



Netherlands Food and Consumer
Product Safety Authority
*Ministry of Agriculture,
Nature and Food Quality*

Shampoo and shower gel 2018

Chemical safety and label assessment

investigation into preservatives, impurities and fragrances

Cosmetic products must satisfy the European safety requirements in order to avoid health risks. The Netherlands Food and Consumer Product Safety Authority (NVWA) has conducted an investigation into whether or not shampoos and shower gels on the consumer market in the Netherlands satisfy these requirements. This report contains the results of the 2018 market study.

Background

Exposure of consumers to frequently used cosmetics such as shampoo and shower gel is high. In view of the fact that the financial margins on these products are small, there is a considerable risk that the products do not satisfy all legal and other requirements. This is evident from, inter alia, the results of the sample investigation of cosmetic products by the NVWA chemical/product safety laboratory.

Risks

Through cosmetics, consumers come into contact with preservatives and allergenic fragrances. In the event that people who are sensitive to these ingredients use these products, there is a risk of allergic reactions if the concentrations are higher than the legal requirements and/or the ingredients are not stated on the label. Some preservatives (certain parabens) have endocrine disrupting effects. Shampoos and shower gels may also contain carcinogenic impurities.

Procedure

Products

Between June and December 2018, the NVWA sampled and investigated 410 products – 187 shampoos and 223 shower gels. The products came from 144 different brands. Between 1 and 14 different shampoos and/or shower gels were sampled from each brand. The decision to investigate several products from each brand was deliberate in view of the range of different fragrances offered by each brand. This figure represents a significant proportion of the shampoos and shower gels that are available on the market in the Netherlands. The shampoos and shower gels were sampled from the retail trade. The majority of products (395) originate from the European Union, and 119 originate from the Netherlands.

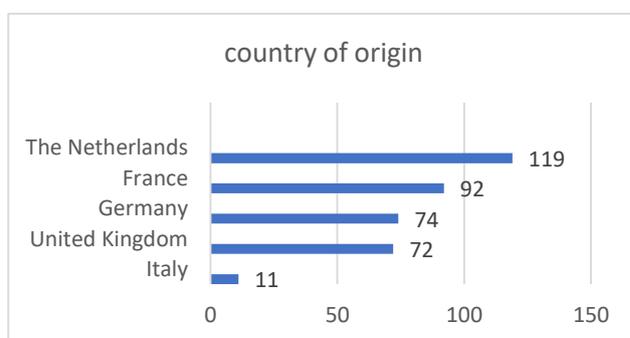


Figure 1: Top five sampled products

Investigation

The NVWA laboratory checked the shampoos and shower gels for the presence of the following chemical substances:

- Preservatives: methylchloroisothiazolinone (CMI), methylisothiazolinone (MI), benzylisothiazolinone, formaldehyde, 4-hydroxybenzoic acid, methyl, ethyl, propyl and butyl parabens, isopropyl, isobutyl, phenyl, benzyl and pentyl parabens and salicylic acid;
- impurities: nitrosodiethanolamine (NDELA);
- fragrances: benzyl alcohol, amyl cinnamal, cinnamyl alcohol, citral, eugenol, hydroxycitronellal, isoeugenol, amyl cinnamyl alcohol, benzyl salicylate, cinnamal, coumarin, geraniol, hydroxyisohexyl 3-cyclohexene carboxaldehyde, anise alcohol, benzyl cinnamate, farnesol, butylphenyl, methylpropional, linalool, benzyl benzoate, citronellol, hexyl cinnamal, limonene, methyl-2-octynoate, alpha-isomethyl ionone and methyl eugenol.

In addition, it was also assessed whether or not the preservatives and allergenic fragrances were stated in the ingredients list on the label and/or packaging.

Legal requirements

Requirements are imposed on the chemical preservatives, allergenic fragrances and presence of nitrosamines (NDELA) in cosmetic products.

A. preservatives:

1. methylchloroisothiazolinone (CMI) and methylisothiazolinone (MI), total contents $\leq 0.0015\%$;
2. benzylisothiazolinone: not permissible;
3. formaldehyde $\leq 0.2\%$;
4. propyl and butyl parabens, total contents $\leq 0.14\%$;

5. hydroxybenzoic acid, methyl and ethyl parabens $\leq 0.4\%$ separate substance, total content $\leq 0.8\%$;
6. hydroxybenzoic acid, methyl, ethyl, propyl and butyl parabens, total contents $\leq 0.8\%$ and total contents of propyl and butyl parabens $\leq 0.14\%$;
7. isopropyl, isobutyl, phenyl, benzyl and pentyl parabens: not permissible;
8. salicylic acid $\leq 0.5\%$, or $\leq 3.0\%$ if not intended for preservation;
9. benzyl alcohol $\leq 1.0\%$;
- B. nitrosodiethanolamine (NDELA) $\leq 50 \mu\text{g}/\text{kg}$;
- C. allergenic fragrances:
 1. benzyl alcohol, amyl cinnamal, cinnamyl alcohol, citral, eugenol, hydroxycitronellal, isoeugenol, amyl cinnamyl alcohol, benzyl salicylate, cinnamal, coumarin, geraniol, hydroxyisohexyl 3-cyclohexene carboxaldehyde, anise alcohol, benzyl cinnamate, farnesol, butylphenyl, methylpropional, linalool, benzyl benzoate, citronellol, hexyl cinnamal, limonene, methyl 2-octynoate, alpha-isomethyl ionone and methyl eugenol: in the event of contents $> 0.01\%$, declaration required on label. Limits apply to the maximum permissible content of the following fragrances:
 2. hydroxycitronellal $\leq 1.0\%$;
 3. isoeugenol $\leq 0.02\%$;
 4. methyl 2-octynoate $\leq 0.01\%$;
 5. methyl eugenol content $\leq 0.001\%$.

Results

Of the 410 shampoos and shower gels investigated, 28 did not satisfy the requirements assessed. This is 7%.

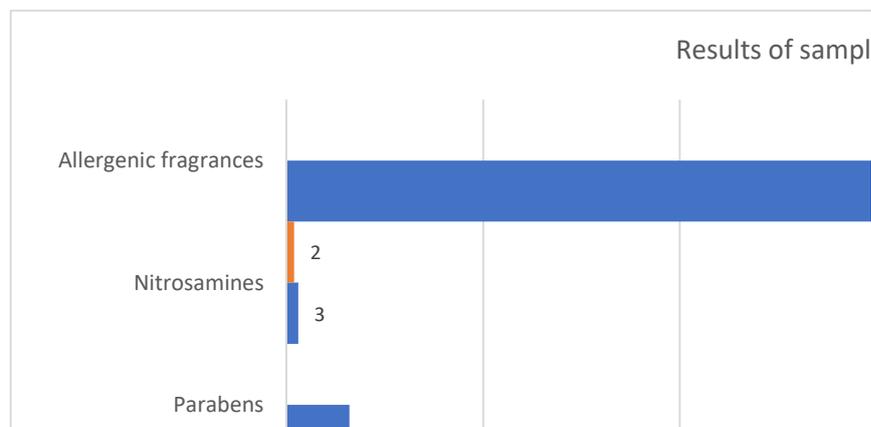


Figure 2: Results of sample investigation

Preservatives

Methylchloroisoithiazolinone and/or methylisothiazolinone were/was found in 73 products. MI was not stated on the label on two occasions; in seven cases, the standard $\leq 0.0015\%$ content was exceeded up to 0.0108% ; on one occasion, it was not stated on the label and the standard was exceeded. Formaldehyde donors/releasers, determined as formaldehyde, with contents up to 0.05% were found in 10 products. In 16 products, there were found to be 1 to 3 parabens: methyl paraben 16 times, contents up to 0.352% , ethyl parabens 8 times, up to 0.240% , and propyl paraben 3 times, up to 0.016% . Salicylic acid was found in 73 products with contents up to 2.52% . 4-hydroxybenzoic acid, benzylisothiazolinone and isopropyl, isobutyl, phenyl, benzyl and pentyl parabens were not found.

Nitrosamines

NDELA was found in three products. On two occasions, the standard of 50 µg/kg was exceeded (106 and 163 µg/kg). In the third product, the content was 28 µg/kg.

Allergenic fragrances

In 328 products, between 1 and 13 fragrances were found in each product. Linalool (234), limonene (215) and hexyl cinnamal (130) were the most common. Of the fragrances with restrictions, these were hydroxycitronellal (29; contents up to 0.087%) and isoeugenol (2; up to 0.014%). All concentrations determined were lower than the maximum permissible contents. The fragrances methyl 2-octynoate and methyl eugenol were not detected. In 18 products, allergenic fragrances were not stated on the label; 5 of these products contained 2 fragrances that were not stated.

Label check

The labels of 21 products (5%) did not meet the legal requirements insofar as one or more of the ingredients were not stated. Methylisothiazolinone was not stated on the labels of three (0.75%) of the products. Allergenic fragrances were not stated on the labels of 18 products (4.5%), namely benzyl alcohol (7), linalool (6), citronellol (4), limonene (3), geraniol (2) and coumarin (1). On five products (1.2%), more than one of the fragrances was not stated on the label.

Conclusion

Of the 410 shampoos and shower gels investigated, the majority (93%) satisfied the legal requirements investigated.

Of the 28 products that were non-compliant, the non-compliance was usually a failure to state the ingredients on the label. With 18 products, allergenic fragrances were not stated; with 3 products, the preservative methylisothiazolinone (MI) was not stated. The standard for MI was also exceeded in seven products. In two products, the NDELA content was found to be higher than the standard.

The sale of these products is prohibited until the label has been modified or the composition of the product has been brought in line with the requirements.