

## Recent advances in advanced oxidation processes (AOPs) for the treatment of nitro- and alkyl-phenolic compounds

*M.N. Arifin<sup>a</sup>, R. Jusoh<sup>a</sup>, H. Abdullah<sup>a</sup>, N. Ainirazali<sup>a,b</sup>, H.D. Setiabudi<sup>a,b,\*</sup>*

<sup>a</sup> Faculty of Chemical and Process Engineering Technology, Universiti Malaysia Pahang, Lebuhr Persiaran Tun Khalil Yaakob, 26300, Gambang, Kuantan, Pahang, Malaysia

<sup>b</sup> Centre for Research in Advanced Fluid & Processes, Universiti Malaysia Pahang, Lebuhr Persiaran Tun Khalil Yaakob, 26300, Gambang, Kuantan, Pahang, Malaysia

### ABSTRACT

The presence of phenolic compounds in the aquatic environment has posed severe risks due to their toxicity. Among the phenolic families, nitro- and alkyl-phenolic compounds have been categorized as precedence contaminants by the United States Environmental Protection Agency (US EPA). Therefore, efficient treatment methods for wastewater containing nitro- and alkyl-phenolic compounds are urgently needed. Due to the advantages of creating reactive species and generating efficient degradation of hazardous contaminants in wastewater, advanced oxidation processes (AOPs) are well-known in the field of treating toxic contaminants. In this review paper, the recent directions in AOPs, catalysts, mechanisms, and kinetics of AOPs are comprehensively reviewed. Furthermore, the conclusion summarizes the research findings, future prospects, and opportunities for this study. The main direction of AOPs lies on the optimization of catalyst and operating parameters, with industrial applications remain as the main challenge. This review article is expected to present a summary and in-depth understanding of AOPs development; and thus, inspiring scientists to accelerate the evolution of AOPs in industrial applications.

### KEYWORDS:

Alkylphenol; Nitrophenol; Advanced oxidation processes (AOPs); Photocatalysis

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