# Emerging Water Contaminants: Assessment of Sources, Associated Risk and Options for Treatment Methods

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## Abstract

Newer chemicals are being synthesized now at a rapid rate than ever before. These chemicals include pharmaceutical, herbicides, pesticides and many other types and sizes of chemicals used in cosmetics. All these chemicals ultimately end up in wastewater. Most of our wastewater treatment infrastructure is not capable of removing of these pollutants before the treated water is either recycled or discharged in natural river systems. Recent studies have linked the release of antibiotics, nano-particles and many new classes of chemicals in water streams to many severe health issues. Though these contaminants are expected to be present at very low concentrations (at micro/Nano-gram per liter), but there have not been many long-term scientific investigations to evaluate their impact on human tissues and organs. Some of these contaminants require strong degradation methods such as advanced oxidation process, $TiO_2$ photocatalytic process, and heterogeneous photocatalytic process ($UV/TiO_2$). These methods are not included in conventional wastewater treatment plants. A better understanding of all the emerging contaminants is needed. Despite of increased efforts within the scientific community, more work is needed for a comprehensive understanding. This paper focuses on presenting a detailed assessment of sources of these contaminants, their associated risks to living organisms and possible options for their removal from wastewater.

## Biographies

SANJAY TEWARI is currently an assistant professor of civil engineering and construction engineering technology at the Louisiana Tech University. In addition to this, he is an aasociate of Institute of Micromanufacturing located at Louisiana Tech University. His research focuses on various issues in water and wastewater treatment using convensional as well as emerging technologies such as capacitive deionization. He has a batchelor degree in civil engineering and a masters degree in chemical engineering. He received his Ph.D. in civil (environmental) engineering from Texas A&M University. His other research interests are Dr. Tewari may be reached at stewari@latech.edu.

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