

研究报告

光照对水环境变化和沉积物吸收磷酸盐的影响

姜霞 金相灿 姚扬 李丽和

中国环境科学研究院湖泊生态环境创新基地,北京 100012

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摘要

在富氧和缺氧环境下室内模拟研究光照对清洁湖区沉积物吸收磷酸盐和对上覆水质变化的影响.结果表明,光照使缺氧环境上覆水体中的pH值显著提高,并增加其溶解氧的含量.上覆水体中磷酸盐浓度的变化在实验初期主要受水-沉积物界面溶解氧含量的影响,表现为富氧组磷酸盐的浓度下降迅速,但随实验时间的推移,光照逐渐起主要作用,表现为实验结束时有光条件下的磷酸盐浓度明显低于无光条件,磷酸盐的减少量和减少速度明显高于无光条件.无论是富氧、缺氧,还是有光、无光,当上覆水体中磷酸盐的浓度很高时,沉积物都能够吸收磷酸盐,但吸收量各不相同.光照对沉积物吸收上覆水中溶解性无机磷酸盐(DIP)的影响受缺氧和富氧环境的限制.

关键词 [光照,沉积物,磷酸盐,吸收](#)

分类号

Effects of illumination on overlying water quality and on phosphate adsorption by sediment

JIANG Xia, JIN Xiangcan, YAO Yang, LI Lihe

Innovation Base of Lake Eco-Environment, Chinese Research Academy of Environmental Sciences, Beijing 100012, China

Abstract

By the method of laboratory simulation, this paper studied the effects of illumination on the quality of overlying water and on the phosphate adsorption by sediment in a clean lake region. The results showed that under anaerobic condition, illumination could increase the pH value and the dissolved oxygen (DO) concentration of overlying water, while under aerobic condition, the concentration of dissolved inorganic phosphate (DIP) in overlying water declined fast at the beginning of the experiment, which indicated that DIP concentration was controlled by the DO concentration at the water-sediment interface. With the time went on, the DIP concentration in overlying water was much lower in the light than in the dark, indicating that illumination was the dominant controlling factor to the DIP concentration in overlying water. Phosphate could be adsorbed by the sediment with continuously loading, and the adsorbed amount varied with different environmental conditions. The effect of illumination on the phosphate adsorption by sediment was limited by the environment whether being aerobic or anaerobic.

Key words [Illumination](#) [Sediment](#) [Phosphate](#) [Adsorption](#)

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