Controversial Ingredients in Cosmetics

By Suzanne Patterson

Over the last 10 years there has been increased awareness and worry by consumers over certain ingredients used in cosmetic products, and largely driven on the internet by “greening” companies and organizations devoted to their orientation towards pure organic ingredient use. Of particular concern are preservatives, foaming agents, and binding ingredients, which include parabens, sulfates, and phthalates.

Preservative Overview:

Preservatives are absolutely vital in consumables and topicals, including cosmetics, because they prevent the growth of bacteria, molds, and fungus in moisture based contents which can cause a variety of ills and potentially deadly diseases. Parabens were discovered and used as a cosmetic, food, and drug (even water supply) preservative back in the 1920’s, and since then have been among the most researched and studied compounds throughout the decades. Several parabens (including methylparaben) are also found in nature, produced by certain mold species to protect themselves from bacteria.

Parabens are derived from petroleum distillates, as is over half of FDA approves cosmetic ingredients today, and are present in virtually every cosmetic product on the market. They have been shown in many clinical trials to have the very lowest percentage of skin irritation and allergic reactions. Because of their efficacy and low risk, parabens (which includes methyl, ethyl, propyl, butyl, and isobutyl) are in world wide approval for consumer use, and they are inexpensive and stable ingredients to formulate with.

Paraben Controversy:

The amount of preservatives used in cosmetics is minute compared to the total ingredient list of a given product, and clinical testing has yet to prove conclusively that topical paraben preservatives are directly linked to any carcinogenic pathogens or disease causing agents in human tissue. However, during several concurrent British and American studies on endocrine disrupter agents (substances that can interfere with normal functions in organs controlled by hormones),

parabens were discovered to have a weak estrogenic effect, and the fact that they were also present in some breast cancer tumors.

To be objective with these findings, it must be noted these studies were done with the focus entirely on underarm deodorants and body lotions, and there was no concrete evidence or connection that proved the breast cancer tumors were directly triggered by topical paraben use. (European Union Scientific Committee on Consumer Products SCCP, 2005 published bulletin.)

In truth, parabens are just a paltry handful of the over 8,000 endocrine disrupters tested and documented, and which are found continuously in our living environment. When parabens were tested at 25,000 times the amount normally used in cosmetics, they were found to be approximately 100,000 times weaker in its component than naturally occurring human estrogen and phytoestrogens.

Parabens in cosmetics cannot act as endocrine disrupters because they dissipate or lose their weak estrogenic effect once they penetrate the skin. They form metabolites that are incapable of mimicking estrogen. However, parabens present in ingestible components, such as food and water supply chains, further elevates the continuing controversy about paraben presence in human tissue and its long term effect, so removing them from these elements, including cosmetics, can lower the overall exposure.

The Bottom Line….

There is no definitive answer or conclusion so far as to what effect the long term presence of paraben exposure may have in human tissue, and the FDA is conducting further study on this issue (Endocrine Disrupter Knowledge Base, http://edkb.fda.gov/).

It is important to keep a perspective about parabens within the entire spectrum of endocrine disrupters, because many organic and plant ingredients favored as preservative substitutes by greening cosmetic companies and organizations are also estrogen reactive, and some have been proven to be strong skin irritants. Thus, removing parabens from cosmetics will not do much to reduce the list of these known irritants, and will make little difference in the overall endocrine disrupter exposure we experience daily in our environment.

Sulfates:

Sulfates have been around for over 60 years and are surfactants, or foaming agents, which create the lathering associated with body soaps and facial cleansers. They are very efficient oil dissolving compounds which bind with sebum residue on skin and hair to remove them with a water rinse. Sulfates, which includes sodium lauryl sulfate (SLS), sodium laureth sulfate (SLES), ammonium lauryl sulfate (ALS), and ammonium laureth sulfate (ALES) are often confused as being the same ingredient, but they all have different molecular structures and varying oil dissolving strengths. SLS and SLES are more commonly found in facial cleansers while ALS and ALES are found in body soaps and shampoos. Some products can also contain a mixture of both sodium and ammonium compounds.

Because of their cleaning power on skin and hair, sulfates are capable of dissolving down the lipid layer of the skin (the “glue” that binds surface skin cells together) if left on too long, which results in the dry “tight” feeling, especially after facial cleansing. This can be very irritating to skin that is dry or sensitive to begin with, and for this reason SLES based products should only be used on very oily skin because they are the strongest of the surfactant family.

Sulfate Controversy:

Sulfates have been getting an undeserved reputation (also from greening companies and organizations) as being carcinogenic pathogens in human tissue. However there is no scientific data, study, or clinical trial to date that has conclusively proven or documented this to be factual. After many years of testing by researchers, scientists, and ingredient manufacturers working closely with the Cosmetic, Toiletry and Fragrance Association, studies and trials concluded sulfates are safe for human use, and found no connective evidence that sulfates cause cancer. Further, the American Cancer Society reviewed other major studies conducted in the US and in Canada, and put out an official statement to the effect that they could find no evidence linking sulfates to human carcinogens.

This is not to say that some sulfates, such as SLES or ALES, can open the door to skin irritations because they can, especially if the product is too strong for the skin type or simply left on the skin too long before rinsing. That tight, smooth texture feeling people associate with skin being “squeaky clean” is actually the sign of stripped skin irritation and

lipid depletion, which can leave the skin open to potential bacterial invasion.

Once the protective antibacterial lipid layer is stripped down, it takes about 5 -8 hours for it to rebuild again. Stripped skin also results in dryness, flaking, even contact dermatitis, which are signs of an active skin irritation. Many people mistake this condition as needing a stronger moisturizer when in fact they just need a gentler cleanser.

The Bottom Line…

Sulfates are not going away any time soon with the majority of major cosmetic manufacturers because of their proven efficacy and performance. They are also very inexpensive to formulate with and it is more difficult in the cost factor to implement suitable substitutes that won't drive up the end price point of the cosmetic product.

However, because of the skin sensitivity potential some companies are actively substituting with a far gentler version of sulfates, such as *sodium trideceth sulfate*, that still provides good foaming action but without over stripping the skin's lipid layer. Still others have eliminated sulfates completely, and developed and implemented organic or plant derived surfactant compounds that gently clean even the most sensitive of skins without drying or stripping them out.

Phthalates:

These compounds have been used for over 50 years as a key ingredient in nail polishes (as a plasticizer) and in synthetic fragrances and scents to make them blend easily into a cosmetic formula. It is also used in a wide variety of flexible vinyl products in use everyday, from medical equipment and toys to a variety of items used in our cars and homes. We are surrounded every day by the convenience of products that contain phthalates. Their performance is very difficult to impossible to match because of two reasons: 1. They are extremely cost effective and highly efficient ingredient to blend with. 2. There really aren't equivalent substitute compounds that can equal or rival the qualities of phthalates.

Phthalates Controversy:

In clinical trials phthalates were conclusive in causing liver cancer in rodents when administered in very high doses over long periods of time. However, follow on research showed that the cancer was caused

by a metabolic process exclusive to rodents that is not found in humans.

In another clinical trial high does of phthalates administered to rodents were shown to interfere with the development of the male reproductive organs, (EWG, http://www.ewg.org) and some related studies allege to show a link between phthalate exposure in humans and the developing reproductive tract in babies. However an NIP (National Toxicology Program) board and the FDA corroborate that no study has ever directly examined the effects of phthalates on the human reproductive organs with a definitive connection or conclusion.

In another report on human exposure to environmental chemicals published by the CDC (Center for Disease Control and Prevention, http://www.cdc.gov) a volunteer study was done on phthalates in which they found detectible quantities in the urine of the participants. The CDC did not conclude that these residue levels constitute a dangerous or injurious health threat.

Cosmetic manufacturers point consistently to the lack of evidence that anyone has been physically harmed by phthalates, but lack of substantiation can hardly be used as proof of their overall safety. The FDA and other governmental agencies throughout Canada, Australia, Japan and Europe remain guarded about the use of phthalates even though they have not restricted their use. Many of these agencies have also made strong statements concerning the risks in using these compounds, even though they are not technically classified as endocrine disrupters.

The Bottom Line:

The use of phthalates by cosmetic companies in their formulations is still split. While some scientists are concerned about a possible link to birth defects, many chemists continue to dispute this claim and point to their efficacy. It can be debated that at the level of phthalates currently being used in cosmetics, especially for fragrance or scenting, they don't pose an appreciable health risk. However there are cosmetic manufacturers that are actively seeking alternative compounds to replace them, and some cosmetic companies have simply eliminated them and fragrancing completely from their formulations.

Without conclusive evidence that phthalates are harmful to human use, the lack of studies done with this issue leaves the argument open

ended. For concerned consumer comfort and well being it is wise to be on the safe side and look for cosmetics that have omitted phthalates in their formulations.

In Conclusion:

Because of the ongoing professional debates over the safety of these preservatives, foaming agents, and binding ingredients, and growing consumer objection over their use in cosmetics it simply boils down to this: it's the individual's sole and informed personal decision as to what is the most healthy and safe choice of products for their makeup and skin care use. There are some companies that have edited out these controversial ingredients in their cosmetic product lines altogether, or have replaced them with equitable substitutes. This doesn't necessarily mean they are organic or plant based alternatives, but it does give the consumer a choice of products that are outside of these compound controversies.