

Pharmaceuticals and Personal Care Products (PPCPs) in Drinking Water

Pharmaceuticals and personal care products, known in the water industry as PPCPs, are a group of compounds consisting of human and veterinary drugs (prescription or over the counter) and consumer products such as fragrance, lotions, sun-screens, house cleaning products and others. These compounds have been detected in trace amounts in surface water, drinking water and wastewater effluent sampling conducted in both Europe and the US.

PPCPs can be introduced into the environment in several ways, including:

- Flushing unused medications down the toilet or sink;
- Rinsing personal hygiene and household cleaning products down the drain;
- Excreting unabsorbed medications into the sewage system;
- Farm animals excreting veterinary drugs, including hormones and antibiotics, into fields where they run off into lakes and streams;
- Commercial improper disposal methods.

Water professionals have the technology today to detect more substances – at lower levels – than ever before. As analytical methods improve, many compounds such as those listed above are being found at extremely low levels, typically single-digit parts per trillion (ppt). Drinking water standards are typically set in the parts per billion range, which is 1000 times higher.

Are PPCPs in drinking water a health concern?

The fact that a substance is detectable in drinking water does not mean the substance is harmful to humans. To date, research throughout the world has not demonstrated an impact on human health from the trace amounts of PPCPs found in drinking water.

While these trace substances may be detected at very low levels in source waters, people regularly consume or expose themselves to products containing these substances in much higher concentrations through medicines, food and beverage and other sources. The level in which they are found in source waters is very small in comparison.

PPCPs are fairly common in our society and environment and come from many sources. Research on health effects for humans from PPCPs has focused on two areas:

- (1) While PPCPs are found in very low levels in drinking water, there is a concern of possible cumulative effects of long-term exposure.
- (2) While most PPCPs are known compounds, they may react in ways that are different from their intended purposes once they are introduced into the environment.

What is the water community doing about PPCPs in drinking water?

The water community is committed to protecting public health. Water professionals are examining the occurrence of PPCPs in drinking water supplies and are paying close attention to health effects research in this area.

Water professionals are also researching the effectiveness of current techniques on removal of PPCPs and other organic compounds. Because of the wide array of chemical structures and properties associated with PPCPs, no one single treatment can remove them all. Technologies under investigation include membranes and GAC which physically remove compounds and ozone or UV which breaks them down.

The US Environmental Protection Agency maintains an active program called the Contaminant Candidate List (CCL) to identify contaminants in public drinking water that warrant detailed study. While the CCL does not currently include any PPCPs, the EPA will likely consider these compounds in the future.

What can consumers do if they are concerned about substances in their drinking water?

The best and most cost-effective way to ensure safe water at the tap is to keep our source waters clean. As a society, we should encourage policies that protect source water from contaminants introduced by human activity. Consumers should never flush unused medications down the toilet or sink. Instead, consumers should check to see if their pharmacy accepts medications for disposal, or contact their local health department for information about proper disposal of medications and other materials that could potentially harm the environment, such as cleaning products, pesticides, and automotive products. As always, consumers who are concerned about their tap water should check their local utility's consumer confidence report and contact their utility with any questions or concerns.

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