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## 富营养化湖泊底泥内磷负荷的疏浚与原位吸附剂改良效果及方式的比较

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Dredging and in situ adsorbent inactivation are two methods which are frequently used in eutrophic water bodies such as ponds, lakes and estuaries to control internal phosphorus (P) loading from sediments. However, their effects and modes on the control of sediment P loading has been seldom compared. In this study, a long-term sediment core incubation experiment in the field was undertaken to investigate changes in sediment P loading (P

fluxes, supply ability and forms of P and transformation) comparing two remediation techniques, that of lanthanum-modified bentonite (LMB) addition or dredging to a control. A 360-day field investigation indicated that LMB addition more effectively reduced pore water P concentrations and sediment P fluxes than dredging in comparison with the control. On average, dredging and in situ LMB inactivation reduced the P flux by 82% and 90%, respectively relative to the control sediment. Whilst both the LMB inactivation and dredging can reduce the mobile P concentration, the impact of LMB in reducing mobile P was demonstrated to be more prolonged than that of dredging after 360 days. The P fraction composition in the LMB inactivated sediment differed significantly from the dredged and control sediment. Contrary to physical removal of dredging, chemical transformation of sediment mobile P and Al-P into Ca-P is the main function mode of LMB for sediment internal P control. Both LMB addition and dredging caused changes in the composition of sediment bacterial communities. Whilst LMB addition increased bacterial diversity, dredging temporarily reduced it. This study indicates that in situ inactivation by LMB is superior to dredging in the long-term control of sediment P loading.

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