Report on Trace Organic Compounds Urges Watchful Caution, Not Alarm

A new WERF technical brief examines the state of the knowledge on trace organic compounds (TOrCs) and their implications for wastewater treatment plants (WWTP) in the United States. The brief reviews data on 720 TOrCs and explores in treatment, potential human and ecological effects, and regulation of TOrCs. Here are 10 primary findings.

No definitive evidence of harm to human health

1 To date, there is no definitive evidence of harm to human health from TOrCs in WWTP effluents. However, reported observations and initial research suggests watchful caution but not alarm.

2 Detection and measurement of trace organics in the environment remains challenging but is a critical link to understanding their sources, potential effects, and removal options.

Removal processes have variable success

3 Typical WWTP processes reduce the concentrations of many TOrCs. However, as presently regulated, configured, operated, and monitored, WWTPs do not totally remove TOrCs or their potential metabolites.

4 Advanced treatment processes used for nutrient reduction can provide additional removal of TOrCs.

5 The fate of each TOrC in a MWWTP depends on its physical and chemical characteristics and on plant operation. Some TOrCs can be removed almost entirely, while other TOrC classes exhibit limited removal.

Determining effects to aquatic biota from TOrC in WWTP effluents is difficult

6 The presence of trace levels of numerous TOrCs as a mixture in WWTP effluents makes it difficult to link ecological effects with a specific TOrC. Specific TOrC have been linked with specific effects in experimental settings but at higher concentrations than found in typical WWTP effluents.

7 Biological changes associated with classes of TOrC (e.g., compounds with estrogenic potential) have also been observed downstream of some WWTP, though the extent and biological significance of these changes remains unclear.

8 Evaluating potential effects on ecological receptors is more complex than assessing potential human health effects because many different kinds of organisms may be affected and researchers need to consider their interactions (e.g., predator-prey links), and various functions within an

ecological system.

More regulatory involvement

9 U.S. EPA analytical methods used for environmental characterization and regulatory purposes have focused on commonly used industrial chemicals. In most cases, these methods cannot satisfy measurement needs for the expanded universe of trace organics, requiring new analytical methods to be developed and approved

10 Regulators are beginning to implement source reduction measures for the management of TOrCs. Expect lobbying pressure for stronger regulations to reduce potential TOrC releases into receiving water bodies.

The complete brief includes detailed analysis and conclusions, as well as a listing of ongoing research, references, and sources for additional information. A copy of *Technical Brief on Trace Organic Compounds and Implications for Wastewater Treatment* (stock no. CEC3R07) can be obtained from the WERF website.

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