[Oral presentation]

Nationwide survey of residual pharmaceutical in wastewater

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ABSTRACT

Pharmaceuticals and personal care products (PPCPs) are generally defined as any substance used for personal health care or wellbeing, such as painkillers, antibiotics, contrast media, antipsychotics, stimulants, cosmetics, fragrances, etc. Their continuous use and improper disposal result in contamination of soil and water environments; they are introduced to the environment via various routes, posing potential risks, highlighting the need for developing effective management strategies. One of the main sources of PPCPs is wastewater. As unmetabolized or unused, they are disposed to wastewater, which is collected and flows into a wastewater treatment plant (WWTP). In this study, more than 30 WWTPs in Korea have been investigated for the occurrence of 46 residual PPCPs. The detected PPCPs are analyzed with respect to (i) substance type, (ii) sampling period, and (iii) wastewater characteristics. Among the PPCP groups, painkillers exhibit the highest concentration (48.09 μg/L), followed by contrast agents (12.74 μg/L), antiepileptics (9.05 μg/L), antacids (5.53 μg/L), antibiotics (4.99 μg/L), other compounds (16.33 μg/L). Seasonally, more PPCPs are observed in the Summer, comparing to those in the Fall or the Winter. In Summer, increased prevalence of infectious diseases (enteritis, respiratory tract, and skin disorders) and higher bacterial exposure lead to elevated use of antibiotics and anti-inflammatory agents.

Keywords: Pharmaceuticals and Personal Care Products, PPCPs

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