

# Decomposition of Aqueous Diphenyloxide by Ozonolysis and by Combined $\gamma$ -Ray-Ozone Processing

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Diphenyloxide (DPO) is one of many, rather toxic pollutants produced by combustion of fossil fuels, which are emitted to the atmosphere with flue gases and brought to ground water by rain and snow. Its decomposition is investigated by ozonolysis at room temperature and the major products like phenol, resorcinol, hydroquinone, dihydroxy-benzoic acid as well as the total yield of aldehydes and carboxylic acids were determined as a function of applied ozone concentration. In addition, the DPO-degradation was studied by a combined action of  $\gamma$ -ray under continuous bubbling of a known ozone concentration. In this case the formation of the same products is observed, but their yields differ from the above ones. Based on the synergistic action of ozone and  $\gamma$ -ray the DPO-radiolysis is rather efficient, leading to an initial-G-value of 11.3. Some probable reaction mechanisms are presented for explanation of the degradation process.

*Key words:* Diphenyloxide, Ozonolysis,  $\gamma$ -Ray-Ozone Processing