

Domestic micropollutants, a diffuse industrial pollution - Part 2: Source reduction by changing personal consumption practices

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It has been proven that micropollutants in domestic wastewater are linked to the use of marketed industrial products in daily life such as personal care products (PCPs). The classical way to limit the discharge of these micropollutants in receiving water is the “end-of pipe” solution by implementing water-treatment technologies. These technological solutions are limited by the effectiveness of the wastewater treatment plants, the untreated discharges during rainfall and the financial and environmental costs. Another solution could be the reduction at source of the micropollutants by changing consumption practices. In the Cosmet’eau project, the example of PCPs is used to investigate the following potential solutions: modifications of industrial formulation or changes in consumption practices. With an interdisciplinary approach, coupling social sciences and chemistry of the environment, our goals are to study the whistle-blowers, the risk perception of consumers linked with their practices and the contamination of wastewater by parabens.

To understand how the alert has been launched, actors involved in the alert were questioned: scientists, associations, specialized or generalist media relaying the issue, and politicians and legislators. Then a survey was conducted with consumers to study the mechanisms leading to a change in the risk perception and the consumption practices and to learn the type of discourses that are relevant to communicate about risks and source reduction. To finish, the flux of parabens released in the Parisian sewer network was compared between 2010, just at the beginning of the alert, and 2016 after the emergence of “paraben free” or “organic” cosmetic products.

Our first results showed that the alert was essentially a sanitary alert that led to the emergence of a new industrial market (paraben free and organic products). This change in the cosmetic supply was the major driver of the changes in consumption practices, which seemed suffered by the consumers and not conscientiously chosen. However, the strong decrease of the cosmetics containing parabens led to a decrease from a factor 2 to 8 of the paraben fluxes in wastewater, from 3 000 µg/PE¹/day in 2010 to 1 000 µg/PE/day in 2016 for methylparaben and from 1 800 µg/PE/day to 180 µg/PE/day for butylparaben. Suffered or chosen, from regulation or from new industrial marketing, the change in consumption practices is a promising way to reduce micropollutants in urban water. Now the next step is to provide policy instruments for local authorities aiming at building effective strategies to promote micropollutant source reduction.

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¹ PE: population equivalent calculated according to dissolved TKN nitrogen