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环糊精与两种有机物的包合物的不同光解特性

汤灿, 曾清如*, 周细红, 杨成建

(湖南农业大学环境科学系, 湖南长沙 410128)

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摘要 本文研究了 β -环糊精(β -CD)及其衍生物羟丙基- β -环糊精(HPCD)对两种疏水性有机物(甲基对硫磷和五氯酚)的增溶作用和光解影响。实验结果表明,对疏水性有机物的增溶作用或光解的影响主要是由于有机物与 β -CD或HPCD形成包合物而引起的。 β -CD能提高五氯酚的水溶性,却在低浓度促进而高浓度抑制甲基对硫磷的溶解。HPCD则能显著提高两种疏水性农药的水溶性。 β -CD及HPCD与甲基对硫磷形成包合物,选择性定向客体分子而促进其光解,可是与五氯酚虽也形成稳定的包合物,却只能保护客体分子而抑制其光解。HPCD对有机物的增溶效果和光解的影响比 β -CD更显著。该方法对于污染土壤、地下水以及工业废水中疏水性有机污染物的降解具有潜在的应用前景。

关键词 [\$\beta\$ -环糊精](#), [羟丙基- \$\beta\$ -环糊精](#), [光解](#), [增容作用](#)

分类号

Contrary Photodegradative Characterization of Two Organic Compounds by Complexing with Cyclodextrins

TANG Can, ZENG Qing-Ru*, ZHOU Xi-Hong, YANG Cheng-Jian

Department of Environmental Sciences, Hunan Agricultural University, Changsha, Hunan 410128, China

Abstract The effectiveness of the solubilization and photodegradation of β -cyclodextrin (β -CD) and hydroxypropyl- β -cyclodextrin (HPCD) on two hydrophobic organic compounds (HOC) of methyl parathion and pentachlorophenol was investigated. The results indicate that the solubilization or photodegradation of two HOC were influenced by complexing with β -CD or HPCD. The solubility of pentachlorophenol (PCP) was increased linearly with β -CD concentration. The solubility of methyl parathion (MPT) was increased with the increase of β -CD concentration initially, however, as the β -CD concentration was enhanced above 3 g/L, the solubility was decreased with increase of β -CD concentration. The solubilities of two HOC were increased linearly with the increase of HPCD concentration. Although the photodegradation of MPT was improved, the photodegradation of PCP was restrained by complexation of HOC with β -CD or HPCD. In a word, the effectiveness of photodegradation or solubilization of HPCD was more significant than that of β -CD. One potential application of such a method was the *in situ* remediation of hydrophobic organic pollutants in contaminated soil and groundwater or industrial waste streams.

Key words [\$\beta\$ -cyclodextrin](#) [hydroxypropyl- \$\beta\$ -cyclodextrin](#) [photodegradation](#) [solubilization](#)

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通讯作者 曾清如 qrzeng@163.com

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