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Excessive use of chemicals make environment filthy

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Abstract
The beauty industry has a significant negative impact on the environment due to several factors like: Plastic waste Beauty packaging generates about 120 billion units of trash per year much of which ends up in landfills and oceans. Only a small percentage is recycled, and micro plastics from both packaging and product ingredients harm marine life and eco systems. Resource consumption the industry uses huge amounts of water (over 10 million tons annually) and natural resources like palm oil, leading to deforestation and loss of wildlife habitats. The cultivation of ingredients such as palm oil is a major driver of deforestation, especially in Southeast Asia. Chemical pollution: Many cosmetics contain harmful chemicals that, when washed off, contaminate water systems and soil, threatening aquatic life and human health. Greenhouse gas emissions: The production, packaging, and transportation of beauty products contribute to CO2 emissions, fuelling climate change. Landfills from beauty waste also emit greenhouse gases like methane. Impact on wildlife:
Plastic and chemical waste from cosmetics disrupts ecosystems, harms marine animals, and threatens endangered species. The industry's environmental footprint spans the entire product lifecycle from resource extraction and manufacturing to consumer use and disposal making it a major contributor to pollution, resource depletion, and climate change.

Keywords: Micro Plastics, Packaging Waste, Carbon emissions, Chemical pollution, Water pollution, Production and Transportation

Introduction

The beauty industry significantly affects the environment in several key ways:

Packaging Waste: The industry produces around 120 billion units of packaging each year, much of it plastic, with most ending up in landfills or oceans rather than being recycled. This contributes to pollution and the build-up of waste in ecosystems like the Great Pacific Garbage Patch.

Micro plastics: Many beauty products contain micro plastics, which pollute waterways and oceans, harming marine life and eventually entering the human food chain. Resource Depletion: The industry’s demand for natural ingredients such as palm oil and soy leads to deforestation, habitat loss, and soil and water contamination from pesticides and fertilizers.

Carbon Emissions: Manufacturing, packaging, and global transportation of beauty products generate significant carbon emissions, contributing to climate change.

Chemical Pollution: Ingredients and by products from cosmetics can contaminate water supplies and harm wildlife. Animals, both on land and in water, can become trapped and entangled in plastic, leading to injury, suffocation, or death. Wildlife often mistake plastic pieces for food, which can cause intestinal blockages, malnutrition, or poisoning, and may ultimately be fatal. As plastic breaks down, it forms micro plastics that contaminate ecosystems. These micro plastics are ingested by marine life, entering the food chain and threatening biodiversity. Toxic chemicals from degrading plastics can leach into soil and water, contaminating habitats and harming plants and animals.

What are micro plastics in cosmetics: Micro plastics are tiny plastic particles (less than 5mm) intentionally added to many beauty and personal care products. They appear as solid micro beads or as liquid polymers that do not biodegrade. Why are they used?

Micro plastics serve several functions in beauty products:

1. Exfoliation (in scrubs and cleansers)
2. Texture and spread ability (in creams and lotions)

3. Visual appeal (glitter in makeup)
4. Extending shelf life and stabilizing formulas
5. Cost reduction for manufacturers

Where are they found?

Common products containing micro plastics include:
1. Face and body scrubs
2. Toothpastes
3. Shower gels and shampoos (especially older formulas)
4. Makeup items like

The beauty industry is a major source of environmental pollution, primarily due to its reliance on plastic packaging, single-use products, and unsustainable resource consumption. Key issues include: Plastic Waste: industry produces around 120 billion units of packaging annually, with up to 95% discarded after one use and only a small fraction recycled. This includes items like mascara wands, lipstick tubes, and shampoo bottles, many of which are not recyclable. Beauty products often contain thousands of synthetic chemicals, including parabens, phthalates, heavy metals (lead, cadmium, and mercury), micro plastics, and volatile organic compounds (VOCs).These chemicals enter the environment through manufacturing waste, product use (rinsing off in showers), improper disposal, and landfill leaching Micro plastics from packaging and product formulations are a major pollutant, persisting in soil and water.

Water Pollution: Many chemicals, such as preservatives, fragrances, and UV filters (like oxybenzone in sunscreen), are not fully removed by wastewater treatment plants.

Carbon Footprint of Beauty Products: Raw Material Sourcing About 30–50% of a beauty product's carbon footprint comes from sourcing raw materials, especially those linked to deforestation (like palm oil and wood pulp) and fossil fuel-derived ingredients.

Production & Transportation: Manufacturing and shipping products also contribute significantly to emissions, especially when heavy machinery and long-distance transport are involved. Consumer Use: For many products, especially rinse-off items like shampoos, up to 90% of their total carbon footprint come from the energy used to heat water during use.

Sustainable Sourcing: Brands are moving toward responsibly sourced, plant-based ingredients to reduce deforestation and biodiversity loss.

Eco-Friendly Packaging: There's a shift toward recyclable, biodegradable, and refillable packaging. Using refillable bottles could reduce emissions by up to 70–85%.

Energy-Efficient Manufacturing: Some companies are investing in renewable energy and waste reduction in their operations.

Carbon Offsetting: Brands unable to eliminate all emissions are investing in offset projects, such as reforestation or renewable energy.

Consumer Actions: Use products that require less hot water or opt for solid bars instead of liquids. Choose brands with transparent sustainability credentials and minimal packaging. Reduce product usage and shower time, and use colder water when possible.

Challenges: Most major beauty companies have not set robust, independently validated Net Zero targets, and sector-wide emissions are still rising. More innovation and consumer education are needed to address emissions from both production and product use. The beauty industry's carbon footprint is significant but can be reduced through sustainable sourcing, packaging innovation, energy efficiency, and conscious consumer choices.

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