#Toxicological Risks and Regulatory Challenges

Misuse of Cosmetic Products

THE EXPERTS



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The off-label use of cosmetic products—applying them in ways other than those intended—is an increasingly widespread trend, largely fueled by social media. This phenomenon introduces toxicological risks that may be overlooked during the initial product safety assessment, which focuses exclusively on intended uses as defined at the time of market authorization.

Safety Assessments and Their Limits

Tolerance and safety assessments are fundamental to ensuring user protection. These include controlled clinical testing on human volunteers under stringent ethical guidelines[1], as well as in vitro and in silico evaluations. These methods aim to detect potential adverse effects that may not emerge under standard conditions of use.

Yet, when products are misused, such risk assessments no longer apply. This creates exposure scenarios that fall outside the validated safety envelope, leaving consumers vulnerable to hazards not originally considered.

Social Media as a Catalyst

On platforms like Instagram, TikTok, and YouTube, influencers regularly promote novel beauty tricks—many of which involve unconventional applications of cosmetic products. Take, for example, root touch-up sprays. Formulated for use on hair, these products are assumed to pose minimal inhalation or dermal exposure. But when repurposed to draw beauty marks near the eyes or lips, they come into contact with mucous membranes, increasing the likelihood of dermal absorption, ocular exposure, or inhalation of volatile substances.

Similarly, using eyeshadows or eye pencils as lip colorants exposes users to ingredients not tested for ingestion or mucosal contact. While creative, these practices significantly diverge from the products' intended uses and introduce avoidable toxicological risks.

Regulatory Framework and Limitations

In the EU, Regulation (EC) No 1223/2009 governs cosmetic products. This regulation mandates a toxicological safety assessment prior to market entry. The evaluation considers the manufacturer's defined use and any reasonably foreseeable usage scenarios. Importantly, as per Article 2:

"'Adverse effect' means a negative impact on human health attributable to the normal or reasonably foreseeable use of a cosmetic product"[2].

Thus, exposure routes such as dermal contact, inhalation, ocular exposure, and incidental ingestion are considered only to the extent they align with declared product applications. For instance, hair sprays are assessed for limited respiratory exposure—not for direct facial application. Products not intended for lip use are not tested for ingestion risk or mucosal tolerance.

This approach reveals clear blind spots when products are diverted from their original purpose. Ingredients like pigments, preservatives, or solvents may present a higher risk of sensitization, irritation, or systemic toxicity when applied to more permeable zones like the lips or eyes. Furthermore, aerosols used near the face may lead to sustained inhalation of volatile components.

Toxicological Risks from Misuse

Skin and Eye Sensitization

Many cosmetics contain potential irritants such as fragrances or preservatives. Certain colorants, approved only for hair applications, may trigger allergic reactions when applied to sensitive skin. For example, 1-Naphthol is an oxidative dye that can provoke facial allergies[3].

Ingestion Toxicity

Products not formulated for use on lips may contain substances that are hazardous if ingested. This is the case for certain pigments, like CI 11680 and CI 11710, which are not authorized for mucosal contact[4].

Respiratory Hazards

Misuse of sprays and powders can heighten the risk of inhaling harmful particles. Repeated exposure to Volatile Organic Compounds (VOCs), often found in aerosols, may lead to chronic respiratory conditions such as inflammation or pulmonary sensitization[5,6].

Conclusion

Misuse of cosmetic products introduces serious toxicological concerns, primarily because these scenarios fall outside the scope of existing safety evaluations. Addressing this issue requires both regulatory evolution and public education. Cooperation among manufacturers, health authorities, and social media platforms could reduce misuse and improve consumer safety. Targeted awareness campaigns and additional testing for products most at risk of diversion could provide practical preventive measures. ●

References

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