

# The Price of Beauty

## Unveiling the Microplastics in Cosmetics



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### Abstract

Many people love to use makeup to make themselves more beautiful. Sometimes, students buy drugstore brands because they are cheap and have many options. But some cosmetics may contain lots of microplastics which may harm our body. For this experiment, we chose to observe the content of microplastics in lipsticks and blushes. Do you want to know more? We will tell you what we found through the following poster.

### Literature Review

#### 1. Distribution of Microplastics in The Human Body

The following picture shows that microplastics may be absorbed by organisms in the food chain and enter the human body, possibly causing endocrine disruption and other health problems.

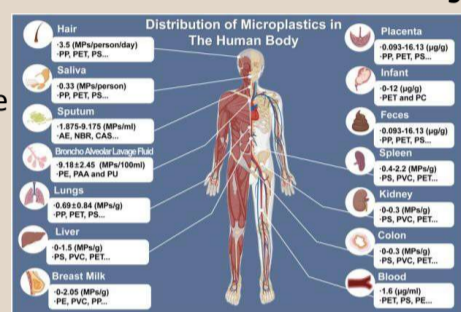
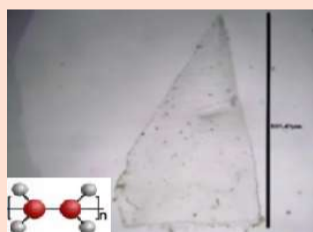


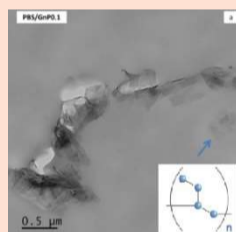
Figure 1. Distribute of Microplastics in The Human Body

#### 2. What are Microplastics?

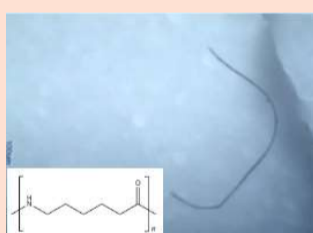
Microplastics are tiny plastic particles less than 5 millimeters in size. The following are microplastics commonly found in cosmetics. According to the research conducted by UNEP, TAUW, and ECHA, they are harmful to the human body.



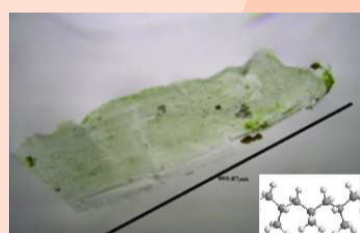
Polyethylene



Polybutene



Polyamide(Nylon)



Polypropylene

Figure 2. The shape of the microplastics

### Research Methods

First we collected different cosmetics. Then we used the app "Beat the Microbead" to check products for microplastics. It can scan your product by taking a picture of its ingredients. The app tells us what kind of microplastics in this product may harm our bodies. After checking the ingredients we used Acetone to dissolve the pigment because we couldn't observe them very well. We filtered it and extracted parts that may contain more plastic particles. Afterward, we used a microscope to observe those different kinds of plastic particles on the carrier slice. Last, we counted the number of plastic particles.

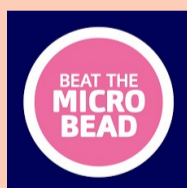
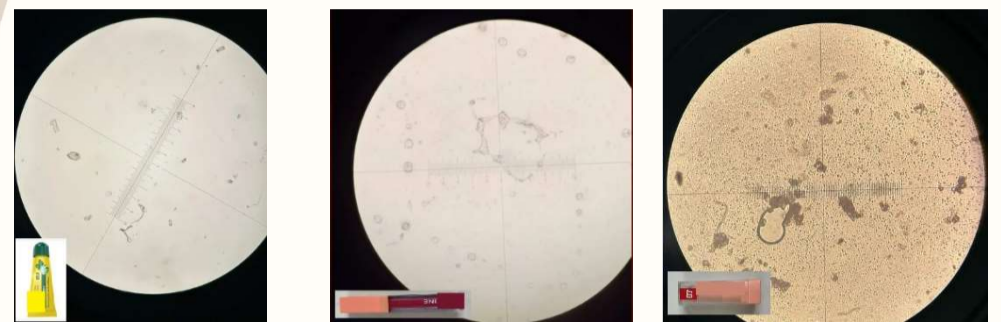


Figure 3. The app's logo of Beat The Microbead

### Analysis and Results

Here are the pictures showing what the samples look like under the 400X microscope. We found that there are many different microplastics for each cosmetic, and no doubt, there are also cosmetics that don't have microplastics inside.



Sample L1

Sample L2

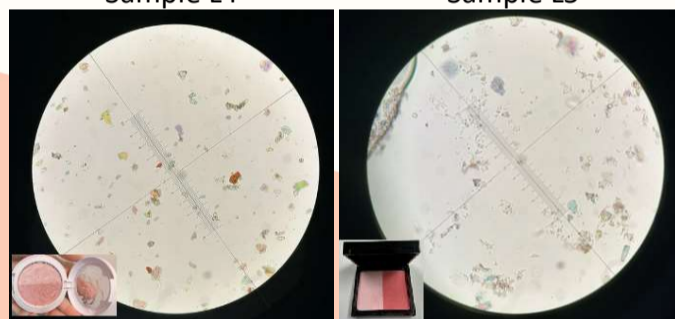
Sample L3



Sample L4

Sample L5

Sample L6



Sample B1

Sample B2

Figure 4. Samples under the microscope

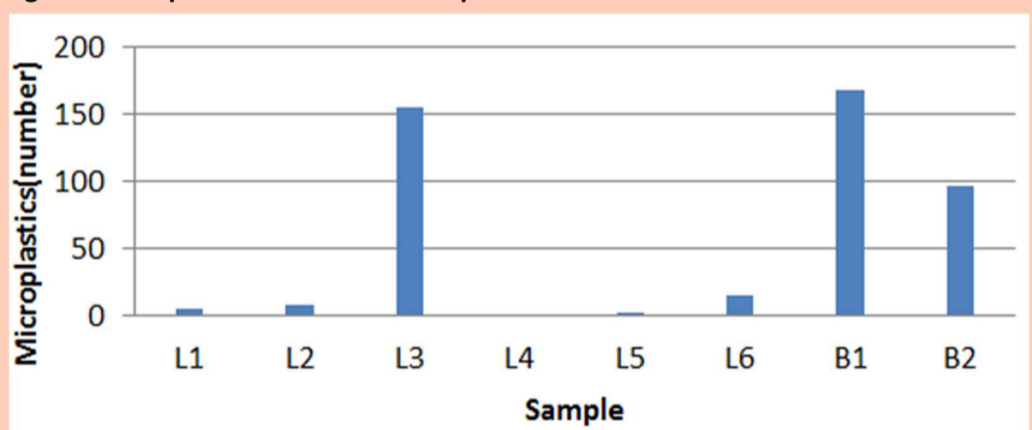


Figure 5. Number of plastic particles per sample

### Conclusion

Our research revealed that brighter and shinier cosmetics often contain more microplastics due to the glitter they include. These microplastics are extremely small, making it easy for them to be inhaled into our bodies. Additionally, during the makeup removal process, some microplastics are washed away, eventually flowing into rivers and reaching the ocean.

To protect both our health and the environment, we can choose cosmetics that are free of microplastics. By making thoughtful choices and working together, we can safeguard our planet and maintain our beautiful faces.

### Reference

- Ziye Yang et al., (2023 August). Human Microplastics Exposure and Potential Health Risks to Target Organs by Different Routes: A Review. Current Pollution Reports 9(18):1-18 <https://reurl.cc/Mjeepv>
- Polyethylene, <https://www.mdpi.com/>
- Polypropylene, <https://reurl.cc/Mjeepv>
- Polybutene, <https://reurl.cc/NIWWk6>
- Polyamide(Nylon), <https://reurl.cc/1XoxD8>



Figure 4. The process of operating the experiment