

The following information is provided to show the reader that the cosmetic industry has known of the damage caused to the skin for some time now. The question that I ask myself is this. "Do we constantly irritate our skin with cleansers to necessitate the purchase of moisturizers and other skin care products designed to replace the moisture lost?"

COSMETIC SCIENCE, 1978

THE MOLECULAR BASIS OF SKIN IRRITATION

C. Prottey
Unilever Research Laboratory
Port Sunlight, Wirral,
Merseyside L62 4XN

"The molecular basis of skin irritation is defined as the adverse reactions of the cells and tissues of the skin, in terms of their constituent molecules, to the types of chemicals that may come in contact with the skin as a result of using cosmetics or skin products."

"Primary (non-allergic) irritation reactions are local skin responses that result in inflammation or injury at the site of application. They are elicited by the direct toxic or cytolytic action of the applied stimuli (physical traumata or irritant chemicals) on the cells and tissues of the skin and do not involve the immunological system. Shelanski and Shelanski (1953) defined primary irritants as being toxic at first contact with the skin, and secondary irritants as those producing reactions only after repeated cutaneous contact... the latter would gradually and progressively damage the skin."

"The function of the stratum corneum is to act as a flexible and renewable barrier between the external environment and the living cells and tissues of the body. This barrier is bidirectional, preventing both the undue loss of body fluids, that would otherwise cause death of the underlying cells by dehydration, and regulating the percutaneous absorption of toxic materials and pathogenic organisms from the environment. Also the excessive uptake of water is prevented, that would otherwise cause osmotic lysis of the cells of the body. Flexibility of the stratum corneum is necessary to accommodate forces of flexion, compression, shear and friction due to movement and contact. Renewal of the stratum corneum by means of regulated epidermal proliferation is necessary to compensate for daily wear and tear. Thus, irritant chemicals may interact with and unfavorably influence this complex function, such that, at the very least, appearance or "feel" of the stratum corneum may be affected (dryness, roughness, glazing and at worst, scaliness, fissuring, loss of flexibility and barrier function may result. This range of responses can be described in terms of the structure and chemical composition of the stratum corneum."

"It is now widely accepted that the whole of the stratum corneum constitutes the barrier between the living cells of the organism and the external environment (Scheuplein and Black, 1971).

"Skin lipids have long been considered to play an indisputable role in regulating barrier function, and so organic solvents, which can dissolve lipids, should be expected to have marked effects."

"Certain irritants may also modify the structure of the stratum corneum both directly and immediately, and indirectly, by altering the processes of cell renewal."

"There is much evidence that the various surface active materials (including some soaps and synthetic detergents) may exert deleterious actions on the stratum corneum..."

"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 substance to be leached out and lost. Moreover, Middleton (1969) suggested that certain detergents (e.g. sodium lauryl sulphate) could dissolve these lipids and allow the intracellular hygroscopic substances to escape, with resultant loss of water-binding ability."

"Increased triglyceride formation may be a general epidermal reaction to injurious stimuli, as Tovell et al. (1974) have shown that in the spongiotic, acanthotic epidermis of rats following repeated applications of sodium lauryl sulphate there is accumulation of fatty droplets in the cytoplasm of epidermal cells at each stage of maturation. This authors suggested that the sublethal cell damage by the irritant may cause local cellular hypoxia, when anaerobic glycolysis rather than fat oxidation would be favored, with a tendency to deposition of intracellular fat."

Surfactant: the ingredient that makes the foam is probably Sodium Lauryl Sulfate (SLS). SLS is used in approximately 95 percent of shampoos.

Sodium lauryl Sulfate can actually damage the outer layer of the skin, the stratum corneum, causing dryness, roughness, scaliness, fissuring, loss of flexibility and can reduce the barrier functions of normal healthy skin. The lipid dissolving action of some detergents including SLS cause damage to the moisture retaining ability at the cellular level resulting in water loss and loss of water-binding ability (Cosmetic Science, C. Prottey, 1978)

According to a study done to determine the effect of SLS in the eye. It **was** found that - First, SLS is rapidly taken up and accumulated by eye tissues. SLS retained for up to five days in most eye tissues. Second, SLS uptake is greatest in younger animals with decreasing amounts with increasing age. Third, SLS causes changes in the amounts of some proteins of eye tissues whether they are treated in the living animal or tissues are bathed in SLS while in tissue culture. Fourth, SLS treatment extends the healing time of corneal epithelium (the cellular surface layer of the cornea) to 10 days, far beyond the normal two days. It was also noted that penetration wasn't limited to the eyes but include systemic tissues such as the brain, heart, spleen, and liver.

Another study as cited by the Wall Street Journal, 11, 1, 88 linked SLS to cata-

acts and Nitrate absorption. The nitrate absorption occurs when the SLS becomes contaminated with NDELA (N-nitrosodie-thanolamine) during processing.

This contamination comes about as a result of SLS coming into contact with any number of chemicals including Triethanolamine (TEA), which as you will recall is a commonly used ingredient in shampoos as a detergent. Put simply: SLS + TEA = NDELA (a nitrosamine and a recognized carcinogen).

SLS is a mutagen! This means that it is capable of actually changing the information in genetic material found in cells. SLS has been used in studies to induce mutations in bacteria. (Masako Higughi, Shinpei Araya and Masataka Higughi, School of Medicine, Tohoku University, Sendai 980, Japan)

And last, but not least, gentlemen, SLS has been shown to cause hair loss!

Humectant: a substance used to preserve the moisture content of materials by preventing moisture or water from leaving the skin or from a cosmetic product. Basically it keeps the shaving cream from drying out. The most popular one is **Propylene Glycol**.

Propylene Glycol is cheap and readily available. It has been suspected of causing sensitivity reactions. It in fact absorbs moisture from your skin, robbing from the lower layers and bringing it up to the surface. It is also used extensively in industry as a component of automatic brake fluids and antifreeze preparations. It's also used in the production

of varnishes. The Material Safety Data Sheet that the manufacturer sends out with the chemical clearly states that through skin contact it causes liver abnormalities and kidney damage. And the list goes on...

Hold it, you say. How can someone sell something that is so damaging? It's business! In fact it is a multi-billion dollar, unregulated business! Don't be fooled by slick ads with movie star names and images of romance beyond our wildest dreams. The industry is a dirty one with just one thing running it - profit!

Last Word:

Your health should be worth more than this propaganda. Buy products with labels on them and avoid as many toxins as you can.

The Cosmetic Consequence

*Help, Hype or
Hazardous to your Health?*

A full run down on the potentially harmful ingredients found in personal care products. The book is due out this Spring, Call (604)663-6312 to reserve a signed copy.