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## Applications of Radiation Technology in Control and Treatment for Environmental Pollution

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Radiation technology including electron beam and  $\gamma$ -ray irradiation has great potential in the field of environmental protection due to its special characteristics. The investigations and applications of radiation technology in the treatment of wastewater, waste gas and solid waste are introduced in this paper, including the treatment of printing and dyeing wastewater, paper mill wastewater, nitroanilines, halogenated flame retardants, endocrine disrupting chemicals, algal toxin, volatile organic contaminants and sludge etc., and the removing of SO<sub>x</sub> and NO<sub>x</sub> in coal-fired and automobile exhausts. The degradation efficiency of these organic pollutants by electron beam or  $\gamma$ -ray radiolytic degradation is discussed in various conditions, such as different initial concentrations, irradiation doses, pH values, solvents, radiolysis systems and the addition of H<sub>2</sub>O<sub>2</sub> etc. Besides, the radiolysis products of certain pollutants are listed and radiolytic degradation mechanisms of these organic pollutants are illustrated. These results demonstrate that radiation technology is an effective method to degrade the organic contaminants, especially the persistent organic pollutants, hydroxyl radicals and hydrate electrons play significant roles in the radiolysis of organic pollutants. In addition, the limitations and the future trends of radiation technology applied in the environmental protection are also discussed.

### Country/Organization invited to participate

China

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