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MAP沉淀法与超声波技术相联合对畜禽类便的脱氮除磷效果

彭绪亚, 何芸, 何清明

重庆大学

Effectiveness of MAP Method Coupled With Ultrasonic Technology in Removing Nitrogen and Phosphorus From Poultry Feces

PENG Xu-Ya, HE Yun, HE Qing-Ming

Chongqing University

摘要 研究磷酸铵镁（MAP）沉淀法与超声波技术相联合处理高浓度畜禽废水的最佳反应条件。结果表明，MAP沉淀法在pH值9.5、$n(Mg^{2+}):n(NH_4^+):n(PO_4^{3-})=1.2:1:1$、反应10 min时脱氮除磷效果最佳，氨氮去除率为95.10%，磷酸盐去除率为97.40%。MAP沉淀与超声波辐照联合处理最佳条件下，同时增加曝气（流量为200L · h^{-1}），6 h时氨氮去除率可提高到98%。

关键词： 磷酸铵镁（MAP） 畜禽粪便 脱氮除磷 超声波

Abstract： To efficiently remove nitrogen and phosphorus from highly concentrated livestock and poultry wastewater,an MAP(magnesium-ammonium-phosphate)sedimentation method coupled with ultrasonic technology is used.Studies have been done to explore optimal conditions for use of the method through controlling and regulating pH,$n(Mg^{2+}):n(NH_4^+):n(PO_4^{3-})$and duration of the reaction.Results show that the MAP sedimentation method may achieve its best effect within the first 10 min of reaction,removing 95.10% of ammonia nitrogen and 97.10% of ammonia nitrogen and 97.40% of phosphorates in wastewater,when pH is controlled at 9.5,and $n(Mg^{2+}):n(NH_4^+):n(PO_4^{3-})$at 1.2:1:1.Moreover,when the method is coupled with 60 W ultrasonic irradiation for 6 hours and increased aeration of 200L · h^{-1},its N removing efficiency can be further improved up to 98%.

Keywords： magnesium-ammonium-phosphate poultry feces nitrogen and phosphorus removal ultrasonic

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About author: 彭绪亚（1963-），男，重庆市人，教授，博士生导师，主要从事固体废物污染控制与资源化技术研究。E-mail:xypeng33@126.com

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