

ABSTRACT

DISSERTATION: The efficiency of constructed wetlands for the removal of the antimicrobial agent triclosan from wastewater

STUDENT: Elizabeth R. Zinn

DEGREE: Doctorate of Education in Science

COLLEGE: Teachers College

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This work provides a comprehensive overview of the presence of the antimicrobial agent triclosan in wastewater, the environmental and health concerns this poses, and a summary of current research on its removal through various wastewater treatment methods. Constructed wetlands are an alternative onsite wastewater treatment and this study researched triclosan removal rates for operational subsurface constructed wetlands functioning for onsite treatment. It also compared two different types of constructed wetland system designs and their efficiency in removing triclosan from domestic wastewater. The findings suggest that constructed wetlands significantly contribute to triclosan removal in onsite systems with a removal range of 15 to 56% though no significant differences were found between horizontal flow constructed wetlands and vertical flow wetlands in their removal efficiencies for triclosan. Four species of wetland plants commonly used in constructed wetland systems were investigated in a laboratory wetland setting for their contribution to triclosan removal from a constructed wetland system. No significant differences were found in triclosan

removal among the four plant species or between the planted and unplanted control containers suggesting that the dominant removal mechanism for triclosan in constructed wetlands is not dependent on the plant communities.