A review of the effects of emerging contaminants in wastewater and options for their removal

Abstract

The occurrence of emerging or newly identified contaminants in our water resources is of continued concern for the health and safety of consuming public. The existing conventional water treatment plants were not designed for these unidentified contaminants. The endocrine disrupting chemicals (EDCs) comprise pharmaceuticals, personal care products, surfactants, various industrial additives and numerous chemicals purported to be endocrine disrupter. These have become a threat to our water supply network. The current wastewater treatment system is not effective in elimination of these different classes of emerging contaminants as these have not been monitored due to the absence of stringent regulation specific to these contaminants. These undesirable compounds are being released, knowingly or unknowingly, into the aquatic environment that affect the whole living organism. The paper discusses adverse effects of these emerging contaminants to water consumers and discusses the potential removal processes. The use of activated carbon, oxidation, activated sludge, nanofiltration and reverse osmosis membranes, and their efficiencies in removal of these pollutants, are reviewed. In particular, the nanofiltration removal mechanism is emphasized because of its utmost importance in eliminating micropollutants.