

ENVIRONMENTAL ISSUES AND THEIR SOLUTIONS IN THE PRODUCTION OF FACE MASKS

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The beauty and cosmetic ingredients industry has a huge impact on the planet that cannot be ignored. From excessive packaging waste to the use of natural resources such as palm and soy, the beauty industry has significant implications for sustainability.

The purpose of this article is to highlight and provide solutions to environmental issues in the production of face masks.

Packaging waste is one of the biggest environmental challenges facing the cosmetics industry. According to a report by Zero Waste Scotland, the average household in the UK produces around 23 kg of plastic packaging waste each year, with a significant proportion of this waste coming from cosmetics and personal care products. Some common ingredients in cosmetics, such as plastics, metals such as lead, cadmium, and mercury, and synthetic chemicals such as parabens and phthalates, do not break down easily in landfills and can persist for many years. Leachate, or the liquid that seeps out of the mixture and into the soil, can contaminate nearby soil and water sources. In addition, when cosmetics are not disposed of properly, they can also pose a danger to wildlife, which may mistake the products for food or become entangled in the packaging materials [1].

There are currently hundreds of cosmetic companies that integrate sustainability into one or more phases of their product life cycle. For example, beauty giants such as Garnier and L'Oréal are implementing sustainability throughout the entire product life cycle. Garnier aims to minimize the use of plastic and other environmentally harmful materials. Biodegradable cellulose and eco-friendly packaging help reduce the environmental footprint of face masks and make them safer for the environment after disposal.

One of the brand's missions within the GREEN BEAUTY project is to reduce the negative impact of our packaging on the environment and to increase consumer awareness of packaging sorting and recycling. To achieve this goal, Garnier, together with the Eva, Watsons, and Rozetka chains, launched a joint project to collect used plastic packaging of Garnier cosmetics and recycle it. This means that bins for collecting Garnier plastic packaging have been installed in 73 Watsons stores, 127 Eva stores, and three Rozetka outlets. So, you need to bring your used and clean Garnier plastic packaging with you and sort it in the bin installed in the store near the checkout. You can then receive a coupon at the checkout with a discount of 25 UAH on your next purchase of Garnier products for each piece of Garnier plastic packaging you hand in for recycling. The collected plastic packaging will be sent for recycling to a

Ukrainian waste management company.

The product's impact on the environment throughout its life cycle can explain all the factors that make up the total rating score, which means “overall impact on the environment.” The rating calculation system involves assessing the environmental impact of:

- ingredient production;
- manufacture of packaging;
- packaging of the product itself and its consumption (including the amount of hot water used to wash it off and the ability of the product to decompose into biologically clean components);
- disposal of packaging and packaging materials.

Each product is labeled with a rating from A to E, with products marked “A” considered the best in terms of environmental impact. To determine the rating thresholds, thousands of L'Oréal products were analyzed, representing the full range of products on the market. The result is a comprehensive rating covering 14 environmental factors related to raw material sourcing, production, transportation, use, and recyclability.

For cosmetics, the two main factors in assessing environmental impact are carbon and water footprints. On average, carbon and water footprints account for two-thirds of the total environmental impact of cosmetic products. They are the main factors in assessing a product's overall environmental impact rating.

The carbon footprint is the amount of greenhouse gas emissions (CO₂) released during the product's life cycle, i.e., during the supply of components, production of packaging and finished products, transportation, use, and disposal of containers and packaging.

The water footprint is the amount of water used throughout the product's life cycle, i.e., during the supply of components, the production of packaging and finished products, as well as during the use of the product (e.g., in the shower) and wastewater disposal [2].

Table 1 shows a number of cosmetic brands that manufacture disposable fabric masks and what they offer in terms of recycling.

Table 1**Recycling in the production of cosmetic masks**

Brand name	Production details
Garnier SkinActive	Offers a series of masks made from biodegradable cellulose. These masks are certified as environmentally friendly and decompose within a few weeks in industrial composting conditions.
Aveda Tulasāra Wedding Masque	Uses plant-based materials and biodegradable packaging for its masks. They focus on eco-friendly production and sustainable sources of raw materials.
Innisfree My Real Squeeze Mask	These masks are made from eucalyptus tree cellulose, which makes them biodegradable. They are suitable for all skin types and provide various types of care (moisturizing, nourishing, soothing).
The Body Shop Drops of Youth Sheet Mask	The Body Shop mask is made from natural biodegradable cellulose, which decomposes after use. This brand actively supports environmental initiatives and uses recyclable packaging.
Leaders Insolution Daily Wonders	These masks use coconut biocellulose, which is completely biodegradable. In addition to being environmentally friendly, coconut biocellulose also has high adhesive properties, allowing the mask to adhere tightly to the skin and better saturate it with beneficial ingredients.
Sephora Collection	Sephora's line of disposable masks includes masks made from plant fibers that decompose faster than traditional synthetic materials.
Orgaid Organic Sheet Mask	These masks are made from environmentally friendly and biodegradable cellulose certified for organic use. Orgaid also avoids the use of toxic preservatives and synthetic chemicals in its products.

As a result, more and more brands are prioritizing the use of recycled and repurposed materials in the formulation of face masks and their packaging, in particular. Innovations in the packaging of masks and other cosmetic products play a very important role. Many brands are developing reusable or recycled packaging for their products, reducing waste. Solutions such as replacing disposable packaging with recycled packaging significantly reduce the environmental impact of production and meet modern environmental standards.

References:

1. Beauty at What Cost? The Environmental Impact of Cosmetic Ingredients and Materials [Electronic resource]. – Access mode: <https://sustainable-earth.org/cosmetic-ingredients/> .
2. Garnier [Electronic resource]. – Access mode: <https://www.garnier.ua/> .