

## 無機イオン交換体・吸着体の特性を利用した 多機能性水質浄化材による浄化槽処理水の殺菌と水質改善

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### 概 要

無機イオン交換体・吸着体の表面特性と本来のイオン交換能・吸着能を利用して、浄化槽処理水の殺菌と水質改善を同時に行う可能性について基礎的検討を行った。

その結果、無機イオン交換体2種および無機吸着体2種とも、水和反応により粒子表層に形成される濃厚な水酸基層による顕著な殺菌効果が認められ、実処理水を用いたカラム法による評価では、各々10gの充填層に流速20ml/min(接触時間15~45sec)で通水する条件で、0.8ℓ~1.2ℓ処理しても放流基準以下( $10^3$ /ml)に大腸菌群数を抑えることができた。また水質改善効果も各々のイオン交換体・吸着体としての特性が反映される形で現れ、最も良好なものでBOD成分が45%、 $\text{NH}_4\text{-N}$ が44%、 $\text{PO}_4\text{-P}$ が53%の除去率を示した。

以上の結果から、無機イオン交換体および吸着体は、殺菌効果と水質改善効果を併せ持つ多機能性無機水質浄化材として使用できる可能性が高いと判断された。

# Improvement in Water Quality and Disinfection of Wastewater Purifiers Effluent by Using Inorganic Ion-Exchangers and Adsorbents as Multifunctional Water-Purifying Materials

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## Abstract

The propose of this study is to improve the disinfection and water quality characteristics of wastewater purifiers by using new Inorganic ion-exchangers and adsorbents (SiAp, HT-114, Neosorb A-35 and M-511). As a result, the used new ion-exchangers and adsorbents have clearly disinfection effects with concentrated  $\text{OH}^-$ -layers which were formed on the surfaces of the suspended particles caused by hydration. Disinfection capacities were investigated by the column method packed with 10g of each sample. Effluents from wastewater purifiers were passed through the columns at a flow rate of 20m $\ell$  /min (contact time 15~45sec). The viable count of coliform bacilli was less than the allowance value of standard effluent ( $10^3/\text{m}\ell$ ) in Japan, after the treatment of 0.8 $\ell$  ~ 1.2 $\ell$ . Moreover, Improvement effects were also fuoud in water quality, i.e., removal ratios of BOD,  $\text{NH}_4\text{-N}$  and  $\text{PO}_4\text{-P}$  were 45, 44 and 53%, respectively, by using the ion-exchangers and adsorbents.

Taking the results obtained into account, the ion-exchangers and adsorbents have been expected as multifunctional water purifying materials with high improvement effects both in effluent quality and disinfection efficiency.

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