Pharmaceutical and personal care products: an emerging water quality issue essay ...

Environment, Water

One of the most concerning environmental issues of our time is water quality. Particularly, the presence of the so-called emerging contaminants has posed a challenge for current water treatment methods. Emerging contaminants are compounds that under conventional water quality standards are virtually unnoticeable. In this new category, perhaps the most worrisome are the pharmaceutical or personal care products (PPCPs). This denomination makes reference to prescription and over-the-counter drugs for human and veterinary consumption as well as to fragrances, perfumes, deodorants, and soaps among many others (Hansen, 2007). Even though these compounds are generally found in very low concentrations, some of them have a tremendous potency. Hormones and steroids are examples of compounds that are still very active at concentrations below parts per million. The major concern is that these compounds may be accumulating in various aquatic ecosystems throughout the whole food web possibly leading to a point where there are no options to revert the damage. This alarming situation has encouraged governmental agencies around the world to tighten legislation for the maximum allowable concentration in water for these compounds. In the U. S., the Environmental Protection Agency (EPA) is well aware of the potential consequences of the unattended presence of these compounds in both surface and drinking water supplies. The EPA has launched a program to educate the general public and the health care industry in the proper handling and disposal of these products (Barceló, 2005). Additionally, the Agency has created an updated list of contaminants that includes several pharmaceutical compounds and personal care products (Barceló, 2005). Despite these efforts, there is no formal regulation for PPCPs

and most initiatives remain at the survey or research stage. In Europe, the Water Framework Directive establishes the limits for various emerging contaminants in both municipal and industrial wastewaters (Barceló & Petrovic, 2008). These efforts have translated into governmental efforts to increase investment in research for developing special treatment processes capable of targeting chemicals at these extremely low concentrations. In general, all these technological developments, laws, and guides have had a very positive impact in the population. It is expected that cancer incidence significantly lowers due to a more trustable food chain with reduced levels of carcinogenic compounds. Additionally, newborns who are the ones to receive the increasingly important influx of PPCPs may be able to considerably increase their life expectancy. In the long-term, all chemically-induced health conditions will be substantially reduced, which in turn will represent a reduction in the costly medical expenses associated with the treatment of these patients.

References

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