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## Trend report: Cosmetics

### Natural beauty: The trend toward natural cosmetics

**Body wash, shampoo, toothpaste, body lotion, face cream, suntan lotion, aftershave, deodorant and make-up are used on a daily basis to clean and care for our bodies and improve our health and well-being. Without a doubt, the latest trend is toward natural cosmetics, which are becoming increasingly popular. But are they really as authentic, as tolerable and as free from harmful substances as consumers expect?**

To protect the consumer, the declarations that appear on packaging must be unequivocally verifiable. Allergies and the risk of being intolerant to cosmetic products cannot be ruled out, but the information on the package should live up to its promises. Origin analyses and detection reactions make it possible to identify harmful and prohibited substances. Which is why high-performance analysis systems and future-oriented detection techniques that verify origin and authenticity such as those on display at analytica 2016 in Munich are indispensable in the verification process.

#### Safety and tolerability

Laws require that, when used as directed, cosmetic products must be safe for the consumer. They may not contain any substances that can cause skin irritations or other health problems. As a result, some substance classes are prohibited for use in cosmetic products, and others are subject to specified limits, below which there is no risk to the consumer. Whether or not a specific product is safe is verified in a toxicological safety evaluation. There are also regulations that apply to scents and fragrances in scented and non-scented products.

#### Monitoring from raw material to product

Companies that manufacture, process and sell food and cosmetics are required to conduct their own tests to document and guarantee the quality of the raw materials they use as well as their products. To protect the consumer against

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potential health risks, monitoring agencies conduct risk-oriented spot checks to verify adherence to these legal regulations. The monitoring system covers the entire supply chain.

According to the EU Cosmetics Directive, only safe and extensively tested ingredients may be used. Misleading information on cosmetics packaging and insufficient warnings about specific effects are forbidden, as are prohibited dyes, additives and softeners.

### **Mineral oils in organic cosmetics**

If they are labeled as "natural cosmetics," body lotions, creams, lip care products and Vaseline may not contain any saturated or aromatic mineral oil hydrocarbons (MOSH und MOAH). Only vegetable fats and oils are permitted in these products. Natural ingredients and plant extracts result in good tolerability, even for sensitive skin, which explains the success of natural cosmetic products. An increase in certifications in the natural cosmetics sector is also a positive development for consumers.

However, waxy and water-repellent paraffins, which in many cases are incorrectly labeled as natural oils, are still being used in shampoos, conditioners and anti-wrinkle products. The debate also includes the silicone substitute polyquaternium, which is used because of its film-forming, antistatic effects.

As an additive in soaps, creams and other cosmetics as well as various foods, glycerin can guarantee that the products it is used in last for a long time. Glycerin is also used as a solvent and softening agent. In general, the hydrating effect of glycerin—whether synthetic or bio-glycerin—is a controversial topic.

### **Carcinogenic substances in decorative cosmetics**

Some substance groups may only be used in cosmetic products if they are explicitly approved, such as dyes and preservatives, for example.

However, some prohibited preservatives and dyes as well as heavy metals such as lead, cadmium, chrome and nickel are still being used in decorative cosmetics. Fan, carnival and theater makeup in particular have high levels of

hazardous substances. The fact that children's makeup also tested positive for prohibited carcinogenic and mutagenic preservatives and dyes is particularly concerning because the intake of harmful substances is particularly high among children. Even carcinogenic polycyclic aromatic hydrocarbons (PACs) were detected in makeup sticks.

High-resolution analysis techniques make it possible to detect banned substances in cosmetic products. In isolated cases, nitrosamines were detected in mascara. And although formaldehyde is banned in cosmetics, due to its effectiveness as a disinfectant and low cost, it is used in the form of urea compounds such as diazolidinyl urea, which releases formaldehyde when it comes into contact with the skin.

### **Aluminum compounds**

Aluminum compounds are still being used as ingredients in antiperspirants and antiseptics. Aluminum salts can often be found in deodorants, colognes and other spray products. While they are effective, they do irritate and dry out the skin in the long term and can cause granulomas. Muscular atrophy, Alzheimer's disease and breast cancer have all been linked to aluminum.

### **Nanomaterials in cosmetics**

Many cosmetics now also contain nanomaterials: Sunscreens, for example, use it as a UV filter. The nanopigments titanium dioxide and zinc oxide reflect and absorb the sun's invisible UV rays and, in doing so, protect the skin. Titanium dioxide has been approved as a UV filter pigment in nanoscale form throughout the EU since 2002.

### **Outlook**

When it comes to researching new types of active substances and manufacturing biopharmaceuticals and natural cosmetics, isolating and characterizing natural substances and new plant-based derived ingredients and explaining biosyntheses are becoming increasingly important. Researchers are also looking into the use of algae as organisms that can produce active substances for use in pharmaceuticals and cosmetics. Next-generation

technologies continue to provide new impetus. The objective is to develop previously unimagined therapeutic approaches in dermatology and personalized functional processes in the future.

**analytica: Trend platform**

The international trade fair analytica is the perfect place to gather information about future issues facing the cosmetics industry. From laboratory equipment and highly specific analysis and bioanalysis methods to automation and evaluation techniques, experts will present the latest developments in Munich.

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**About analytica**

analytica is the international trade fair for laboratory technology, analysis and biotechnology and their users in research and industry. The trade fair is accompanied by the analytica conference, where the international scientific elite meets to discuss the latest topics that pertain to chemistry, biochemistry and laboratory medicine. A total of 35,384 visitors and 1,166 exhibitors took part in analytica in 2014. analytica has been held in Munich every two years since 1968. The next analytica takes place from May 10 to 13, 2016. [www.analytica.de](http://www.analytica.de)

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