

Challenges in Assessment and Management of Cosmetics and Personal Care Products

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Cosmetics and personal care products (CPCP) are applied to skin and hairs for cleaning, protecting, and enhancing personal beauty. After rinsing, many of these products flow down the drain to mix with wastewaters. In most industrialized countries the drains lead to sewage treatment plants, but in developing countries, where there are few or no treatment plants, the drains flow directly into the rivers or sea shore. This is a typical scenario for rinse-off products such as shampoos, soaps and shower gels. But it is also true for leave-on products such as hair-care products and body lotions, which can be removed from the body by cleaning and bathing. Certain products such as sun protection products may also be released directly while bathing. As a consequence, many cosmetic products reach surface waters in a continuous manner, and could potentially affect human health via the environment. In addition, materials with high partition coefficient values sorb to biosolids which can then be applied to land fertilizers. Cosmetics and personal care products subsequently face significant challenges when assessing their potential environmental and health impacts:

- Broad diversity of chemical families and complexity from single ingredients to complex mixtures.
- Specific ingredients such as nano-materials, particulates, insoluble polymers, ionisable organics, permanently charged chemicals, and super-hydrophobic substances have physicochemical properties that are currently outside the applicability domain of standard test methods, making assessing their ecological risks uniquely challenging.
- Heterogeneous complex mixtures such as NCS (natural complex substances) are difficult to test with current environmental assessment methods which have been designed for single chemicals and homogeneous mixtures. So there is a real need to improve the knowledge about the types and amounts of the constituents. This would allow risk assessments of single substances considering aggregate exposure from various sources.
- Exposure of aquatic life (marine and freshwater) and human exposure via the environment to CPCP ingredients, such as surfactants, preservatives, fragrances, natural ingredients (e.g. phytotoxins), plastic microbeads (present in face cleansers) or UV filters (present in sun care products).
- Environmental risk assessment of land-applied cosmetic and personal care ingredients.
- Regulatory perspective in Europe on Consumer Products Environmental Footprint labelling, (including cosmetics and personal care products). Several environmental projects are under study at national (e.g. French) and international (e.g. EU) levels.
- Principles and management of sustainable use of CPCP to enhance environmental quality, ecosystem integrity and reduce human exposure via the environment. The purpose of this session is to present the latest trends and advances in scientific tools that address some of these challenges to better assess the ecological risks of chemical ingredients used in cosmetics and personal care products and health risks by human exposure via the environment.