

A Scoping Review of Industrial Effluent Pollution Control Technologies in Egypt: An African Environmental Perspective, 2019

N, a, d, i, a, A, b, d, e, l, -, M, a, l, e, k, ,, K, a, r, i, m, H, a, s, s, a, n, ,, Y, o,
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| Abstract

Industrial effluent pollution presents a significant environmental challenge in Egypt, affecting water resources and public health. Effective control technologies are essential for sustainable industrial growth and environmental protection within the African context. This scoping review aims to map the documented range, characteristics, and applications of industrial effluent pollution control technologies in Egypt. It seeks to identify prevalent treatment approaches, research trends, and gaps in the literature from an environmental science perspective. A systematic scoping review was conducted following established frameworks. A comprehensive search of peer-reviewed and relevant grey literature was performed. Identified records were screened against predefined eligibility criteria, and data from included sources were charted and analysed thematically. The review identified a diverse body of literature, with a predominant focus on physico-chemical and biological treatment methods for specific industrial sectors, notably textiles and chemicals. A key theme was growing research interest in low-cost and sustainable technologies, such as constructed wetlands and the use of agricultural waste for adsorbent materials. The findings are descriptive and thematic, as is standard for a scoping review. The literature reveals concentrated research on both conventional and emerging sustainable technologies for industrial effluent treatment in Egypt. However, the research scope appears unevenly distributed across

different industrial sectors and geographical regions within the country. Future primary research should address less-studied industrial sectors and regional disparities. More studies are needed on integrated technology systems, full-scale implementation challenges, and policy frameworks that support technology adoption and enforcement. Egypt, industrial pollution, wastewater treatment, effluent control, environmental technology, scoping review This review provides a consolidated overview for researchers and policymakers, highlighting current technological focuses and research gaps to inform future environmental management strategies in Egypt and analogous African contexts.
