Polyacrylamide

Polyacrylamide is used as a stabilizer and binder in lotions and other products. Though it is not a concern in itself, it is made up of repeating molecules of acrylamide, which is a strongly suspected carcinogen and has been linked to mammary tumors.

The European Union (EU) sets limits for the amount of acrylamide allowed in products containing polyacrylamide, but the United States does not currently regulate it.

What is Polyacrylamide?

Polyacrylamide is used in cosmetics to stabilize products and bind ingredients. It also has foaming, anti-static and lubricating properties.

Polyacrylamide contains small amounts of unreacted acrylamide.[3] In water-based solutions, some of the remaining acrylamide can be stripped out but removing acrylamide from solid forms is more difficult. In both cases, some acrylamide is likely to remain.[4] Because it's properties as a thickener and lubricant are desirable for cosmetics, use doubled between 1989 and 2002,[5] and appears to have increased dramatically since.[6]

Polyacrylamide is also used in water, sewage and waste treatment, oil recovery, ore processing paper making, and to make permanent-press fabrics, to synthesize dyes, contact lenses, and in the construction of dams, tunnels and sewers (Habermann 2002).[7] Polyacrylamide is also present in cigarette smoke.

Found In

- Facial moisturizers
- Anti-aging products
- Color cosmetics
- Lotions
- Hair products
- Sunscreens
- More

What to look for on the label

- Polyacrylamide
- Acrylamide
- Polyacrylate
- Polyquaternium
- Acrylate

Health Concerns

Polyacrylamide is made up of repeating molecules of acrylamide, which is a suspected carcinogen. Trace amounts of acrylamide remain in polyacrylamide. Acrylamide is found in lotions, powders, and creams.[8][9][10] Daily exposure to acrylamide through cosmetics may exceed the amount that would result from smoking a pack of cigarettes a day (.95 vs .67micrograms/kg of body weight per day).[11] In addition, acrylamide concentrations in many cosmetic products exceed those found in most, but not all, foods.[12] Research suggests acrylamide is absorbed by the skin fairly quickly, particularly when applied in mixtures of oil and water, which are very common in personal care products containing acrylamide.[13] Reference doses for acrylamide exposure are set at a range of .83-1.7 µg/kg of body weight per day, depending on the health outcome studied.[14] This level of exposure could be attained by heavy use of cosmetics containing acrylamide, or by combined exposures from food and cosmetic sources.

Cancer: The National Toxicology program designates acrylamide as reasonably anticipated to be a human carcinogen. It has been linked to cancers of the thyroid, testis, mammary gland, uterus, pituitary gland and oral cavity in animal studies. Human studies have found associations between acrylamide exposure and pancreatic cancer among men exposed in the workplace. Some studies of dietary exposure to acrylamide have found associations with sex-receptor-positive breast cancers, although other studies have not found a relationship. Three studies have explored acrylamide exposure and risk of ovarian and endometrial cancers, and two of these found an association. The research on acrylamide exposure and kidney, head and neck cancers has been inconclusive.[15]

Reproductive and Developmental toxicity: The National Toxicology Program considers acrylamide a neurotoxicant, due to effects of prenatal exposure on behavior. They also noted that acrylamide reduced fetal weight at doses in the low parts per million range.[16] In male rats and mice, acrylamide has been linked to negative impacts on sperm, including ejaculation and motility and on genetic mutations.[17]

Vulnerable Populations

Babies & Children (https://www.safecosmetics.org/population/babies-children/), Men (https://www.safecosmetics.org/population/men/), Pregnant Women (https://www.safecosmetics.org/population/pregnant-women/), Teenagers (https://www.safecosmetics.org/population/teenagers/), Women of Color (https://www.safecosmetics.org/population/women-of-color/), Workers (https://www.safecosmetics.org/population/workers/)

Regulations

The use of acrylamide is banned in cosmetics in the EU,[1] and the EU also sets limits for the amount of residual acrylamide allowed in products containing polyacrylamide.[2]

How to Avoid?

Avoid products with polyacrylamide, acrylamide, polyacrylate, polyquaternium or acrylate on the label.

Explore other Chemicals

Hydroquinone (https://www.safecosmetics.org/chemicals/hydroquinone/)

Nail Polish Removers (https://www.safecosmetics.org/chemicals/nail-polish-removers/)

Talc (https://www.safecosmetics.org/chemicals/talc/)

Resorcinol (https://www.safecosmetics.org/chemicals/resorcinol/)

Phenoxyethanol (https://www.safecosmetics.org/chemicals/phenoxyethanol/)

1,4-DIOXANE (https://www.safecosmetics.org/chemicals/14-dioxane/)

View All Chemicals of Concern > (/chemicals/)

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Your Action Helps

Together, we can make beauty safer for all.

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