reaction on their own. Quaternium-15 is the most sensitizing of the FRPs. A retrospective study by the North American Contact Dermatitis Group (NACDG) revealed an increase in the incidence of allergic reactions to Quaternium-15 over time.
- Arsenic
  - Some color additives may be contaminated by heavy metals, such as D&C Red 6, which can be contaminated by arsenic, lead and mercury.
  - Aluminum-based compounds vary in their toxicity, but some are linked to neurotoxicity, developmental and reproductive toxicity, and cancer.
- Mercury and mercury compounds
  - Mercury is linked to nervous system toxicity, as well as reproductive, immune and respiratory toxicity, and is a recognized environmental health concern by numerous national and international government bodies. Mercury is particularly hazardous during fetal development and is readily absorbed by the skin. A 2013 study suggested mercury may also disrupt thyroid hormones.
- Styrene (EWG Score: 10)
  - Styrene is a reasonably anticipated human carcinogen by the International Agency for Research on Cancer and by the National Toxicology Program. The European Commission on Endocrine Disruption classifies styrene as a Category 1 endocrine disruptor, meaning evidence for endocrine disruption has been documented in humans and wildlife.
  - Styrene is a reasonably anticipated human carcinogen by the International Agency for Research on Cancer and by the National Toxicology Program. Styrene is also listed on the California Proposition 65 list of known carcinogens to cause cancer.
- 1,4 dioxane

- Research shows that 1,4-dioxane readily penetrates the skin. It is considered a probable human carcinogen by the U.S. Environmental Protection Agency.
  - It is included on California's Proposition 65 list of chemicals known or suspected to cause cancer or birth defects.
- Toluene (EWG Score: 10)
  - Dysfunction of the central nervous system following acute, intermediate or high inhalation exposure to toluene is a critical health concern. Toluene is listed as a possible human developmental toxicant by the California Environmental Protection Agency Proposition 65. The EU classifies toluene as a skin irritant (only for products for use on skin). Exposure to toluene in humans can result in respiratory tract irritation. Additionally, in human epidemiological studies and in animal studies, this chemical has been associated with toxicity to the immune system and also possibly with blood cancers such as malignant lymphoma.
- Parabens
  - Parabens are potential endocrine disruptors due to their ability to mimic estrogen. In cell studies, parabens have been found to weakly bind to estrogen receptors. At sufficient concentrations, parabens can increase cell proliferation in human breast cancer MCF-7 cells, which are often used as a sensitive measure of estrogenic activity.
  - Applying personal care products containing parabens—especially methylparaben—can lead to UV-induced damage of skin cells and disruption of cell growth rate. Parabens combined with other estrogenic chemicals may potentially influence the development of malignant melanoma, one form of skin cancer, through their estrogenic and genotoxic activities.
  - Some parabens appear to reduce sperm production and lead to reduced testosterone levels.
- Lead and lead compounds
  - Lead is a well-known and proven neurotoxin that has been linked to learning, language and behavioral problems.
- Asbestos
  - Talc may contain the known carcinogen asbestos. Case studies of infants inhaling talc-containing baby powder showed severe respiratory distress. Talc use is linked to endometrial and ovarian cancer.
- Ethyl Acrylate (EWG Score: 9)
  - Probable human carcinogen, EPA.
- Methyl Methacrylate (EWG Score: 8)
  - Methyl methacrylate inhalation is associated with lung disease.
- Triclosan (EWG Score: 7)

- There is evidence that triclosan is an endocrine disruptor and impacts thyroid function and thyroid homeostasis. There are concerns for the fetus during vulnerable periods of development, and make the bioaccumulative and endocrine-disruptive potential of triclosan even more alarming.
- Methylisothiazolinone (EWG Score: 7)
  - Methylisothiazolinone (MIT) and Methylchloroisothiazolinone (CMIT) are two of the most predominant contact allergens found in cosmetic products. In vitro cell studies on Methylisothiazolinone (MIT) showed signs of neurotoxicity when cerebral cortex cells were exposed to liquid MIT. Rats exposed to highly concentrated MIT (over 50%) showed a range of symptoms, including significant body weight gain and death. Autopsies revealed that death was due to reddened lungs and swollen intestines (organ system toxicity).
- Methylchloroisothiazolinone (EWG Score: 5)
  - See above.
- m-phenylenediamine and its salts (EWG Score: 8)
  - Strong evidence of skin toxicant or allergen. One or more animal studies show classified as toxic effects at moderate doses by the EPA.
- p-phenylenediamine and its salts (EWG Score: 10)
  - Evidence confirms p-phenylenediamine is a strong potential skin sensitizer. Aromatic amines found in hair dyes, such as p-phenylenediamine, have long been suspected of being carcinogenic. For example, they are linked to increased incidence of bladder cancers. When P-phenylenediamine reacts with hydrogen peroxide, as it does in the preparation of hair dyes, it can form a mutagenic, or DNA-altering, substance called Bandrowski's base. Bandrowski's base has been shown to be strongly mutagenic and possibly carcinogenic. When ingested, p-phenylenediamine is highly toxic. Often referred to as hair dye poisoning, p-phenylenediamine can cause respiratory distress and renal failure.