Activated sludge yield as related to its degrader amount

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ABSTRACT

Activated sludge degradation of xenobiotic substrate follows pathways that are different than metabolism of biogenic substrates. In addition to the conditions for induction of the activated sludge degradation ability, the results of xenobiotic degradation may also be different from those observed for biogenic substrates. The purpose of this study was to investigate the yield of activated sludge biomass yield from the treatment of biogenic and xenobiotic substrates. Continuous flow activated sludge reactors were operated with the feed with the influent of made up of (1) biogenic substrate (sucrose and peptone), (2) a xenobiotic organic 2, 4-D, and (3) mixture at varying concentrations of biogenic and 2,4-D. Yields of activated sludge biomass from each of the treatment system were calculated, while the amount of 2, 4-D degraders contained in each sludge were enumerated. Test results showed that yield was reduced when 2, 4-D were mixed with biogenic substrate. Yield reduction was proportional to the amount (concentration) of 2, 4-D influent. Degrader contained in the sludge indicated that when 2, 4-D influent was increased, amount of degrader increased. Flow into the general matrix and 2,4-D concentration 10 mg / l, 20mg / l, 50 mg / l of bacterial decomposition rates were 0.162%, 0.164%, 0.167%. The reason of yield reduction was appropriately related to the higher degrader contents because degraders produce a lower yield.

Keywords : activated sludge、xenobiotic、degrader、2、4-D、yield

Table of Contents

封面內頁 簽名頁 授權書iii 中文摘要iv ABSTRACTv 誌謝vi 目錄vii 圖目錄xi 表目錄xiii 第一章前言1 1.1.研究起源1 1.2.研究目的2 1.3.研究內容2 第二章文獻回顧4 2.1.二氯酚氧基乙酸(2,4-dichlorophenoxyacetic acid)4 2.1.1.2,4-D的特性4 2.1.2.2,4-D在一般的環境特性6 2.1.3.水相環境中的2,4-D6 2.1.4.2,4-D在環境中的反應7 2.1.5.2,4-D之生物效應8 2.2.2,4-D的微生物分解9 2.3.活性污泥法13 2.3.1.活性污泥法之發展經過13 2.3.2.活性污泥法14 2.3.3.活性污泥中的微生物組成14 2.3.4.活性污泥的生成15 2.3.5.影響活性污泥法的因素16 2.4.活性污泥產值19 2.4.1.影響活性污泥產率的因素20 2.4.2.連續流活性污泥的產值計算22 第三章研究方法26 3.1.實驗材料26 3.1.1.藥品26 3.1.2.儀器設備26 3.1.3.活性污泥反應器28 3.2.活性污泥之馴化與培養30 3.2.1.活性污泥之培養30 3.2.2.營養鹽成份與配比30 3.3.研究架構31 3.4.實驗方法32 3.4.1.連續式活性污泥操作方法32 3.4.2.實驗組合33 3.5.分析方法35 3.5.1.一般基質濃度分析35 3.5.2.2,4-D濃度測量36 3.5.3.2,4-D檢量線製備37 3.5.4.活性污泥量之分析38 3.5.5.培養基之製備與菌落計數39 3.5.6.產值之計算42 3.5.7.去除基質量之總產值計算43 3.5.8.利用實測分解菌及非分解菌之總產值計算43 第四章結果與討論45 4.1.進流一般基質之產值試驗45 4.1.1.進流一般基質之MLSS試驗45 4.1.2.進流一般基質之COD表現48 4.1.3.活性污泥產值之Kd值計算49 4.1.4.進流一般基質之產值表現51 4.2.活性污泥分解一般基質與2,4-D混合液之試驗52 4.2.1.進流一般基質與2,4-D之MLSS表現52 4.2.2.進流一般基質與2,4-D之COD表現56 4.2.3.進流一般基質與2,4-D之2,4-D分解表現58 4.2.4.進流一般基質與2,4-D之產值表現60 4.3.活性污泥分解2,4-D之產值試驗63 4.3.1.進流2,4-D之MLSS表現63 4.3.2.進流2,4-D之2,4-D降解表現64 4.3.3.進流2,4-D之產值表現65 4.4.分解菌量試驗66 4.4.1.進流一般基質及2,4-D分解菌量66 4.4.2.進流一般基質與2,4-D混合基質68 4.4.3.分解菌量產值計算68 4.4.4.總產值分析71 第五章結論與建議73 5.1.結論73 5.2.未來實驗建議73 參考文獻74 附錄78

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