عنوان مقاله:

Investigation of VOC removal mechanisms in membrane bioreactor based on experimental data and mathematical model

محل انتشار:

پانزدهمین کنگره ملی مهندسی شیمی ایران (سال: 1393)

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خلاصه مقاله:

In this study, mathematical model was applied for determining main removal mechanisms at various MLSS concentration, hydraulic retention time (HRT), and air to wastewater ratio in a biological wastewater treatment process treating styrene and ethylbenzene. Stripping and biodegradation are major competitive volatile organic compound (VOC) removal mechanisms, which depend on compound and sludge specific properties and system design/operational parameters. Also model results are verified by experimental data for a membrane bioreactor process at various HRT. Model results showed that biological treatment process should be designed with High MLSS, optimum HRT and low air to water ratio to maximize biodegradation and minimize volatilization of VOCs. The model results and experimental data proved that optimum HRT for styrene and ethylbenzene biological removal is 15 hr at SRT of 20 day and air to wastewater ratio of 500 in lab scale MBR. In this HRT, styrene and ethylbenzene removal efficiency through biodegradation mechanism received up to 98.9 and 99.1% respectively

کلمات کلیدی:

mathematical method, VOC removal mechanism, membrane bioreactor, HRT

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