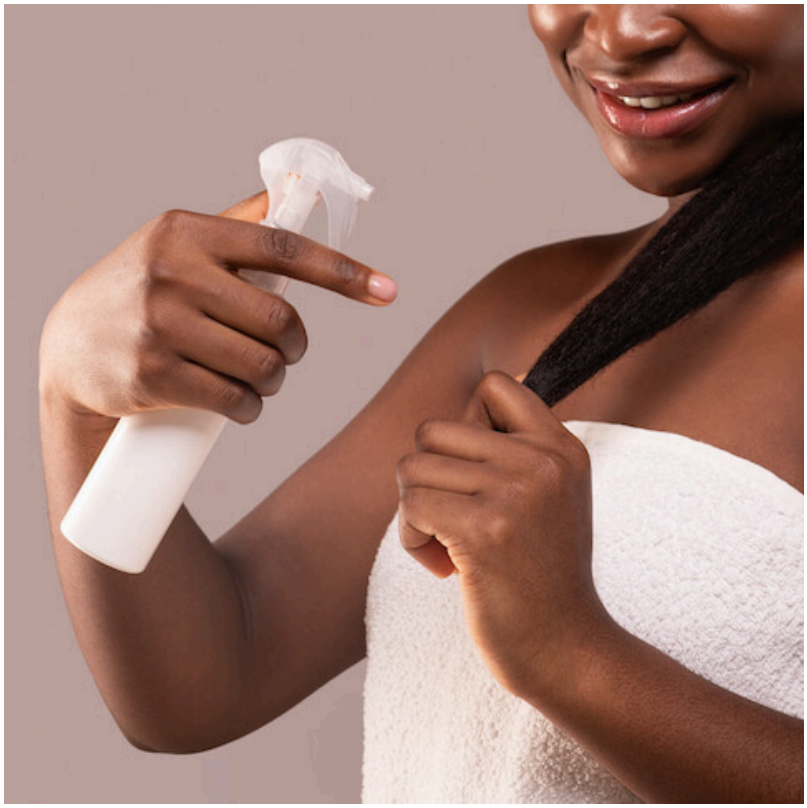
Ethoxylated Ingredients

Ethoxylation is the process of reacting ethylene oxide with other chemicals to make them less harsh. Ethoxylation can create small amounts of 1,4-dioxane and leave residual ethylene oxide in the product.



WHAT ARE ETHOXYLATED INGREDIENTS?

Ethoxylated ingredients on their own are of low concern, however, the process of ethoxylation, may leave behind trace amounts of carcinogens.

1,4-dioxane is a clear liquid that easily dissolves in water. It is used primarily as a solvent in the manufacture of chemicals and as a laboratory reagent.[1] Ethylene oxide is a man-made chemical that is used primarily to make ethylene glycol and sometimes used in hospitals to sterilize medical equipment and supplies.[2]

Found In

- Shampoo
- Liquid soap
- Bubble bath
- Hair relaxers

What to look for on the label

- PPG
- PEG
- Polysorbate
- Ingredients that end in –eth such as laureth, steareth, ceteareth.

Health Concerns

This manufacturing process can result in two toxic contaminants linked to breast cancer and other cancers: ethylene oxide and 1,4-dioxane.

In our 2016 report focusing on kids' makeup products we found 28% of products listed ethoxylated ingredients on their labels.[3] Ethoxylated ingredients are generally of low concern on their own. However, they can be contaminated with ethylene oxide, a known carcinogen,[4] and 1,4- dioxane, reasonably anticipated to be a human carcinogen by the NTP.[5]

Ethoxylated ingredients are listed on labels, but without testing them, there is no way to know if a product contains residual ethylene oxide or 1,4 dioxane.

Cancer: Research shows that 1,4-dioxane readily penetrates the skin.[6] 1,4-dioxane is listed as possibly carcinogenic to humans by the International Agency for Research on Cancer (IARC).[7] It is included on California's Proposition 65 list of chemicals known or suspected to cause cancer or birth defects.[8]

Ethylene oxide is classified as a known human carcinogen by IARC[9] and listed on California's Proposition 65 list of chemicals known or suspected to cause cancer.[10] Lymphoma and leukemia are the cancers most frequently to be associated with occupational exposure to ethylene oxide.[11] Data also link ethylene oxide to breast cancer.[12][13][14][15]

Reproductive toxicity: Ethylene oxide is listed on Prop 65 list as a developmental toxicant and a male and female reproductive toxicant.[16] Other reviews have found ethylene oxide to be a reproductive toxin in male and female rats resulting in decreased fertility, increased fetal deaths, and heritable chromosomal translocations.[17] A study found that inhalation of ethylene oxide at low concentrations affected the development of sperm in rats.[18]

Other: Short-term exposure to 1,4-dioxane may result in nausea, drowsiness, headache, and irritation of the eyes, nose and throat.[19][20][21] Long-term exposure may result in dermatitis, eczema, drying and cracking of skin and liver and kidney damage.[22][23]

Vulnerable Populations

Babies & Children (https://www.safecosmetics.org/population/babies-children/)

Regulations

1,4-dioxane and ethylene oxide are prohibited for use in cosmetics products in Canada.[24] The European Union has also prohibited use of ethylene oxide in cosmetic products.[25]

The FDA does not require 1,4-dioxane or ethylene oxide to be listed on ingredient labels because both are contaminants of manufacturing.[26]

How to Avoid?

Since labels do not indicate the presence of these contaminants, check labels for the presence of chemicals with PPG, PEG, and polysorbate in their name and ingredients that end in –eth such as laureth, steareth, ceteareth. Some companies have policies to

strip the contaminants, so if your favorite product has one of these, check the company website or call them to see if they have a policy.

Explore other Chemicals

Nanomaterials (https://www.safecosmetics.org/chemicals/nanomaterials/)

Butylated Compounds (https://www.safecosmetics.org/chemicals/butylated-compounds/)

Benzophenone & Related Compounds (https://www.safecosmetics.org/chemicals/benzophenone/)

Parabens (https://www.safecosmetics.org/chemicals/parabens/)

Formaldehyde And Formaldehyde-Releasing Preservatives (https://www.safecosmetics.org/chemicals/formaldehyde/)

Triclosan (https://www.safecosmetics.org/chemicals/triclosan/)

View All Chemicals of Concern > (/chemicals/)

Looking for a Safer Alternative?

Use Clearya's app to find non-toxic products! Clearya alerts you to toxics and helps you find safe products.

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Your Action Helps

Together, we can make beauty safer for all.

Take Action Today!

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