I am frequently asked what ingredients are and why we should avoid them. Just as frequent and more alarming are the number of requests I get for products free from preservatives and 'nasty chemicals'. Nothing engenders fear more than ignorance and no other industry has so many lies and half truths told in order simply to sell a product.

Basic chemistry lesson number one: Everything is a chemical- it is not a bad word! Every compound, ingredient and natural substance has a scientific name and just because these are long and difficult to say does not mean they are harmful. I often hear the laughable statement that to avoid products containing ingredients with long complicated names is to avoid 'dangerous chemicals.'

Even water has one- its *Dihydrogen Monoxide*. Scary sounding eh?

Even 'natural' ingredients have big bad scary sounding names- they are listed by their Genus and Species. Two examples below:

Butyrospermum parkii: Shea Butter
Strychnos nux-vomica: The tree from which Strychnine is taken (a vile poison.)

It is impossible to tell from the name alone whether the ingredient is harmful.

All our ingredient lists are listed according to their INCI name ('International Nomenclature of Cosmetic Ingredients.')

Now we have determined that chemical does not equal harmful, we can have a look at some of the more common villains in cosmetics. Or so we are told.

Sodium Lauryl Sulphate is always on the 'avoid at all costs' list. We don't use it in any of our products, for the simple reason that I personally find it too harsh for skin and hair. I find it can exacerbate dandruff, irritate scalps and wreak havoc on certain hair types. It is definitely a skin irritant and is often used in clinical studies to irritate the skin before the test is carried out. There are better, gentler and just as 'foamy' options available.

It also a carcinogen. Apparently. According to absolutely no evidence found in any study… ever. Plenty of 'natural health sites' tell you to watch out for SLS when combined with ingredients that donate Formaldehyde (more later) as when combined Formaldehyde and SLS form toxic Nitrosamines. Quite an interesting concept, but one that is completely impossible owing to the fact neither contain a Nitrogen atom.

I quote this completely from the very informative **Paula's Choice** website as she has written it in a way I never could: *"A study from the Medical College of Georgia indicates that SLS is a systemic, and can penetrate and be retained in the eye, brain, heart, liver, etc., with potentially harmful long-term effects. It could retard healing and cause cataracts in adults, and can keep children's eyes from developing properly." This is supposedly quoted from a report given to the Research to Prevent Blindness conference. While the report on animal models extrapolates concerns about the use SLS, it draws no*

hard conclusions stating that the amount of SLS used was 10% greater then that used in shampoos and done on animals not people. The doctor who conducted the study and delivered the final report is Dr. Keith Green, Regents Professor of Ophthalmology at the Medical College of Georgia, who received his doctorate of science from St. Andrews University in Scotland. He told me in a telephone interview back in 1997 that his "work was completely misquoted. There is no part of my study that indicated any [eye] development or cataract problems from SLS or SLES and the body does not retain those ingredients at all. We did not even look at the issue of children, so that conclusion is completely false because it never existed. The Neways people took my research completely out of context and probably never read the study at all." He continued in a perturbed voice, saying, "The statement like 'SLS is a systemic' has no meaning. No ingredient can be a systemic unless you drink the stuff and that's not what we did with it. Another incredible comment was that my study was 'clinical,' meaning I tested the substance on people, [but] these were strictly animal tests. Furthermore, the eyes showed no irritation with the 10-dilution substance used! If anything, the animal studies indicated no risk of irritation whatsoever!" That lack of outcome is in fact why, as of 1987, Green no longer pursued this research. When I asked if anyone has done any follow-up studies looking at SLS and SLES in this regard, Dr. Green said, "No one has done this because the findings were so insignificant."

Amazing what people will read into things.

The alternative SLeS (Sodium Laureth Sulphate) is also an irritant, but a greater concern simply because it has been Ethoxylated. It's a basic chemical reaction when a compound is added to the fatty acids to produce SLeS which is more soluble in water. Unfortunately, this often produces traces of carcinogenic 1-4 Dioxin.

So, what do you look for instead?

Most surfactants are derived from Sugar or Coconuts (SLS is) and that is no indication of its safety. Look for ingredients such as Decyl Glucoside (often referred to as Poly Glucose), Coco Glucoside and Cocamidopropyl Betaine (although this is a potential allergen). This list is by no means exhaustive!

Ethoxylated compounds were touched on briefly above. Ingredients such as 'PEG', 'Polyethylene', 'Polyethylene glycol', 'Polyoxyethylene', '- eth-', or '-oxynol-' (as determined by the US Food and Drug Administration) may be contaminated with 1-4 Dioxin. Dioxin readily penetrates the skin and is a carcinogen as determined by numerous animal studies. The percentage in products is extremely low, but if there are alternatives that are 100% free of the compound, why not use them? T I avoid these ingredients and they are not used in our products.

Parabens are the other bad guy currently in the news. Yet again, there is little to no evidence of their toxicity, carcinogenetic ability or otherwise untoward effects. Butylparaben, Ethylparaben, Isobutylparaben, Methylparaben and Propylparaben are the most commonly used preservatives in cosmetics as they work brilliantly. They are weak xenoestrogens, which means they mimick the way the hormone Oestrogen works in the

body. A study published in *Journal of Steroid Biochemistry and Molecular Biology* in 2002 showed that they have a weak oestrogenic ability when injected and taken orally in rats.

People often bring up the study which showed Parabens found in the samples of breast tumours from 20 patients. This is no way indicates that the Parabens caused the cancer. The study is vague at best, as is the whole of the science surrounding Parabens. So although there is no concrete evidence either way, we think Parabens are best avoided until we know more.

So again the question begs- what do we use instead?

Good question.

Some preservatives donate Formaldehyde to a formula. A chemical (ahhh!) that I am not a fan of. The percentage in the product is laughably insignificant, but again, best avoided if possible. Common Formaldehyde donors are Sodium Hydroxymethylglycinate and Diazolidinyl Urea.

A lot of 'natural' companies use a 'preservative' called Grapefruit Seed Extract. GSE is the biggest con (in my opinion) in the natural product industry. GSE is synthesised using compounds such as Triclosan, Ammonia and Formaldehyde- not a natural process by any stretch of the imagination! There have been so many studies on GSE and every single one has come up with the same conclusion. Pure GSE has NO antimicrobial effects at all. The product only works when contaminated with ingredients such as Triclosan (there's that pesky Dioxin again). A few samples of GSE were shown to contain up to 20% benzalkonium chloride!!

Personally I would prefer to use a safe synthetic preservative that I know works, rather than run the risk of an inferior product contaminated with either Dioxin or Microorganisms!

Summary:

SLS: Is a skin irritant that can be overly harsh but is in no way carcinogenic and does not cause eye problems and is not retained in the body.

Parabens: Due to possible Xenoestrogenic abilities are best avoided until we know more!

GSE: A complete con.

Disclaimer: I am an avid student of Biology (specifically Microbiology) and I research constantly on this subject, however if you feel I have left anything out, or need anything clarifying, please flick me an email on Brianne@ethique.co.nz.