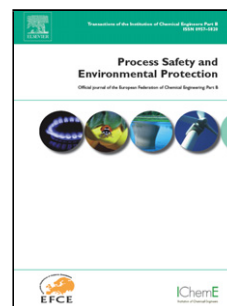


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Industrial wastewater treatment through bioaugmentation

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Abstract

Bioaugmentation of activated sludge processes through the addition of microorganisms is employed with the aim of enhancing treatment, in particular the removal of priority pollutants. With industrial wastewaters, studies have covered target pollutants including ammonia and polycyclic aromatic hydrocarbons (PAHs): compounds that are regulated around the globe. However, bioaugmentation is a technique that has been associated with doubt in regard to its ability to benefit treatment processes. Failure of bioaugmentation has been reported to be associated with numerous factors that include the growth rate being lower than the rate of washout, insufficient inoculum size and substrate availability. Limitations of bioaugmentation can be overcome through techniques that include increased inocula dosing, pre-acclimatisation of inocula in side-stream reactors, addition of nutrients and surfactants and application of sufficient acclimatisation periods. Surveys of the literature show that a key area for further research should be towards acquiring a better understanding of the degradation pathways where bioaugmentation is applied. There also remains a need to undertake bioaugmentation efficacy studies at full scale with test and control streams. Further reporting on the economic viability of the technique is also necessary.

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