

Sodium Lauryl Sulfate

Toxicity - A serious problem with these chemicals is that they may be contaminated with NDELA (N-nitrosodiethanolamine), one of the nitrosamines and potent carcinogen, according to a 1978 FDA report. Shampooing the hair with a product contaminated with this substance can lead to its absorption into the body at levels much higher than eating nitrite-contaminated foods. Avoid these chemicals. See NITROSAMINES.

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NITROSATING AGENTS - Sodium lauryl (or Laureth) sulfate with any of the following chemicals causes NITROSATING agents.

2-bromo-2-nitropropane-1,3dial.
Cocoyl sarcosine
Diethanolamine (DEA)
Diethanolamine (DEA) plus any chemical
Imidazolidinyl urea
Formaldehyde
Hydrolyzed animal protein
Lauryl sarcosine
Monethanolamine (MEA)
Monethanolamine (MEA) plus any chemical
Quaternium-7, 15, 31, 60, etc.
Sodium methyl cocoyl taurate
Triethanolamine (TEA)
Triethanolamine (TEA) plus any chemical

Hair and Hair Products

A recently published article reports that shampoos based on alkyl sulfate surfactants should be used with caution around the eyes if corneal lesions are present [Surfactant effect on the rate of rabbit corneal epithelial healing, J. Toxicol., *Cutaneous Ocul. Toxicol* 8 (3), 25 1-267 (1989)].

The effects of 0.004% and 0.02% benzalkonium chloride (BAK), 1.3% sodium lauryl sulfate (SLS), 0.001% thimersol, 0.005% chlorhexidine digluconate, and 0.00005% polyaminopropylbiguanide were tested on the rate of corneal epithelial regrowth after mechanical lesions. BAK and SLS were also tested for effect on regrowth after hepanol- generated lesions were inflicted in rabbit corneas. Of the agents tested, only SLS reduced the rate of corneal healing and caused damage to the epithelial cells with disruption and expansion of the extracellular space.

Sodium Lauryl Sulphate (or Sodium Laureth Sulphate) is an ingredient employed in most shampoos for three reasons:

- 1- It's cheap
- 2- It makes the mixture foam well
- 3- Adding salt thickens it appreciably

Sodium Lauryl Sulphate has several side effects. It has been documented to cause:

- 1- Improper eye development in children. Affects protein structures and keeps childrens eyes from developing properly.
- 2- Cataracts
- 3- Nitrate absorption (as much as eating one pound of bacon with each shampoo) nitrates are known carcinogenic agents.
- 4- Penetration into systemic tissues (brain, heart, liver)
- 5- Proven skin irritant

Cited by the Wall Street Journal (11-1-88).

The thickening agent, NaCL (sodium chloride) (plain old table salt) is harmful to hair causing drying, itching and some hair loss.

(d) *Extraction of non-lipid material from the stratum corneum*
In 1952 Blank showed that the plasticity of stratum corneum was due to the presence of water, without which it would become dry and brittle. The work of Spier and Pascher (1957) identified a number of water-soluble and strongly hygroscopic substances in the stratum corneum (free amino acids, lactic, urocanic and pyrrolidone carboxylic acids, urea, ammonia and sugars) that were shown to be responsible for the binding of water in the stratum corneum (blank and Shappirio, 1955; Spier and Schwartz, 1962). Jacobi (1959) collectively described these components as the "natural moisturizer factor". Middleton (1968) proposed that the mechanism of water binding involved these hygroscopic substances that were held within the stratum corneum cells by semi-permeable lipoprotein membranes, and that treatment of the skin with lipid solvents dissolved the lipids of the semi-permeable membranes, thus allowing the hygroscopic substances to escape, with resultant loss of water-binding ability. Indeed, detergents such as sodium lauroyl isethionate, which removed less lipids from the corneum, also had markedly less effect upon water binding capacity than sodium lauryl sulphate.

Smeerik and Polano (1965) and Smeenk (1969) showed that when human forearm skin was washed with various synthetic detergent solutions in a "washing simulator" (Vermeer et al., 1963), free amino acids, soluble and insoluble proteins (i.e. horny cells) were all present in the wash liquors, in greater amounts than with just water washes.