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THE ECOLOGICAL ASPECT OF THE USE OF COSMETICS AND THEIR IMPACT ON THE ENVIRONMENT

Introduction

Cosmetics may contain components that have an adverse effect on the environment. In recent years, the scale and volume of production of cosmetics has increased significantly, and their range has expanded. However, using cosmetics, we underestimate the harm that it can cause to our health and the environment.

Goal

To study the composition of the BB face cream Photoshop effect (JV Belita LLC, Belarus) indicated on the package in order to identify environmentally hazardous components in its composition.

Material and methods of research

Comparison.

The results of the research and their discussion

When studying the composition of the Photoshop effect BB face cream, it was found that it contains the following components: aqua (water), glycerin, cyclopentasiloxane, cyclohexasiloxane, ethylhexyl methoxycinnamate, CI 77891, hydrogenated lecithin, octyldodecanol, octyldodecyl xyloside, peg-30 dipolyhydroxystearate, hydroxyethyl acrylate/sodium acryloyldimethyl taurate copolymer, ethylhexyl stearate, phenoxyethanol, methylparaben, ethylparaben, propylparaben, CI 77492 (iron oxides), CI 77499 (iron oxides), CI 77491 (iron oxides), parfum (fragrance), 2-bromo-2-nitropropane-1,3-diol, tasmannia lanceolata fruit extract, syzygium leuhmanii fruit extract, kunzea pomifera fruit extract, linalool.

When analyzing the composition of the cosmetic product, the following harmful and environmentally hazardous components were found:

– *cyclopentasiloxane:* cyclopentasiloxane is a synthetic polymer based on volatile silicones. According to the ECHA (European Chemicals Agency), cyclopentasiloxane is bioaccumulative resistant and toxic (PBT) in the environment.

After January 2020, the European Commission amended cyclopentasiloxane (D5) in Annex XVII to REACH, indicating that this component should not be marketed as part of flushable cosmetics in concentrations of 0.1% or higher [1].

– *cyclohexasiloxane:* cyclohexasiloxane is chemically inert and very stable, its biodegradability is very low and it may take years to decompose, which is harmful to the environment.

Since January 31, 2020, the European Union has called for limiting the concentration of its use in the composition of washable cosmetics to less than 0.1% [2].

– *ethylhexyl methoxycinnamate:* octyl methoxycinnamate or ethylhexyl methoxycinnamate or octinoxate is an ester formed from methoxycoric acid and 2-ethylhexanol. It is a liquid insoluble in water.

The Hawaii State Legislature has restricted the use of sunscreens containing octyl methoxycinnamate due to the effects on coral reefs. For the same reasons, the Government of Palau has restricted the sale and use of sunscreens and skin care products containing octyl methoxycinnamate [3].

− *CI 7789:* titanium dioxide or titanium (IV) oxide is an inorganic compound.

Titanium dioxide, which is part of cosmetic pigments, mainly enters the environment in the form of nanoparticles through wastewater when the product is washed into sinks after cosmetic application. In wastewater treatment plants, this pigment is released into sewage sludge, which can subsequently get into the soil during injection and will not be distributed on its surface. 99% of titanium dioxide nanoparticles end up on land and in the environment it has a low solubility to extremely low [4].

− *ethylhexyl stearate:* ethylhexyl stearate is a substance of essential oils and vegetable oils.

According to environmental information, ethylhexyl stearate has the following environmental effects:

− toxicity to fish: LC50 Danio rerio (previous name: Brachydanio rerio) > 10,000 mg/l − 96 h;

− toxicity to daphnia and other aquatic invertebrates: EC50 Daphnia magna > 3000 mg/l − 48 h;

− toxicity to algae: EC50 Desmodesmus subspicatus (previous name: Scenedesmus subspicatus) < 100 mg /l − 72 h;

− toxicity to microorganisms: EC50 Pseudomonas putida > 10,000 mg/l − 16 h.

− *phenoxyethanol:* phenoxyethanol is an organic compound in the form of a colorless oily liquid. Phenoxyethanol is an alternative to preservatives that release formaldehyde.

Formaldehyde is an organic compound that heads the class of aliphatic aldehydes. Under standard conditions, it is a colorless gas with a sharp unpleasant suffocating odor. It is an irritant, contaminant and carcinogen.

The harmful effects of formaldehyde on the environment were investigated by V.B. Dorogova, who found that this compound is formed due to photochemical reactions and transformation processes of organic compounds polluting the atmospheric air. In addition, formaldehyde is one of the most powerful mutagens. In experiments on drosophila, some bacteria and plants, a direct relationship between the concentration of formaldehyde and the number of hereditary changes was revealed. Formaldehyde directly affects the nucleoprotein substance by blocking amino acids in the structure of gene proteins [5].

Conclusions

Thus, the study of the composition of the BB face cream Photoshop effect (JV Belita LLC, Belarus), indicated on the package, in order to identify harmful and environmentally hazardous components in its composition, allowed us to identify harmful and environmentally hazardous components.

Cyclopentasiloxane, cyclohexasiloxane, ethylhexyl methoxycinnamate, CI 7789, ethylhexyl stearate and phenoxyethanol, which emits formaldehyde, when flushed into sinks after cosmetic application of BB face cream Photoshop effect, enter the environment through wastewater. These components are further released in wastewater treatment plants into sewage sludge and can enter the soil during injection, distributed over its surface.

If this soil is located near a moving aquatic system, then chemicals can enter large freshwater systems, where fish may be at high risk of toxic effects.

When these chemicals evaporate into the atmosphere, followed by condensation and precipitation, the substances can end up in the environment anywhere on earth. Due to their long-range transport, harmful effects will persist until they are used and the current pollution is destroyed. If their use is excluded, these substances will remain in the environment for many years to come due to their high resistance.

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EPIDEMIOLOGY AND STATISTICAL REVIEW OF SCHISTOSOMIASIS IN NIGERIA

Introduction

Schistosomiasis is an acute and chronic parasitic disease caused by blood flukes (trematode worms) of the genus *Schistosoma* [2]. It is endemic in the poorest regions of sub-Saharan African countries. In Nigeria, 20 million people need to be treated annually, thus, it is the country with the highest burden in the world [1]. Despite the numerous cases every year, there is very little awareness about this disease in Nigeria. The disease is caused by five major species of schistosome. *Schistosoma mansoni*, *S. intercalatum*, *S. japonicum*, and *S. mekongi* cause intestinal schistosomiasis while *S. haematobium* causes urogenital morbidities. The predominant species in sub-Saharan African countries is *S. haematobium* [3]. There are only two predominant Schistosoma species in Nigeria which cause human schistosomiasis, S. mansoni, and S. haematobium.

The World Health Organization (WHO) set a target of schistosomiasis morbidity reduction of <5% prevalence in children aged 5–14 years by 2020 for endemic countries [2]. Despite a decade of efforts to mitigate the disease transmission, Nigeria is far from achieving the WHO's target.

Goal

The aim of this report is to highlight the epidemiological status of schistosomiasis in Nigeria. It is also to highlight the challenges, progress, treatment, method of diagnosing and preventive measures of this disease.

Material and method of research

The information was acquired using different books, websites and health organizations. Informations and records held on the online publishing of National institutes of health, Science direct, PubMed, World Health Organization (WHO), Google forms was used for the online survey.

The result of the research and their discussion

A survey was carried out to create awareness on schistosomiasis among different age grades and occupation.

The survey included age groups between the range of 9–51 years old. Nigeria students, foreign medical students, lawyers, engineers, doctors, physiologists, accountants took part in the survey.