PABA

PABA and PABA derivatives are commonly used in sunscreens as ultraviolet B (UVB) filters. PABA use has declined over the years, but its derivatives are still around today. PABA may alter thyroid activity[1],[2],[3] and PABA derivatives may have additional endocrine disrupting properties.[4],[5],[6]

WHAT IS PABA?

PABA was introduced in the 1970s as a UVB filter. More recently, its use has declined due to allergic dermatitis, photosensitivity and a tendency to stain clothing. Some research links PABA with thyroid-disrupting activity, raising concerns about long-term health effects. Currently, PABA derivatives are used in place of PABA, but these derivatives may also cause health problems.[7]

The most commonly used PABA derivative is Padimate O (OD-PABA). It is less likely to cause hypersensitivity reactions or stain clothing, but is still able to filter UVB radiation efficiently.[8] Padimate O may also disrupt endocrine activity.[9]

Found In

- Sunscreens

What to look for on the label

- PABA
- OD-PABA
- Padimate O
- 4-aminobenzoic acid
- Para-aminobenzoic acid
- P-aminobenzoic acid
- Et-PABA
- 2-ethylhexyl ester
- P-carboxyaniline

Health Concerns

Endocrine Disruption: Studies performed on rats and on thyroid tissue samples suggest that PABA may disrupt thyroid activity.[10][11][12]In a study conducted on thyroid tissue samples, researchers found that PABA inhibited thyroxine,[13] the primary hormone secreted by the thyroid gland that regulates metabolism. Decreased levels of thyroxine may lead to hypothyroidism which includes symptoms such as fatigue, weight gain, and muscle weakness.[14]

The PABA derivative Padimate O appears to be weakly anti-estrogenic (meaning it suppresses estrogen pathways).[15] Another PABA derivative, Et-PABA, disrupts estrogenic and androgenic activity.[16]

Sensitization: UV radiation is more likely to damage DNA in the presence of PABA, and DNA damage to the skin increases the risk of skin cancer.[17],[18],[19] These studies raise serious concerns about the potential for PABA to sensitize skin to radiation although human studies are needed to confirm these findings. In the absence of such studies, precaution may be warranted.

Bioaccumulation: Padimate O dissolves in fats (it is lipophilic) which is a common feature of chemicals that bioaccumulate in the environment and the food chain. Not surprisingly, Padimate O appears to accumulate in fish.[21]

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

Banned or found unsafe in both Canada and the European Union.[22] The US FDA regulates PABA use at a maximum of 15% concentration, while Padimate O is regulated at a maximum of 8% concentration.[23]

How to Avoid?

Read labels and avoid sunscreen products that contain PABA, Padimate O and other PABA derivatives.

Explore other Chemicals

Titanium Dioxide (https://www.safecosmetics.org/chemicals/titanium-dioxide/)

Fragrance (https://www.safecosmetics.org/chemicals/fragrance/)

Quaternium-15 (https://www.safecosmetics.org/chemicals/quaternium-15/)

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

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

Ethanolamine Compounds (MEA, DEA, TEA And Others) (https://www.safecosmetics.org/chemicals/ethanolamine-compounds/)

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