

H₂S removal from wastewater treatment plants off-gases using activated sludge process

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ABSTRACT. The emission of H₂S from POTWs is a serious problem so, collection and treatment of these emissions is essential. In this work, the performance of a bench scale activated sludge system in H₂S removal and the effects of H₂S concentrations in range of 5 to 50 ppm_v on COD reduction and biomass settleability was studied. After biomass acclimation, reactor was operated in continuous mode at HRT and MCRT of 5 h and 6 days, respectively. Results showed that the level of COD and H₂S removal during trial course were in turn over 93.5 and 94.5%. Furthermore, H₂S concentration up to 50 ppm_v could not significantly affect the reactor performance in COD reduction. H₂S loading rates of up to 7.5 mgH₂S g-1MLSS d-1 that is lower than the toxicity threshold was handled very well. The only adverse observed effect of H₂S diffusion the reactor performance was SVI increase at loading rates over 4.5 mgH₂S g-1MLSS d-1, in which bulking sludge occurred. Overall, the results indicated that the H₂S in concentrations emitted from wastewater treatment processes (lower than 50 ppm_v), can be efficiently treated using activated sludge diffusion without compromising the performance of the process.