

Emerging Contaminants

What Are They?

Research is documenting with increasing frequency that many **chemical and microbial constituents that have not historically been considered as contaminants** are present in the environment on a global scale. Emerging contaminants (sometimes called “Organic Wastewater Contaminants” [OWCs] or “Pharmaceuticals and Personal Care Products as Pollutants” [PPCPs]) can originate from a variety of animal- and human-waste sources, including municipal, agricultural, and industrial wastewater pathways. These pathways to the environment range from rapid and direct discharges of effluent into a water body to the slow leaching of stored waste through soils. These newly recognized contaminants represent a shift in traditional thinking, as many are produced industrially yet are dispersed to the environment from domestic, commercial, and industrial uses^{1,2}.

Common sources of emerging contaminants include³:

- Human activity (bathing, shaving, swimming, etc.)
- Veterinary drug use, especially antibiotics and steroids
- Agribusiness
- Residues from pharmaceutical manufacturing
- Residues from hospitals

Are They Harmful?

Much is yet to be known about the potential toxicological effects of many emerging contaminants. Due to the contaminants’ low concentrations, acute effects appear limited. **However, more subtle, chronic effects from low-level environmental exposure over time are of much greater concern.** Further, little is known about the potential interactive effects (synergistic or antagonistic toxicity) that may occur from complex mixtures of these compounds in the environment⁴.

Despite growing concerns about the effects of emerging contaminants, the federal government does not require testing for these compounds, and it has not set safety limits for these newly recognized contaminants in water. At present, no municipal sewage treatment plants are engineered specifically for the removal of these compounds or for any other unregulated contaminants⁵.

Want More Information?

Visit the United States Geological Survey’s “Toxic Substances Hydrology Program” homepage at <http://toxics.usgs.gov/regional/emc> or go to the Environmental Protection Agency’s fact sheet at <http://www.epa.gov/ppcp/faq.html#Insimpleterms> .

¹ <http://toxics.usgs.gov/regional/emc/>

² <http://www.epa.gov/ppcp/faq.html#Insimpleterms>

³ <http://www.epa.gov/ppcp/faq.html#Insimpleterms>

⁴ Kolpin, D.W., Furlong, E.T., Meyer, M.T., Thurman, E.M., Zaugg, S.D., Barber, L.B., and Buxton, H.T., 2002,

Pharmaceuticals, hormones, and other organic wastewater contaminants in U.S. streams, 1999- 2000: A national reconnaissance: Environmental Science & Technology, v. 36, no. 6, p. 1202-1211.

⁵ <http://www.epa.gov/ppcp/faq.html#Insimpleterms>