

Plastics in municipal drinking water and wastewater treatment plant effluents: challenges and opportunities for South Africa—a review

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ABSTRACT:

Pervasive plastic wastes, pollution and detrimental environmental ethics are a serious threat in South Africa. Compared with global trends, most studies undertaken on plastic pollutions in water bodies across South Africa have generally been limited to marine and coastal waters. A literature review, for the last 40 years, demonstrated the scanty studies on the economic, social, health and cost implications of plastic entrainment into fresh water (sources of drinking water) and wastewater systems in South Africa. Hence, demonstrating a knowledge gap on this imperative issue, the inadequate and limited frameworks needed in assessing, evaluating and re-evaluating the menace of plastic pollution and entrainments into consumable water and wastewater treatment plants. This has hampered the local capacity, manpower, knowledge and understanding direly needed for mitigating these challenges. This work is necessitated because of the dire need in bridging the knowledge gap locally by adaptively reviewing possible challenges and opportunities for South Africa in meeting up the mandate of addressing this global threat. The emerging agreement amongst global policy-makers, educators and scientists is that environmental challenges, such as this, require, now more than ever, renewed ways of effective knowledge production and decision-making in tackling, holistically the menace of mismanaged plastic wastes and pollutions. These include but not limited to plastic education curriculum, synergised policies in fostering a circular plastic economy, overriding political will, innovative waste management systems, inclusive independent monitoring of plastic wastes, robust laws and effective enforcement strategies that are needed to promote better environmental ethics, mitigation and a sustainable environment.