miamoo
latest news on baby skincare

Read The Label:

Emulsifiers

Pat Thomas
14/12/2008

Many mainstream toiletries' incompatible ingredients require chemicals to bind them together. Pat Thomas considers the alternatives to this unholy alliance.

Many of the ingredients in commercial toiletries are uneasy bedfellows: none more so than water and oil. Anybody who has ever made a salad dressing or sauce knows these two don't combine well unless you add something else – such as salt, mustard, sugar or corn starch. Emulsifiers are essentially the glue that holds incompatible ingredients together, producing a stable, homogenous product with an even texture that formulators call an emulsion. An emulsifier can be either a physical substance (like a wax), which will generally hold the ingredients in suspension indefinitely; or a physical action, such as the instruction to shake well before use.

For the purposes of understanding toiletries there are two basic types of emulsion: oil in water and water in oil.

Oil in water – In this type of emulsion, water is the major ingredient. Oil in water emulsions are used to create creams and lotions that feel moist and less greasy. When absorbed into the skin there is very little or no oily residue.

Water in oil – Here, oil is the dominant ingredient. You will find this mixture in heavier creams, and those used to treat rough skin. The level of greasiness depends on the formula – all of which will be absorbed into the skin, albeit more slowly.

Many toiletries – creams, lotions, liquid soaps, toothpastes, and various other cosmetics – contain emulsifiers. Although they are generally minor ingredients, they confer no real benefit to the skin. Often they are used in conjunction with solubilisers – solvents that keep other ingredients in the mix dissolved. Complex blends of ingredients typically aren't stable for more than a few days without emulsifiers and solubilisers. Without them, the oil and water would separate and other ingredients would drop to the bottom or float to the top of the bottle.

Those who question the use of emulsifiers are often labelled as puritans. After all, how can we make great-looking and great-feeling products without them? In fact, very few manufacturers – even those that purport to make natural toiletries – regard emulsifiers as a problem. But because these ingredients simply address aesthetics and ease-of-use issues, it's worth at least pausing to consider both their safety and necessity.

Many types of bodycare products, for instance, make use of polyethylene glycol, or PEG, compounds. PEGs, which are derived from the petrochemical gases are derived from the petrochemical gases ethylene and propylene, belong to a large family of chemicals that can be, among their many other uses, effective emulsifiers. They can also irritate sensitive or damaged skin and have been associated with kidney damage in animals.

According to a report in the International Journal of Toxicology by the Cosmetic Ingredient Review (CIR) committee, impurities found in various PEG compounds include ethylene oxide and 1,4-dioxane – both human carcinogens; polycyclic aromatic compounds (volatile chemicals that are also potentially cancer-causing); and heavy metals such as lead, iron, cobalt, nickel, cadmium, and arsenic.

In spite of this, the CIR (which is funded by the cosmetics industry) concludes that PEGs are generally 'safe for use' in cosmetics but should 'not be used on damaged skin'. It is on this rather thin endorsement that PEGs continue to be used in bodycare products, though their presence on the label would indicate a product that is best avoided.

Other common emulsifiers include surfactants (which change the surface tension of water) such as triethanolamine (TEA), which can cause sometimes severe allergic reactions, dry skin and eye problems, and can become a sensitiser if used over a long period of time. Mixed with formaldehyde-forming ingredients such as the preservatives 2-bromo-2nitropropane-1,3-diol DMDM hydantoin, diazolidinyl urea, imidazolindinyl urea and quaternium 15, TEA can promote the formation of cancer-causing substances known as nitrosamines.

Searching for emulsifiers on the label can be a bit of a minefield. Some, such as 'emulsifying wax', sound more natural than they are. Emulsifying wax, for example, is label shorthand for an ingredient made from other (largely synthetic) ingredients, such as polysorbate 60, PEG-150 stearate (can be animal or vegetable in origin) and steareth-20 – all three of which can be contaminated with the carcinogen 1,4-dioxane. Others such as decyl glucoside, which can be made from corn starch, are effective natural emulsifiers, but are not available in an organic form. Indeed, there are no certified organic emulsifiers.

So do we need emulsifiers in our products? Aubrey Organics – who famously encourage users to 'shake the bottle' before use – would say no. Other manufacturers use natural emulsifiers, such as glycerine and beeswax, to good advantage, but many of these require some chemical processing and may provide little benefit to the skin. So maybe we are asking the wrong question.

Emulsifiers are necessary if you have oil- and water-based products. The real question would appear to be: do we need oil- and water-based products? Often, the answer is no. In the case of moisturisers – as I have said in a previous Read the Label – you can use single oils (such as jojoba or rosehip) to keep your skin supple. These are best applied to damp skin or with damp hands, to ease their application and to stop you from using too much and feeling greasy. Applying oil or an oil-based moisturiser in this way effectively does the same job as applying an oil/water mixture – without the extra chemicals.

ACTION!

1. Go into your bathroom and look at the labels of your favourite products. Do any of them contain the following emulsifiers?

None of the current emulsifiers – even the natural ones – are currently available in organic form, which is why the Soil Association seal of approval can't be found on products that appear to be emulsions of natural ingredients. Other organic certification bodies are less strict, so as always it's worth paying attention to what the label actually says. Is the whole product certified organic, or just some of its ingredients? In the UK at least, choosing Soil Association certified organic products can wipe out a whole host of problems to do with emulsifiers at a stroke and make your life much less complicated.

- Carbomer
- L PEG-40 sorbitan peroleate
- Carboxymethylcellulose
- PEG-150 stearate
- Ceresin (aka mineral wax, Ozokerite)
- Diethanolamine (DEA)
- Isopropyl stearate (laurate, palmitate, oleate etc)
- Polysorbate 20
- Polysorbate 60
- Polysorbate 80
- Potassium hydroxide
- Propylene glycol
- PEG compounds, eg:
- PEG-8 myristate
- PEG-30 glyceryl cocoate
- PEG-80 glyceryl cocoate
- PEG-15 soyamide/IPDI copolymer
- Sorbitan stearate (laurate, palmitate, oleate etc)
- Steareth-20
- Triethanolamine (TEA)

2. If so, photocopy these pages, highlight the worrying emulsifiers you have found on the label and write to the manufacturer's customer services department. Ask them why they are using these ingredients in their product, given that the following natural, non-toxic and equally effective emulsifiers exist.

- Beeswax
- Candelilla
- Carnauba
- Cetearyl alcohol
- Cetearyl wheat bran glycosides
- Cetearyl wheat straw glycosides
- Decyl glucoside
- Jojoba
- Lecithin
- Quince seed
- Rice bran wax
- Sucrose cocoate
- Vegetable glycerin
- Xanthan gum