BASIC STUDY ON ENVIRONMENTAL REMEDIATION OF COASTAL ZONE CONTAMINATED WITH PHENOLIC COMPOUNDS BY USING OZONE OXIDATION AND ACTIVATED SLUDGE TREATMENT

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In recent years, environmental pollution by chemical compounds used in factories, farmlands, golf courses, and other areas has been a serious social problem in many countries. Since factories, farmlands and golf courses connect closely with water systems, i.e. rivers, lakes, and coastal seas, the chemical compounds in the wastewater cause water pollution and provide a bad influence on the natural water ecosystem. Therefore, it is desired to develop the efficient environmental remediation method of water systems contaminated with chemical compounds. In the treatments of water systems contained with chemical compounds, the treatment of water system containing phenolic compounds is one of the most annoying problems because the phenolic compounds have complex chemical structures and make their microbial degradation more difficult. Ozone is one of the chemical reagents capable of oxidizing a variety of organic compounds in aqueous solution. The available methods to treatment wastewater such as the ozonolysis of phenolic compounds and the biological treatment of organic acids produced from phenolic compounds seems to be one of the most effective methods for the degradation of phenolic compounds in the water systems. In this work, phenolic compounds such as 2,4-D, 2,4,5-T, bisphenol A, and others in the water containing salt were treated with a combination of ozone oxidation and activated sludge treatment for developing the novel treatment method of coastal zone contaminated with phenolic compounds. The effects of operational conditions, i.e. pH and temperature, on the degradation of phenolic compounds and the production of organic acids were examined experimentally in the ozonolysis of phenolic compounds. Furthermore, the activated sludge treatment containing halotolerant microorganisms was attempted for the effective degradation of organic acids obtained from phenolic compounds by ozonolysis.