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I Was Wrong

So, I was wrong and I am glad I was. For a long time I believed that when you asked which instrument cosmetic scientists would use to measure the water content of the stratum corneum, the answer was geographically rather than scientifically determined. When this was asked in Europe, I was informed that I would be best off using the Corneometer, a measuring device that measures the capacitance of the skin that is proportional to the dielectric constant of the stratum corneum. In Asia, I was told to use the Skicon, a measuring device that measures the conductance of the stratum corneum. And finally, in the United States I was recommended to use a TEWL meter (such as the Tewameter, the Evaporimeter) or the DermLab Moisture Probe, based on impedance, or the Dermal Phase Meter. The latter measures something that relates to the water content of the skin based on some biophysical principles that I have never been able to comprehend and that the company selling the device has never been willing to disclose. So, who is right? The Europeans, the Asians or the Americans? Are they all right or perhaps none of them?

A problem with measuring water in the skin is that no one measures water strictly chemically, as in a Karl Fischer reaction. Of course, this is also caused by the fact that we want to measure it noninvasively

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and performing a Karl Fischer determination on human skin would most likely involve taking a biopsy. So, we therefore had the choice of measuring water based on its unique physical chemistry or on its spectroscopy. The former principle turned out to be cheaper as well as easier to handle and interpret, and this principle has therefore become the method of choice in quantitative studies. For qualitative studies, where the objective is to investigate the interaction of water with its surroundings, photospectroscopic methods like ATR-FTIR have demonstrated their value.

But now back to the original question. How do I measure the water content of the stratum corneum? As we have seen above, there are at least a couple of options open to the cosmetic scientist. Which in the list of measuring devices that I listed above is certainly not correct? In my opinion, measuring TEWL has got nothing to do with the hydration levels of the skin, but I realize that this is wrong even as I write it. However, it is not correct either. How can something be right and wrong at the same time? In order to answer this question, we need to know what TEWL actually is. We all know it to stand for Trans-epidermal Water Loss, the rate of evaporation of endogenous water from the skin surface to the external environment. Two issues determine this rate, namely the absolute quantity of water in superficial layers in the skin as well as the barrier function of the skin that prevents us from drying out. So, when I have a high level of hydration in the skin, I will have a higher TEWL suggesting that TEWL will be a good measure for superficial skin hydration levels. But on the other hand, if I have an impaired barrier function due to either a dermatological disease or the excessive use of a harsh soap, I may also have a high TEWL (suggesting a high hydration level) but actually a low hydration level because of the impaired barrier function.

The latter argument is the main reason why most cosmetic scientists nowadays consider TEWL to measure primarily barrier function and not skin hydration. I've always compared it to money, a subject that all seem to understand. If you want to know whether I am a rich man, do you want to know the amount of money that I have (the level of water in the skin) or the amount of money that I spend (the

rate of disappearance of water from the skin)? In case you're not convinced, I know of people that earn a lot but spend even more!

Let's go one step further and talk about moisturizers. Ask the average formulator to describe the ideal moisturizer and (s)he will tell you that this is a molecule that is at least as good in its hydrating properties as glycerine but without its sensory negatives. But on top of this, this person will also tell you that the ideal moisturizer should also have a reduced TEWL. This latter requirement has always surprised me and I believe it—from a scientific point of view—to be fundamentally wrong. First of all, we have just established that TEWL was only saying something about the barrier function of the skin and not necessarily representative for the state of hydration of human skin. If you ask these formulators why they insist on the reduced TEWL, they use the following line of reasoning: With your ideal moisturizer, you are increasing the level of hydration in the skin but at the same time allowing the newly acquired water to disappear immediately to the external environment, which has a negative impact on the level of hydration. What kind of ideal moisturizer is that?

Before I answer that question, maybe I should first investigate how the water that I want to measure got into the skin. Until now, cosmetic scientists believed that there are two ways of increasing the water levels in the skin. The first mechanism is by applying an occlusive layer on top of the skin, a kind of elegant plastic coating that encloses the skin and prevents water from disappearing into the outside world. These types of formulations have a heavy feel, but do indeed keep the water in, so they increase the hydration levels of the skin. Moreover, as long as you keep the formulation on your skin, the TEWL will be reduced, simply because you added an extra barrier. But people won't like them because of their heavy feel. So, after a while, they remove such formulations and because the barrier function was only artificially improved, the water levels return back to normal quite quickly.

The second mechanism is based on molecules that attract water, such as glycerine, urea, sucrose, etc. They are much more polar in nature, relatively small and generally hygroscopic. Because they are small, they tend to penetrate the skin and this is where they attract

their water and increase the water content of the skin. Some of them, like glycerine, are so good in doing this that they attract that much water (up to 60% of their own weight) that the skin is left to feel dry, although it contains significantly higher amounts of water than without the moisturizer. A relatively new mechanism is to enhance the formation of (components of the) Natural Moisturizing Factors. This is via precursors of individual components or by stimulating enzyme production or activity. But in essence, this is a modification of the second mechanism, to increase the amount of water in the skin by introducing chemicals that keep it there.

By insisting on moisturizers that do not increase TEWL, cosmetic formulators actually indicate that they are only interested in short-term solutions. Only the occluding moisturizers work via this principle. As long as the product is on the skin, it will work, but as soon as it is removed, its effect will immediately disappear. It resembles the cost-cutting approach in order to get rich. Spend nothing and you will be rich. If you don't believe me, try it to find out that it does not work in the long run. From a skin hydration point of view, the second mechanism is to be preferred. This is the mechanism by which you manage to keep the water in the skin because there are chemicals to keep it there. In money terms, you have managed to increase your salary. With every salary increase that you have had, you will also have spent more money (the new and bigger car and house represent the increased TEWL), but the amount of money in your bank account has also increased (the hydration level).

I started by saying that I was wrong. During a course that I gave on Cosmetic Claim Substantiation for the Society of Cosmetic Chemists in New York in December 2001, I discovered that American cosmetic scientists no longer use the TEWL meter to measure the amount of water in the skin, something which I had believed the Americans typically did based on many discussions that I have had there. But if they have come to their senses, I now also have the silent wish that cosmetic formulators will finally accept that the long-term solution of increasing the water levels of the skin (by introducing something into the skin to keep the water there) may be benefiting them more than the short-term solution of the occlusive layer. Right now, most of you

may not believe me but I tell you, I long for the day that I can again write a column with the opening statement “I was wrong.”

Modified from a column “OK, I was wrong” previously published in SPC, February 2002

Post-publication note (2010)

Indeed, I am very glad that I was wrong, but I was wrong in a completely different way than I expressed above in 2002. I discovered in a collaborative project with the University of Leiden in 2007 that ‘simple’ emollients like isopropyl isostearate (and most likely isopropyl palmitate and isopropyl myristate) do stabilize the orthorhombic phase of skin lipids, see *Cosmetics & Toiletries* magazine, Vol. 124, No. 6, pp 45-50, for a summary of this research project. This creates an internal occlusion which allows increased water levels in the skin, yet simultaneously a reduced TEWL. OK, I was wrong and the cosmetic formulators were right. Their wishes are fulfilled but, likewise, not in the way they had anticipated as the reduced TEWL does not happen immediately. In a nutshell, we were all wrong but cosmetic science was the ultimate winner!

Off the Scales?

It's that time of year again. The festive season when we ate far too much is over and summer is approaching fast. But the extra weight that we put on over the holidays is still there. As a consequence, we're looking at the scales to see whether we can permit ourselves to go to the beach at all. That's why I am looking at the scales this time. Or, more precisely, I'm looking at scales in cosmetic science.

Let's take your weight for instance. How do you know whether you're really overweight? For that, you have to weigh many people, assess their average weight and standard deviation. Only then you can decide whether you're on the scale or off the scale when you're on the scales. But in fact, you should actually compare your weight with that of your peers in similar subsections of the population: same age, same gender, etc. Both weight and age are continuous scales, but when I ask you for your age, the answer that you will refuse to give me is most likely to be a natural number like 21. It is never 51.473. The obvious reason for this is – of course - that you're not that old yet, but the other is that we only think of age in whole, round (i.e. natural) numbers, despite the fact that you are now older than when you started reading this column. Even when we talk of the age of very young children, we quote whole numbers but

There is quite a bit of nonsense going on in this field lending some truth to that well-known statement, "Lies, damn lies and statistics."

we change the units to smaller entities like months, weeks or even days. Such scales using only natural numbers are called ordinal scales. Two cosmetic examples of such scales are skin type classification and SPF rating. There are always more than two and there is some logic in it: the higher the number, the darker the skin or the better the protection offered.

With weights or finances, things are different as we happily use non-natural numbers. If numbers like 51.473 are also possible, then we are dealing with numerical scales. But weight, in turn, is different again from the figure of your personal capital. Whereas the latter can be negative, you have an even more serious problem if either your weight or your age is negative! Most things we measure in cosmetic science can only be positive, albeit that we are excellent in subtracting two positives to measure a change of any sort: wrinkles, skin color, split ends, etc.

Most scales in (cosmetic) science, however, are numerical scales, which helps if you want to do statistics. We diligently calculate means and standard deviations and do t-tests to see whether our comparisons are statistically significantly different. But let's be careful. Problems can arise when we think we are dealing with a numerical scale, whilst in reality, it is an ordinal scale. There is quite a bit of nonsense going on in this field lending some truth to that well-known statement, "Lies, damn lies and statistics." Not because statistics can give you any answer that you would like to have, but because there are so many different statistical techniques that it is often difficult to identify which one you should use. One of the most critical things to consider is which type of scale you are dealing with. Let's investigate a few things that are often forgotten.

We often automatically assume the distance between two points on different portions of the scale to be similar, i.e. the distance between 1 and 2 is the same as that between 3 and 4. For instance, visual assessment of skin lightening is done by comparing the skin color of two arms. If they have the same color, the score is 0, but if the left arm is somewhat lighter than the right arm, then the score is 1. If the difference is clearly visible, the score is 2, and when there is an extreme difference, the score is 3. Is the difference between 0 and 1 the same

as between 1 and 2? I bet you that it is not and that is exactly the reason why it is more difficult to measure significant differences from visual than from instrumental assessments where there is no judgmental element. Other similar examples include scales for irritancy, axillary malodor, acne (via comparison with pictures) or dandruff.

The dandruff scale is a very beautiful example of a weird and illogical scale. In quantifying the degree of dandruff, the scalp is subdivided into four quadrants, two per half head, each half receiving another product. Each of these quadrants is separately judged for the incidence and severity of the dandruff. The incidence can vary from 0 (<10% affected) to 4 (>70% affected), whereas the severity, judging both the size of the scales and the degree to which the scales are attached to the scalp, can vary from 1 till 5. Subsequently, the two scores obtained for the same quadrant are multiplied, and can thus range between 0 and 20 for a single quadrant. The scores for the two quadrants that make up the half-head treated with the same product are subsequently summed and therefore range from 0 to 40.

This all sounds very logical, so why do I think this is probably the weirdest scale ever invented? First of all, how do you get to the number 39? This can only be $20 + 19$, or $19 + 20$. But how do you make 19 - a prime number - out of the multiplication of two small numbers? Indeed, 39 is impossible on this scale. Similarly, 38 is only $19 + 19$, or $20 + 18$, or $18 + 20$. We just concluded that 19 is impossible, but the same applies for 18. It can only be formed from 2×9 and 3×6 , but 6 and 9 are off the scale. It will not amaze you that whilst fighting off a jetlag I have worked out all numbers that could and could not be made on the dandruff scale. Try it and, if you take into account the fact that certain scores can be made in many more ways than other scores (and therefore have a higher probability of being the score of the dandruff investigation), you will probably see why I think that the dandruff scale is a weird scale. This scale is not only non-equidistant; certain distances do not even exist.

So, how do you take this into account when doing the statistics on dandruff data? The only way to overcome such irregularities is the law of the big numbers. If you have enough subjects in your trials, then the influence of scale irregularities diminishes but the costs of

your study rockets. Would anybody (including you) notice that you potentially invalidate your anti-dandruff study by using a smaller panel to reduce costs? How do you balance your desire for scientific integrity and using the smallest possible panel size to substantiate your cosmetic claim?

Lies, damn lies and statistics. You've heard it all before, so what's new? Only that it is not true but often simply based on an unawareness that many cosmetic scientists would rather like to keep that way. By far the most powerful statistical test in cosmetics that you will never see quoted is the PBO test, the Pretty Bloody Obvious test. If you see that two products have two sets of scores, one all around 1,000 and the other all around 1, then you do not need any statistics to identify whether there is any statistical difference between the two products. You will never have to have any discussion on which statistical test should be used or whether the scale was equidistant. The PBO test is enough. We do need statistics when the difference is far less obvious, even to the extent that we need to rely on large population samples to be able to show the difference. Unfortunately, the effective differences between our products or the improvements in our products have become that small that the question of the appropriate statistics becomes very important.

Are you on or off the scale? When you weigh yourself on my statistical scales, do you conclude that you are as light as dandruff scales that float in the wind but leave a stain on your scientific integrity? In that case, it is Pretty Bloody Obvious that you will have to lose that extra weight before you can even go to the beach. But if you decide to go there anyway, count the number of grains of sand in a thimble to discover the Law of Big Numbers and get yourself back on the scale!

Modified from a column "Off the scales?" previously published in SPC
March 2002

Let's Get Visual...

*To die is to go somewhere where you've never been before...
Last Thursday our beloved daughter passed away
due to lung cancer at the age of 31*

Sophie Hamming – van Deursen

* Amsterdam, 6 May 1973

† Amsterdam, 19 June 2004

Admit, a rather unusual start for a column on cosmetic science, but this is “just” an example of what the Dutch regulatory authorities plan to have printed on cigarette packs from May 2002 onwards, i.e., before the date on which Sophie will supposedly die. Such messages should make up at least one-third of the available surface. The Dutch measure is the result of a European guideline that comes into force by the end of 2002. In Canada, already more than 50% of the available surface of cigarette packs is taken up by one of a series of statements like “Cigarettes cause strokes,” “Tobacco can make you impotent,” “Don’t poison us,” “Cigarettes cause mouth diseases,” “Cigarettes leave you breathless,” or “Cigarettes hurt babies.” All these slogans are accompanied by some horrible

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visual of which the one showing rotten gums is probably the most off-putting.

I've been looking at all these horrid slogans and pictures for a while and asked myself whether they would have convinced me to stop smoking. I think they might, but the probability of me stopping would increase if one of the defects described had already manifested itself. But what would have actually convinced me: the slogan or that horrible picture?

With this awkward introduction, let's have a look at current advertisements for cosmetic products. As some of you know, I occasionally give a course on cosmetic claim substantiation (see www.jwsolutions.com for further details) and, in order to keep this course actual, I regularly buy glossies like Elle, Vogue and Cosmopolitan to keep up to date with the latest cosmetic advertisements. Most of my reading time is spent on the first ten pages of these magazines where the majority of the most impressive ads for prestige cosmetics can be found. But I also look at the rest of the publication and when I compare cosmetic advertisements with those of the exquisite clothes, shoes and handbags that are also being advertised, it strikes me over and over again that cosmetic ads are rather unique. The latter are characterized by a large amount of text and I ask myself why all this prose is necessary. Perfumes are an exception to this; these ads hardly contain a word apart from the brand name. Perfumes, like the clothes, shoes and handbags, are sold on image, so why are the rest of cosmetic products sold on text? And, does it really work?

I think that the answer to the first question lies in the way to create uniqueness. If I want my consumers to believe that my product hydrates skin better or gives hair more body than any other product, I should provide evidence thereof. But whilst the product's impact on hair body can still be shown via the picture of a celebrity that supposedly uses my product and certainly endorses my product as long as I send her the monthly check, such authentication is much more difficult with product efficacies like skin hydration. But although the impressive reduction in the number of skin wrinkles due to the use of my latest antiaging product should be easily visualized, you will never see the so-called "before" and "after" pictures in cosmetic advertise-

ments. Could this be because we do not like to use less favorable visuals in cosmetic advertising? Rather than off-putting pictures (often also impossible because which celebrity wants to be shown in a “before picture”?) we use graphs, bars and lines and text, lots of text, in cosmetic ads. And since a year or so ago, we also predominantly use the color white to enhance the clinical and scientific value of our products.

But now to impact. Do our customers really read the text? If I can take the people that have attended my courses as a typical audience, which of course, they are not; being on the course already suggests them to be a lot more critical than the average consumer, then they do not read the text at all, even if you ask them to do so. And therefore my second question: do all those phrases, tables and graphs do what they are supposed to do? In other words, what is the impact?

Let me give you an example from personal experience. When I described the clinical effects of a new personal care ingredient that can enhance the skin radiance by evening skin tone at cosmetic symposia, the level of interest has been limited despite all the numerical evidence for the efficacy of the molecule. All the graphs, bar charts and tables with statistically significant results did not result in an enthusiastic response from my audience, even though I thought the evidence was rather persuasive. More recently, I realized that I also had some photographs taken before and after treatment with a cosmetic formulation containing the specific chemical. As soon as I started showing these, everybody woke up and agreed that the product worked and did do what I have been claiming all the time. Like Doubting Thomas, cosmetic scientists and consumers are not convinced by stories, nor by graphs, nor by bar charts, but only by visuals. Although factual data is all very correct, they do not leave a lasting impression on people; regardless of whether they are cosmetic formulators or product developers or consumers.

So, what should we do to increase the visuals in cosmetic product advertisements? First of all, we could start using the new non-invasive skin bioengineering methods that have recently been developed and that provide beautiful and impressive visuals. Examples are FOITS (Fast Optical In-vivo Topometry of human Skin), PRIMOS

(Phaseshift Rapid In-vivo Measurement Of Skin) and VISIA, a complexion analysis technology for medical and skin care professionals. The latter system, for instance, captures digital photos of the face and then measures wrinkles, texture, pores and pigmentation and generates quantitative values for skin features. Whether we like it or not, visuals in cosmetics are on the up and up. Printed next to the beautiful celebrity and the product itself, we will use more and more visuals of product efficacy that will prove to be powerful communicators of product efficacy.

But apart from the text, cosmetic ads stand out in another way. Whilst advertisements for most other products are trying to convey their message in quite a humorous manner, cosmetic ads seem to have a monopoly on boredom. Therefore, let's also add some humor to our cosmetic ads. I certainly need it as, if I'm a smoker, I've just established that I am likely to have a stroke, that I will be impotent, that I am certainly poisoning you whilst suffering from horrible mouth diseases and that I am hurting both your and my babies. I'm even too breathless to grab my camera to make the "after" picture.

Luckily you've already got the "before" visual on the cover of this e-book. Make your own "after" when we meet again at a next conference, but don't offer me that cigarette, please!

Originally published in SPC, May 2002, p.15

Shaken, Not Stirred

If you think that I have been hitting the booze again, then you're wrong. I am not referring to the dry martini that James Bond prefers shaken, not stirred. Instead, it's me who is shaken, not stirred but I realize that this needs some explanation. It's hardly two months since I was in Shanghai to attend PCIAAsia, the annual Personal Care Ingredients event in the region. Apart from the usual exhibition, there is also a conference where suppliers and cosmetic chemists have the opportunity to describe their latest product findings in a semi-scientific way. Attendants pay an admission fee, so the content of the lectures at this conference should be different from straightforward commercial infomercials. On average, this is the case although I remember only two talks that were devoid of any product or trade names. If you have read most of my columns, you know that such an issue could sufficiently shake me to write a stirring column, but I have already done this before and as it had no impact, I won't do it again. So what happened in Shanghai?

I attended quite a few lectures in a couple of different sessions dealing with subjects such as skin whitening, preservation, new antiaging technologies and sun care. Although these subjects were quite different, the new innovations exposed in these areas all had one

Let's stir less and shake more test tubes to create more novel chemistry that will explore new routes to new efficacies rather than just mix the existing molecules.

thing in common, namely that mechanisms of action were being combined. In the skin whitening field, different mechanisms such as tyrosinase inhibition, complexation of Cu^{2+} ions, tyrosinase gene expression, etc., were explained and, subsequently, existing ingredients working via these mechanisms were mixed. In the antiaging field, chemicals fighting the signs of photoaging and chronological aging were combined, for instance sunscreens with anti-pollutants. New combinations of existing preservatives were proposed and organic sun filters were now stirred with inorganic UV-scattering ingredients.

The benefit of all this stirring is obvious. First, there is the possibility of a synergistic effect although the supplier of the ingredients will tell you that there will always be one. In reality, this depends on where the individual ingredients used in the mixture exert their influence. Second, thanks to this possible synergy, you might only need smaller amounts of the two individual ingredients to be included in the product to create an effective product. This would have some cost benefits but certainly seems to have a safety benefit also. Some of the products that were mentioned have toxicological implications at higher concentrations. Hydroquinone, for instance, is only cytotoxic at higher concentrations and therefore, a combination of this tyrosinase inhibitor and another ingredient that does not act via the same mechanism of action might reduce the required levels of hydroquinone just below these cytotoxic levels.

Another benefit is also possible, although this was not mentioned in China. Let's look for instance at the combination of hydroquinone and octadecenedioic acid. It could benefit from all points I just mentioned. Whereas hydroquinone is inhibiting tyrosinase activity, octadecenedioic acid is not (post-original publication note: in 2004 I established that it acts on the peroxisome proliferator-activated receptor). The combination would probably require less hydroquinone than a similar product that only uses hydroquinone, reducing its cytotoxicity whilst increasing its efficacy. But the other benefit is that the combination allows the highly desired cosmetic claim "skin whitening" to be made based on the presence of the hydroquinone. This claim is not allowed for octadecenedioic acid alone as no NDA's

and Quasi-Drug registrations have been filed (yet). For a supplier of a new ingredient, piggybacking on the registration status of an existing ingredient is also a much quicker way of commercializing an ingredient than going through the NDA and Quasi-Drug process yourself.

So, with all this stirring of ingredients and mechanisms of action going on, why am I then shaken? Whilst it will have some short-term impact on delivering innovation to the marketplace, what will happen on the longer term? Do you really see this as creativity? If all the cosmetic industry can do is mix existing ingredients and take advantage of the obvious short-term benefits, what will happen once we have explored all possible mixtures? Will we be able to survive as an industry if we only stir? The more we stir, the less we invest. And we all know that the famous expression is “Less is More,” but we do “More is Less.” Let’s stir less and shake more test tubes to create more novel chemistry that will explore new routes to new efficacies rather than just mix the existing molecules. So, next year in Manila, Düsseldorf, Paris and Secaucus, I hope to see more true innovation. And whilst I am there, could I ask all of us that make appointments with suppliers to stick to their appointments? With ingredient suppliers playing a larger role in the delivery of technology and innovation, the manufacturing industry depends equally much on the supplier industry as the supplier industry depends on the manufacturing industry. Although, if all innovation the supplier industry currently can master is to stir existing ingredients, who could blame the manufacturing industry for not taking the supplier industry seriously? Let’s get some real creativity flowing. By stirring only, we create our own long-term problems. I hope that you are shaken by my statements, as that is exactly what I would like you to be. Don’t stir, shake!

Modified from a column “Shaken, not stirred...” previously published in SPC, July 2002

Bad Hair Day

I have never had a bad hair day. Actually, there is no problem with my hair whatsoever. But it was only recently that I learned that this does not apply to all of us. Whereas it takes me as a Caucasian only a few seconds to comb my hair (although that may also tell us something about the quantity left on my scalp!), you will have considerably more difficulty combing your hair if you are of African descent. Because the sectional plane of the hair of the latter is elliptical, it curls a lot more and, because it curls a lot more, it is much more difficult to comb. And because black people are fed up with having bad hair days every day, they have been straightening their hair for as long as they can remember.

Straightening hair is a chemical process in which the strong cysteine bonds are broken. The hair is then set in the desired shape and the cysteine bonds are allowed to reform themselves in the new shape. Chemically, this is rather simple but, in reality, this causes a lot of additional bad hair days. Or, more correctly, bad scalp days as one needs an extremely high pH to break the cysteine bonds, which causes a lot of scalp irritation. At a recent conference in Chicago I was shown a pile of gruesome pictures of the consequences of hair straighteners. It really is an issue that makes

As long as a community only keeps talking to itself, they will not succeed in getting the major international companies interested in their issue.

your hair curl! It was not a pleasant sight, but it made me wonder why the cosmetic market has not yet solved this problem.

I heard about the existence of hair straighteners and the resulting bad hair days for the first time when I attended the IFSCC Conference in the Republic of South Africa in October 1999. In an excellent presentation, Patrick Obukowho informed his audience about the history of straightening African hair, how the procedure is done and the associated problems. But he did not present a solution to the problems, because he had none. If you want to straighten your hair, you face the consequences. A cosmetic “Catch 22” situation. Considering the number of black people in the world, you would think that the consumer need is big enough for the cosmetic industry to solve this problem once and for all. I went back home and forgot all about it.

Recently, I attended another conference and met Patrick again. After having spent only five minutes with him in the same room, I realized that Patrick had become the champion of the Bad Hair Day of all Black People. Unfortunately, I also learned that nothing had substantially changed in the three years since our first encounter. Patrick still spoke very convincingly about the Bad Hair Day problems but despite his credibility, the problem had not been eliminated. Although the theme of the conference was not dedicated to specifically solve the problems of scalp irritation of hair straighteners, a disproportionate amount of attention was given to this subject. It was not only discussed by Patrick, but also by many other cosmetic scientists present, even to the extent that it got in my hair.

Ever since our recent meeting, I have been wondering why the problem has not yet been solved. Clearly, there is a tremendous need for mild products that can straighten African hair. How much do we actually know about the problem? Since I joined the supplier industry of cosmetic ingredients six years ago, I think I might have attended some 30 cosmetic conferences. But at only two of them, the Bad Hair Day problem was discussed. The first one, as said above, was the one in South Africa, a country with a mainly black population where the problem is prominently present and where it is “justified” to discuss it. The second one was that recent meeting in Chicago that – in

hindsight - mainly dealt with ethnic skin and hair issues and where the Caucasians were in the minority. This led me to the conclusion that within the black community sufficient attention is given to the problem but that the problem is basically unknown in the Caucasian community, despite all Patrick's efforts.

What to do to solve the Bad Hair Day problem? There is a scientific and a sociological answer to this question. From the scientific side, you need to target the hair very specifically without affecting the scalp. In a previous job, I had to do exactly the opposite and it was almost impossible. The surfaces are almost identical. Their surface charges do also not differ by more than a hairsbreadth. Only the surface areas differ dramatically in size. But, many new deposition systems are emerging that all claim to be capable of solving any problem. Even in Chicago, someone said, without turning a hair, that it was easy to target the hair specifically and preferentially over the scalp but nobody thought to challenge him with the Bad Hair Day problem. Personally, I do not believe the person who said so, but if he could, it would be the quickest and easiest way to become a millionaire and make a lot of people happy at the same time.

But there is also the sociological side to this problem that needs solving. As long as an ethnic community such as gathered in Chicago only keeps talking to itself about their Bad Hair Day problem, they will not succeed in getting the major international companies interested in their issue. I was amazed to see so many non-Caucasian and non-female cosmetic scientists and marketers together in Chicago. Why did I never see these colleagues at the other 28 meetings that I attended during the past six years? Why are you hiding? Do not wait for Patrick to give his next talk. With all due respect, he cannot do this alone with the occasional talk and course in Ethnic Hair Care. Come and help the guy to solve the Bad Hair Day problem! You owe it to yourself and Patrick! And to all the Caucasians I would like to say, let your hair down and help solve Patrick's and many others Bad Hair Day problem.

Modified from a column "Bad hair day" previously published in SPC, September 2002

The McDonald's Effect in Cosmetics

“Honey, could you please pass me the lice?” When you hear this being mentioned at your kitchen table, you will probably frown your eyebrows unless you happen to have an East Asian partner who is just asking for the rice. Why is it that Japanese, Koreans and Chinese cannot pronounce the letter r? Recent research by Paul Iverson of University College London has discovered why this is the case. Linguists surveying the world's languages have identified at least 558 consonants, 260 vowels and 51 diphthongs. Infants appear to be able to distinguish all 869 sounds of speech up to the age of six to eight months. After that, the brain sorts out all of these into the much smaller subset of phonetic categories in its native language. The English language, for instance, uses only 52 phonetic categories, whereas the Kalahari desert language, !Xũ holds the world record at 141. Iverson's research has shown that it is not that Japanese speakers cannot hear the difference between r and l, but that they are sensitive to other differences that do not distinguish the two. The Japanese, for instance, tend to pay more attention to the speed of the consonant, something to which western ears are completely insensitive.

But as always in the second paragraph of my column, there is my

If this capability to interpret whether to act or ignore applies for acoustic signals, why then should the same principle not apply for things we see, smell, feel or taste?

usual question: What has this got to do with cosmetic science? And even I, this time, have to admit that, strictly speaking, it is absolutely nothing, but there are a few parallels that can be drawn from this seemingly irrelevant example to cosmetic science. So, as always let me try to explain what I mean.

While the senses of sight, smell, touch and taste are indispensable for gaining the full benefit from cosmetic products, hearing is one that is hardly used in our industry. Although these senses seem to be quite different, they all come about in the brain. Following an energy or chemical input stimulus from our eyes, nose, skin or mouth, an electric signal is sent to the brain via neurons. In our younger years, we learned to interpret these signals so that we can now act on them in the appropriate manner. Therefore our real sense, i.e., the perception of the stimuli received by our grey matter, is situated in our brains and not in our eyes, nose, skin, mouth or ears. But the language example also teaches us that our brain has not only the capability of interpreting the signals, but it also learns when to ignore signals if they turn out to be unimportant and, as a consequence, we subsequently lose the ability to differentiate existing but irrelevant differences.

I am convinced that there is a lot of overlap between the senses. If this capability to interpret whether to act or ignore applies for acoustic signals, why then should the same principle not apply for things we see, smell, feel or taste? This would mean that if we have not learned to appreciate specific sensory stimuli in our younger years, we might not be able to even recognize them later. Think, for instance, about your favorite dish at home as a child when your mother was still preparing your daily meals. When your partner finally got to taste it, (s)he probably thought nothing of it. Our preferences are, of course, influenced by our abilities to register sensory experiences. In the same way as our food sensory preferences are influenced by what we ate in the early phases of our lives, our capabilities to observe and possibly prefer a specific skin feel may also originate from what we have experienced as a child.

So, a relevant question is how much use of cosmetics and toiletries did we experience when we were very young? At least once a day,

we were bathed, washed, pampered and cuddled all at the same time using at least baby oil, baby soap and baby powder. We probably still remember how these products smelled. In The Netherlands, the Zwitsal brand of cosmetic products for babies and young children is extremely popular. Although the number of products in the Zwitsal brand has expanded considerably since I was a regular, albeit compulsory user, they are all still characterized by the same fragrance that gave these products their particular appeal in the late fifties and early sixties when it was my turn to experience them. All later brand extensions simply had to have the same fragrance. To almost all Dutch people, the smell of Zwitsal products reminds them of babies, cuddles and other positive things. This is a perfect example of how our minds, some twenty to thirty-five years later, when we have to bath, wash, pamper and cuddle our own children, will immediately select those familiar products from the supermarket shelf.

But the world has changed dramatically in these twenty to thirty-five years. It has become a much more global marketplace and our main emphasis in life has shifted from producing to consuming. Product lifetimes have shortened. The consequences of this change for our early sensory experiences are that every child nowadays likes McDonald's regardless of country or social status. All children have these sensory experiences engraved in their minds forever and, as a consequence, traditional local eating habits will disappear. Daily olive oil consumption in Crete has already reduced by some 80% within one generation. This may be fine (albeit tasteless) for food, but what about cosmetics? Is there a cosmetic equivalent of McDonald's?

The baby market in cosmetics is booming and little people have become big business. But modern cosmetic users are not typically renowned for their product loyalty and, if babies would change their products just as frequently as their parents change their shampoos (and who's deciding?), then babies may not develop the "Zwitsal"-feeling necessary to influence their choices later on in life. The first thing you need to create a "Zwitsal"-feeling is consistency. McDonald's will probably never noticeably change their Big Mac. When one of you will have reached the status of being the cosmetic equivalent of McDonald's, this company will be literally brainwashing

our children into cosmetic preferences. We will achieved that status when in 30 to 40 years time, Japan, Korea and China will have lost their preference for cosmetic products with an extreme light skin feel or the rest of the world will be following their example. But until that time, eat your lice and start developing the cosmetic equivalent of McDonald's!

Modified from a column "Sense & sensitivities" previously published in *SPC*
October 2002

Without Penetration No Delivery!

Someone has to say it, so why not me? Active ingredients are dead! Not that I believe that this trend is completely over. On the contrary, actives are more active than ever before. So, what do I mean?

The 90s in cosmetic science were the decade of the “active ingredients,” the new wonder molecules that would forever change the face of cosmetics and therefore the face of our consumer. Many multinational suppliers bought small, specialized laboratories that identified, isolated, tested and/or marketed such molecules. This led to a plethora of new products and chemical entities that were able to combat phenomena we did not even know we were suffering from. And if the active ingredient was natural—new chemicals emerging from exploration of oceans and forests—so much the better. But has this really changed the face of our industry? Or even more to the point, of our consumer?

The efficacy of these active ingredients was often only investigated in *in vitro* experiments. Reasonably high concentrations were added to isolated cells that were, for instance, stressed by the addition of cigarette smoke or other free radical providers. The greater the reduction, the

This new decade (or at least the earlier part of it) will be the decade of active delivery.

greater the joy of the investigator and the greater the market potential of the new wonder molecule. In the 90s, only a few openly questioned whether cells would ever be exposed to such levels of free radical providers and whether such quantities of active ingredient could ever be delivered to these cells in real life situations. Only in vivo evidence could provide the answer to such questions but such evidence for the functionality of a new active ingredient is rarely seen. This sole availability of in vitro evidence even led to the formation of a whole new type of cosmetic claim, the so-called ingredient claim, that sounded something like “New and improved product, now containing ingredient Q, that is known to do R.” But nothing about what product P would do...

But with the arrival of the new century, the cosmetic industry came to its senses. It realized that the clinical efficacy of a product is the result of the intrinsic activity of the active ingredient *and* its delivery to the site of action. Not only was the active ingredient needed, but its delivery was also important. This new decade (or at least the earlier part of it) will be the decade of active delivery. We need an active ingredient and it also needs to be delivered. If one of the two is zero, then we will not have clinical efficacy. Hence my statement that active ingredients are dead, we now want active *products*, active cosmetic *products*, not just active ingredients.

So we have realized that we need to deliver our active ingredients to have active products. But, in our enthusiasm, we have forgotten to master the concept of cosmetic delivery. What is delivery? It is clearly defined in the Four R's of Skin Delivery: to deliver the *Right* chemical to the *Right* site in the skin at the *Right* concentration for the *corRect* period of time. Delivery is often a problem because the stratum corneum provides such an efficient barrier against incoming chemicals. In short, the delivery of an active molecule is predominantly determined by its physicochemical properties and, to a lesser extent, by the vehicle in which it is formulated.

Therefore, having sold active ingredients for a decade or so, the next focus was to sell the vehicle. Formulations have traditionally been mixtures of ingredients from various suppliers, but now suppliers would want to sell new formulation systems that have the

unique property to generically enhance delivery of every single active ingredient under the sun. In order to create uniqueness, our innovative industry therefore created all kind of encapsulating bodies (or –somes) that could be linked to chemistry (e.g., liposomes), physical chemistry (e.g., nanosomes), mechanism of action (e.g., transferrinosomes), or company (e.g., Rovisomes). Whereas such types of bodies have clearly demonstrated their benefits in oral and parenteral drug delivery, they still need to show their *clinical* benefits in cosmetics and dermatology.

And why do I think that these particles have not yet delivered their benefit? This approach does not make sense because an encapsulated particle will be significantly larger than a non-encapsulated molecule. Some of these encapsulating bodies have diameters that are larger than the spaces occupied by the intercellular lipid between corneocytes. If you would like to make it easier for an incompetent soccer player to score a goal in a football match, would you enlarge the goal or the football? What these particles do in most cases is to deposit a chemical on the skin surface. But without penetration of the active ingredient, there is no delivery of efficacy although there are still people that believe that cosmetics work exclusively on the skin surface and only pharmaceutical ingredients penetrate the skin. To penetrate or not to penetrate, is that what makes a drug? Penetration is what makes an active ingredient into an active cosmetic product. Let's deliver on our promises and penetrate the skin to deliver an effect. Active ingredients should be dead but long live the active products. But without penetration no delivery, and without delivery no active product!

Modified from a column "No gain, no claim" previously published in *SPC*, August 2003

The Perception of Reality or the Reality of Perception?

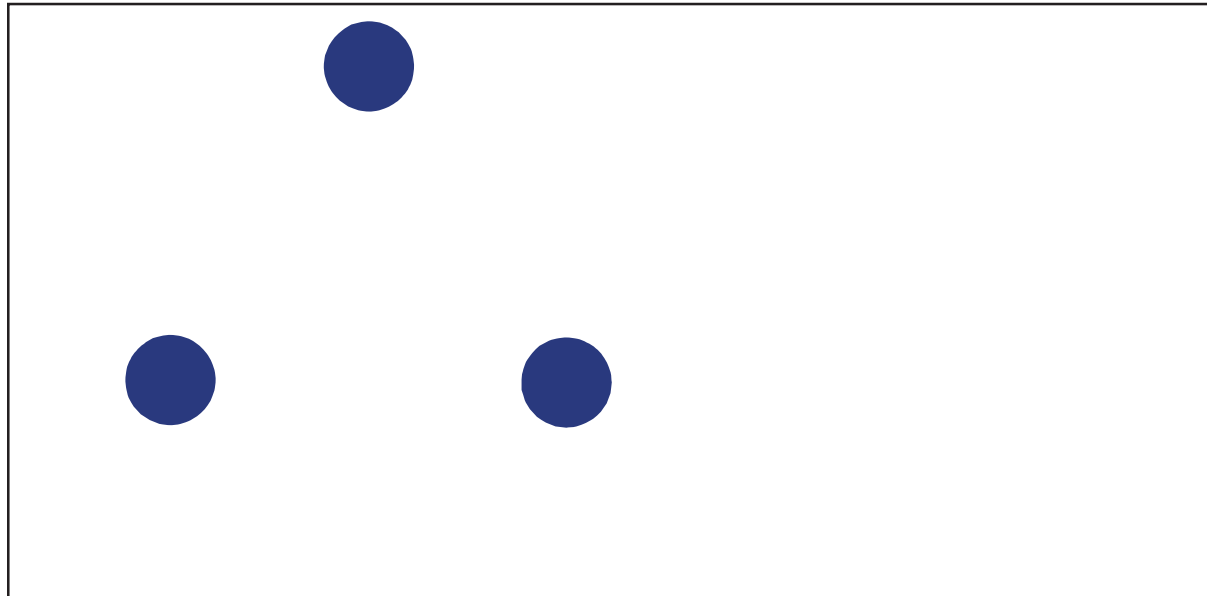
The great Albert Einstein was once asked to explain the concept of relativity to laypeople in the form of an easy experiment that they could do at home. To demonstrate the concept, he needed a beautiful woman and a stove. Einstein's housekeeper, knowing his qualities in the kitchen and not a beautiful woman herself, did not want to lend him a stove, so he had to settle for a chrome waffle iron instead. He phoned his friend, Charlie Chaplin, to make an appointment for a cup of coffee with his beautiful wife, the movie star Paulette Goddard. He went to New York for his rendezvous and after, as he thought, a minute had elapsed he looked at his watch and concluded that, in reality 57 minutes, almost an hour, had passed. Delighted about the company he had enjoyed but puzzled by his misjudgment of time, he went home where he switched on the waffle iron. He put his shirt over his pants and sat on the alternative stove for what he thought was an hour. He looked at his watch; noticed that hardly a minute had passed and then phoned his medical doctor. When asked for the origin of his strange wounds, Einstein told the amazed physician: "When a man sits with a pretty girl for an hour, it seems like a minute. But let him sit on a hot stove for a minute and it's longer than

Absolute truth, i.e., reality, is the summation of all external information in the form of vibrations.

any hour. That's relativity." (For those of you that would like to repeat the experiment, the details can be found in the *Journal of Exothermic Science and Technology*, Vol 1, No 9, 1938, but make sure you have a doctor standing by).

Is that relativity? I think that this is only relatively true. Personally I think that Einstein was describing perception. Just the same way as relativity is a relatively vague concept for those without a degree in quantum mechanics, perception is perceived to be rather vague for those not working in cosmetic science. In my own-made definition, perception is our own personal and internal interpretation of absolute truth. And as such, it is very close to reality, which according to Harry Jerison is a creation of the nervous system. And with this, we reach the heart of this month's column: what is the difference between perception and reality?

Look at the picture at the bottom, a variant on the well-known Kanizsa triangle, and tell me what you see. I bet that you see three black circles and a white triangle. Well done, but the reality is that there are only three parts of black circles. There is no triangle although we all see it clearly. In other words, we see things that are not there in the same way as we do not see things that are there.



Absolute truth, i.e., reality, is the summation of all external information in the form of vibrations. We pick these up via our senses and transport this absolute signal to our brain. There, the signal is processed, stored and compared via association with the information in our personal database of conscious and unconscious memory. If unimportant we tend to ignore the information, but when deemed to be important enough, this association subsequently allows the information to generate our own projection of reality, which we subsequently call reality even though it really is only our perception thereof. In other words: our perception of reality.

And this is a very dangerous, yet pleasant thing. Because perceptions are our personal interpretation of the absolute reality, we cannot be wrong in the same way as “there is no accounting for taste”! In certain cases, for instance in an Escher painting, you realize that you are manipulated into seeing things that cannot be right. The clever trick of his paintings is that we know only from association that his paintings are wrong but we cannot put our finger on the wrong spot!

We’re living in a world where perception is gaining in importance over reality. We have to feel right rather than be right. For quite a few new politicians (certainly in Dutch politics), TV appeal and charisma seem to be more important than quality and content. And we’re seeing the same in cosmetics. Suppliers promise quite a lot to their customers, the manufacturing industry. They love to promise more and the manufacturing industry loves to insist on more. This attitude also promotes a shift from reality to perception. But when it comes to selling the personal care ingredients, all the perception is gone and manufacturers need the hard and cold facts: the absolute reality. But when they subsequently start selling to their customers, the perception is back in full swing and consumers are carefully helped by advertising into believing whatever claim is presented. Of course, customers do not push back in asking for the hard and cold facts: the absolute reality. But they reply with their spending patterns and manufacturers will realize that they may have gone too far when their product stops selling after the first purchase.

But where does that leave us with cosmetics? Groucho Marx once said, “Who are you going to believe, me or your eyes?” As “seeing is believing.” I think I know the answer. Let’s do a “seeing” experiment, somewhat less painful than the unbelievable experiment Albert Einstein proposed. Do you believe that the mirror gives a true reflection of how you look? If the answer is yes, then look at yourself in the mirror. We think that the reflection of our face is the size it really is, a true reflection of reality. Now put your forefinger and thumb to your chin and the top of your head in the mirror, and then bring your hand back and compare this distance with your actual face. The more technically minded amongst you are encouraged to use a ruler. Whichever method you use, the answer will be the same: it’s only half the size!

I hope to have convinced you that the distinction between reality and perception is thin, very thin indeed. But there is nothing wrong with perception. This is fortunate as there is really more perception than reality in this world. So, if you are being accused again of selling “Hope in a Bottle,” ask people whether they think the product that they are using has any image, enhances their self esteem or even confers sex appeal and then ask them which ingredient from the INCI list on the back is responsible for that. Maybe Harry Jerison was right, reality is a creation of our nervous system, i.e., our brain. Maybe that is the reality of perception, or is it only my perception of reality?

Modified from a column “The reality of perception” previously published in *SPC*, April 2003

Dancing to the Dollar...

How come you ended up in cosmetic science? Could it have been by accident—like the pharmacist who had a frustrated sister who could not attract the attention of the guy that she wanted to make an impression on? She asked her brother to make something that would draw the guy’s attention to her eyes. He set to work and sure enough, about a year later, she was married. The pharmacist who knew both the inner and outer beauty of his sister must have thought, “If this is what I can do for my sister Mabel with Vaseline, I can do the same for a lot of other women too,” and the brand Maybelline (a fusion of both the sister’s name and the main ingredient at that time) was born. What made the pharmacist successful was the creative ability to both select the right ingredients to get the job done correctly and to see the applicability of his technical success beyond the eyes of his sister. In other words, chemical knowledge plus commercial acumen combined with the drive to make things a success.

So, why are you working in our industry? Are you attracted by its broad knowledge base and, maybe, the fact that—in contrast to pharmacy—you can even innovate without too much knowledge? Or is it your “nose” for commercial success? You will have learned by now that the cosmetic industry is one of the few

The nice thing about our industry is that our customers even love us in the current economic climate for that little bit of hope and self-esteem we offer.

industries that continuously grows at a rate well above inflation. For instance, even in the turbulent times of 2002, the share price of L'Oréal fell by only 10%. This was mirrored by Beiersdorf, Unilever and Procter & Gamble who demonstrated similar share price fluctuations. Avon was the real star in 2002 with a 15% increase in share price. The nice thing about our industry is that our customers even love us in the current economic climate for that little bit of hope and self-esteem we offer.

So, knowledge and a nose for commercial success, i.e., a nose for raising money, are important to make it in our industry. But are they not like water and fire? Should we be square circles to be successful? After all, knowledge and money are completely different, so how can they be combined within a single individual? Let's focus on the differences for a while. Knowledge is something that you can share but that you never lose. You can listen to what people tell you at scientific conferences and congresses and decide to take it on board or not. But, whatever your decision, the person imparting the knowledge never loses it. Money, however, is something completely different. The money that I have, you have not and vice versa. And the purpose of all of us in business is to make money, and more than your competitor. But without knowledge you cannot raise money. After all, a fool and his money are soon parted. Likewise, without money you cannot create knowledge, as many academics know unfortunately only too well. As such, money and knowledge are like the poles of a magnet, there is no North without South but they will never come together. Sounds like a real Catch 22, doesn't it?

Let's look at how we raise money on knowledge. We patent our findings to ensure that we, and only we, make a financial profit from our inventions, but the cost of that exclusivity is that we have to share our knowledge with everyone, allowing even our competition to study the principles of our invention which may spark off new ideas that would not have emerged otherwise. Sometimes, we prefer not to patent to avoid this from happening. And in doing so, we protect our knowledge and our money until our competition has the same idea. Based on this, you would be inclined to believe the common knowledge that knowledge is power but in reality power is more

associated with money. Whereas the value of money is absolute (i.e., the same for all), the value of knowledge depends on how desperately the receiver needs it. Knowledge, therefore, has only relative power, which is something that cosmetic consultants know only too well. In order to turn their knowledge into money, they need to disclose some of it to let it be known that they have something to offer to prospective new clients, and in doing so they might accidentally release the critical information that constitutes the value, free of charge. And once they have been recruited, how do they deal with their contract that states that they cannot use the newly gained knowledge whilst working with this client with another client? How does a cosmetic consultant manages to maintain market value (i.e., knowledge) if you cannot speak freely any longer? Not being a cosmetic consultant myself, my answer is not based on experience, but simply on observation. There is a constant increase in the number of publications from cosmetic consultants in both the cosmetic science literature and the trade journals, depending on the markets they would like to reach. The science consultants write, for instance, extensive reviews on complicated and confusing subjects that we could understand ourselves if we would only have the time to read everything that is published, whereas the more practically oriented consultants like to write about solutions they implemented for their clients. The reader may think: "If this consultant can solve that formulation problem, why not mine?" and may phone the consultant's number that can invariably be found at the end of the article. Are we now not getting close to the pharmacist who had a sister called Mabel? At the end of the day, cosmetic consultants are selling time, billing us by the hour or day. And time is money; you don't have to be a man of knowledge to know that. Really frightening if you know that time is the only thing money cannot buy!

Modified from a column "Dancing to the dollar..." previously published in *SPC*, June 2003

A Smelly Business...

Did you notice a change in the world around you recently? No, I am not talking about changes in political regimes or country boundaries but things that really matter to us in the cosmetic industry. I am sorry to have to push your nose right into this matter but you will need to follow it as I am about to discuss a truly smelly issue. Whereas the European consumer has a strong belief in the benefits of cosmetics, the members of the European Parliament do not seem to share the belief of the people they represent. In particular the chemical and cosmetic industries are facing tougher and tougher regulation all the time. Are our European parliamentarians walking along with their noses in the air, or do they indeed have a nose for matters that we cannot smell? This brings me to this month's topic, the 7th Amendment, the latest change in European cosmetic regulation.

What's smelly about this, then? Starting March 2005 we have to declare the presence of 26 fragrance ingredients in cosmetics if they are present at levels above the cut-off values of 0.001% for leave-on products and 0.01% for rinse-off products. The SCCNFP identified these 26 fragrance ingredients (13 of which are commonly and 13 less frequently used) that are known to cause allergic reactions. All have names that might frighten consumers

By educating our consumers and retailers, our industry would show its willingness to help the troubled consumer make a well-considered choice

when they read these on their product labels: amyl cinnamal, amyl cinnamic alcohol, anisyl alcohol, benzyl alcohol, benzyl benzoate, benzyl cinnamate, benzyl salicylate, cinnamal, cinnamyl alcohol, citral, citronellol, coumarin, eugenol, farnesol, geraniol, hexyl cinnamic aldehyde, hydroxy citronellal, isoeugenol, BMHCA, d-limonene, linalool, HMPCC, methyl heptine carbonate, methyl ionone alpha iso, oak moss and tree moss. A long and impressive list that causes many red scribbles on my computer screen to appear, indicating how well known these fragrance ingredients actually are. However, consumers must know these ingredients a lot better than Bill Gates' programmers because, as John Middleton of Quest International told me, "in an industry survey of over 300 fragrance mixtures, 100% of all deodorants or fine fragrances contain at least one or more of the ingredients listed above, and 26% of deodorants and 37% of fine fragrances contain at least 10 or more of the above ingredients." Bill Gates programmers' wives are probably allergic to d-limonene and linalool, two ingredients that ended up on my screen without wiggles.

But are Bill Gates programmers' wives exceptional or simply like any one of us? Dermatologists claim that fragrances are the second most common cause of skin allergies after nickel. According to the Colipa Web site, only a small sub-section of the population suffers from fragrance allergy (less than 0.1%). For these consumers, ingredient labeling is the only real means of identifying the eventual presence of the specific allergen concerned and thus avoiding the product. But according to a 1999 report from the same SCCNFP that identified the 26 ingredients, 1–2% of the population has skin allergies to fragrances and the incidence is rising. This can be easily explained from the fact that more and more fragrances are being used in hygienic products, drugs, detergents as well as other household products, plastics, industrial greases, oils and solvents, foods, etc. What these sensitized people would really like is to have all these products to be produced without any of the 26 ingredients listed above. Only that would really solve their problems because for those that have symptoms triggered by indirect contact and airborne allergens, avoiding personal use of these ingredients is not enough. What

is on surfaces and in the air can trigger the allergic symptoms already, so a complete replacement seems the only option. Do you also feel a little bit led by the nose by these two contradicting statements or is all simply a matter of concentration as Paracelsus already concluded in the early 16th century?

Let's go for the more dramatic scenario first and see whether we can modify an existing fragrance to remove all of the 26 allergens and keep the same odor fragrance. No. Can we then create a new fragrance without any of the 26 allergens? Yes, but it makes it difficult to use naturals and other ingredients containing the 26. Can we create then a new fragrance with all the 26 allergens below the cut-off values? No, cut-off levels do not help, as they are too low. Will there be any odor areas that will be difficult or even impossible to retain? Yes, citrus, lavandaceous, flora (rose, jasmine, for instance) and spicy. The impossibility of this replacement issue is starting to get up your nose and even if we really tried, we cannot fully replace the 26 ingredients.

The only thing therefore left to do is to mention their presence on the label with all its possible consequences for adverse publicity, such as rejection by retailers or consumers. But on the other hand, given the fact that we have to do this according to the 7th Amendment, labeling may also have its advantages. With a targeted advertising campaign to educate consumers and retailers, our industry would show its willingness to help the troubled consumer to make a well-considered choice. Labeling will only be successful if the consumer, the retailer and the members of the European Parliament are educated to understand that the labeled ingredients are not dangerous to a very large proportion of the population, that most people can ignore the extended labels completely, but that it will help diagnosed consumers to choose their products based on facts. Let's use the time till March 2005 to look beyond the end of our noses and show ourselves from our best side. Educating our consumers for the benefit of all, now that would really be a fragrant new breeze for our industry!

Modified from a column "A smelly business..."