

Tons of wastes, of which most refractory organics are anthropogenic, have been generated since the industrial revolution. Although activated sludge process and its modified processes have been usually used for the treatment of municipal wastewater since over 100 years, these processes generated the tremendous excessive biomass. For industrial wastes, the treatment process design of each waste is highly dependent upon the waste source. The process is determined by waste characteristics such as organic and nutrient loading as well as the biodegradability of waste. When the influent consists of the high concentration of refractory organic matter, it is necessary that the treatment process be lessened the persistence of organic matter. Several investigators showed that the excellent performance for the reduction of refractory organic matter using physicochemical, thermal and Advanced Oxidation Processes (AOPs) including ozone, ozone/UV, ozone/H₂O₂ and electron beam/gamma irradiation. In addition, AOPs are used for very effective disinfection processes. When pathogens are exposed to hydroxyl radicals, nucleic acids suffer from fatal damages by the attack of hydroxyl radicals. It is possible that the optimization of removing organic matter and nutrient in the wastes using the pretreatment of AOPs and the following on-line monitoring system. Several investigators suggest on-line monitoring systems with

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