

Is your make-up killing you? The deadly poisons lurking in your handbag

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The British cosmetic, toiletry and perfumery industry is worth more than £6.5 billion a year.

Yet just this week, research was published showing that common chemicals used in toiletries may make women more likely to be infertile.

Indeed, inside all those gleaming bottles and tubes we take for granted lurks a cocktail of dangerous synthetic chemicals that research suggests may be responsible for everything from reproductive complications to allergies and cancer.

In her new book, *Toxic Beauty*, investigative journalist DAWN MELLOWSHIP takes a look at what's really in our cosmetics. . .



Toxic make-up: The deadly chemicals in our beauty products

BAD HAIR DAY

Contact dermatitis is a form of skin inflammation related to eczema that is caused by external substances coming into contact with the skin.

One incredibly potent source of allergic contact dermatitis in humans is the hair colourant paraphenylenediamine (PPD), also referred to as p-phenylenediamine.

PPD is still used in some permanent hair dyes in Britain and the U.S. - despite being prohibited for use in hair dyes in Germany, France and Sweden many years ago because concerns developed about its damaging health effects.

PPD is not approved for direct application to the skin, yet when hair dye is applied it usually does come into contact with the scalp and often the forehead and ears.

A survey of one London contact-dermatitis clinic, where eczema patients were tested for reactions to PPD, found that allergy to the substance had risen from 4.2 per cent in January 1999 to 7.1 per cent in December 2004.

The study's authors state that the 'disturbing' increase in positive reactions to PPD 'may be due to subjects dyeing hair in increasing numbers and at an earlier age'.

One recent study of 55 people with adverse reactions to hair colours concluded that PPD presents a significant health risk for people, yet it is still authorised in hair dyes in concentrations of up to 6 per cent in the EU and 4 per cent in the U.S.

ALTERNATIVES TO CONVENTIONAL HAIR DYES

If you colour your hair regularly, try natural dyes. Dark hair dyes in particular seem to have more question marks about their safety, so consider a lighter shade or learn to love your natural colour.

Vegetable dyes are a far safer option than those packed with synthetic chemicals - and are much less likely to cause allergic reactions.



Dark hair dyes may be unsafe so consider a lighter shade for your locks

Pure vegetable dyes are extracted from plants such as saffron, camomile, black myrtle leaves and green walnuts.

Henna (which in rare cases can cause skin problems) is extracted from the *Lawsonia inermis* shrub and has a more permanent effect because its molecules are able to penetrate the cortex of the hair shaft.

CHEMICAL NASTIES IN CLEANSER, SHAMPOO, BUBBLE BATH - AND EVEN TOOTHPASTE

Sodium lauryl sulphate (SLS) is reported to be the most frequent cause of eye irritation by shampoos.

A cleansing and foaming agent, it is used in a range of personal care and household products.

SLS can damage the protective outer layer of the skin, and has been shown through research to penetrate the skin to a depth of 5mm to 6mm (1/4 in), causing skin irritation - with deeper transference occurring via the bodily systems.

SLS is commonly used in laboratory testing on humans and animals to induce skin irritation so that the healing or modifying properties of other substances can be measured.

Skin is also sometimes irritated with SLS in tests to increase the penetration of other substances.

This is a worry, as using SLS via cosmetics and personal hygiene products could potentially allow other toxicants to penetrate the skin more easily.

Toothpastes often contain SLS in order to clean the teeth and mouth more efficiently, even though the substance has been reported to irritate mucous membranes in the mouth. This is particularly the cause among those predisposed to recurrent mouth ulcers.

IS YOUR BATH GIVING YOU THE ITCH?

Soaking in the bath leaves the skin, urogenital and anal areas exposed to the harsh detergents (such as SLS) used in many shampoos, bubble baths and soaps. This can trigger urinary-tract infections in

sensitive individuals (particularly babies and children). In the U.S., children's foaming bath products carry a health warning alerting parents to this.

NAIL POLISH NASTIES



Nasties: Formaldehyde is used as a preservative in nail polishes

Formaldehyde is used as a preservative in nail polishes, soaps and other cosmetic products.

It is also found in household products such as furniture polish.

Formaldehyde is a suspected carcinogen and common skin and eye irritant.

The International Agency for Research on Cancer (IARC) says there is evidence formaldehyde causes a form of throat cancer in humans.

Though the U.S. Food And Drug Administration (FDA) does not object to the use of formaldehyde in cosmetics, providing certain restrictions are adhered to, finished products containing formaldehyde in the EU must be labelled with the warning 'contains formaldehyde' if the concentration exceeds 0.05 per cent.

WHAT TO DO

Formaldehyde is one chemical you are well advised to avoid, given its potential to cause allergies and irritation - not to mention its identification as a potential carcinogen. Seek alternatives wherever possible.

TALCUM POWDER

Cosmetic talcum powder, which is made up of more than 90 per cent mineral talc, is used in a range of beauty products.

These include eyeshadows, baby powders and feminine hygiene products. Talc is favoured for its ability to help a product stick to the skin and for its translucency.

The U.S. FDA consider cosmetic-grade talc to be safe, but in 1993 the National Toxicology Programme (NTP) in Britain found that rats exposed to cosmetic-grade talc via inhalation developed a range of inflammatory lung disorders, including cancer of the lungs and rare adenomas.

In addition, eight studies have indicated a 30 to 60 per cent increase in the risk of developing ovarian cancer in women using talc-based body powder in the genital region.

The IARC has concluded that using talc-based body powder in this region is possibly carcinogenic to humans.

COULD YOUR DEODORANT LEAD TO BREAST CANCER?

Parabens are a group of widely used preservatives added to food and cosmetics, and an extremely common ingredient in underarm deodorants and anti-perspirants.

These chemicals have come under scrutiny in recent years because they can demonstrate an oestrogenic (hormonal) effect in studies on animals and cells.

Oestrogen is known to play a part in the onset and progression of cancer.

In 2004, Dr Philippa Darbre, senior lecturer in oncology at the University of Reading, undertook a study which showed that parabens could be detected in human breast tissue.

A separate Danish study in which 26 healthy male volunteers applied cosmetic creams containing parabens detected the substances in their bloodstreams within one hour.

Parabens are included in many consumer items, but chronic exposure to parabens can result from repeated use of personal care products that contain them, especially deodorants and anti-perspirants.

These products have been linked to breast cancer because they are applied close to the breast, where they could potentially adhere to DNA and encourage the development of damaged cells.

Deodorants and anti-perspirants are also often applied to shaved skin.

This provides an easier route for chemicals to enter the body as shaving strips away some of the protective outer layer of the skin.

Another cause for concern in these underarm products are aluminium salts, which are authorised to be used at high levels in anti-perspirants, sometimes making up to 25 per cent of the product.

Research has shown that aluminium can bind to oestrogen receptors in the breast, also mimicking the effect of oestrogens.

A survey of 437 women diagnosed with breast cancer found that those who frequently used anti-perspirants along with shaving their underarms from an early age were diagnosed with breast cancer at an early age, too.

'I am not quite sure why anyone in their right mind would want to spray a 25 per cent solution of aluminium under their arms every day. It's absolute madness,' says Dr Darbre.

'People need to understand what is really in deodorants and anti-perspirants. It's a toxic mess.'

WHAT TO DO

Avoid deodorants and anti-perspirants that contain parabens and aluminium, which you should find published on the product's label.

Encourage children and teenagers in particular to use natural products.

WHAT 'HYPOALLERGENIC' AND 'DERMATOLOGIST TESTED' REALLY MEAN

If you have sensitive skin, you may well choose products bearing these labels in the hope that your risk of experiencing any irritation will be reduced.

'Hypoallergenic' and 'dermatologist tested' are two frequently used terms - but, unfortunately, they may bear little or no relation to the product.

Any product may legally call itself hypoallergenic. In evidence submitted to the House of Lords Select Committee on Science and Technology and published in its report on allergies in 2007, Professor David Gawkrödger, consultant dermatologist at the University of Sheffield, said: 'There is no regulation of the term "hypoallergenic".'

I see a whole list of things which I know can cause allergy, so I am rather cynical about the label of 'hypoallergenic'.



Avoid deodorants and anti-perspirants that contain parabens and aluminium

Again, 'dermatologist tested' can be a meaningless statement. It may simply be the case that a small number of individuals claiming to have sensitive skin have been tested and demonstrated no reaction to the product.

The testing may not be scientifically valid and there's no guarantee the product will not cause reactions in others.'

As the Select Committee report remarks: 'The allergenicity of a substance is dependent on an individual person's response and their tendency to develop allergies.'

In 2004, product testing and campaigning charity Which? wrote to ten leading British cosmetics companies asking them to explain the use of terms such as 'dermatologically tested' on their products.

Eight replied and explained that such claims referred to tests intended to provide reassurance to consumers about product safety. Though general information about the tests was provided, none gave specific details of trials conducted or test results.

Which? asked two expert dermatologists to examine the information provided to assess its validity, but because it was incomplete they were unable to do this comprehensively.

AND IF YOU THINK THAT 'NATURAL' ALTERNATIVES ARE BETTER ...

Make-up composed of inorganic pigments, such as mica, zinc oxide and iron oxide, is hugely popular, and is frequently being touted as a 'natural alternative' to conventional products.

But there is a lack of industry regulation on mineral make-up and the term 'natural' can be a bit of a misnomer, too, as the minerals have to go through stringent chemical and purification processes to be included in cosmetic products.

Other controversial issues surrounding mineral make-up are the use of ultra-fine particles in some brands, which are 'nano-sized' (once inside the body, there are concerns that nano particles seem to have unlimited access to all tissues and organs, including the brain, and may cause cell damage that we don't yet understand).

Some mineral make-up brands may also use potentially toxic minerals such as talc, aluminium and bismuth oxychloride - a by-product of lead and ore refining that can cause skin irritation and scratch the surface of the skin.

Having said that, if you are determined to use mineral make-up - particularly the more ethical brands - you will be exposing yourself to far fewer synthetic chemicals on your face than if you use conventional make-up.

* Extracted from *Toxic Beauty* by Dawn Mellowship (Gaia, £7.99) 2009, Dawn Mellowship. To order a copy (P&P free), call 0845 155 0720.

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