Biofiltration of hydrogen sulfide: Trends and challenges

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Abstract

Expansion of modern industry coupled with a lack of effective treatment systems has resulted in excessive release of toxic and odorous pollutants such as hydrogen sulfide (H_2S). Development of treatment measures is therefore necessary to protect ecosystems and human health. This paper explores recent advances in H_2S treatment technologies. Particular focus is placed on innovative and recent advances in biofiltration, especially for wastewater treatment facilities and biogas generation (e.g., use of innovative packing media for better performance and reduced pressure drop, eliminating sulfate accumulation, and development of modeling techniques). The review also identifies current challenges and future prospects (e.g., fluctuations in methane and carbon dioxide concentrations during biogas upgradation, optimizing anoxic H_2S biofiltration, and understanding the effects of operating conditions on biofilter performance) for improving biofiltration by highlighting research gaps in related fields.

Keywords: Odorous gas; Pollution control; Desulfurization; Microbial degradation; Biotechnology.