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Nov 5th, 4:00 PM - 5:00 PM

### Anaerobic Dechlorination of Polychlorinated Dibenzo-p-dioxins in Passaic River Sediments

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**MONTCLAIR STATE**  
UNIVERSITY

The Doctoral Program in Environmental Science & Management  
and MSU Sustainability Seminar Series Present:

# Anaerobic Dechlorination of Polychlorinated Dibenzo-*p*-dioxins in Passaic River Sediments

WHEN: November 5, 4:00 pm WHERE: CELS 120 lecture hall

**Donna E. Fennell**  
Rutgers University



Donna Fennell is a Professor of Environmental Engineering in the Department of Environmental Sciences at Rutgers University, New Brunswick. Her work encompasses microbial processes in natural and engineered systems including sediments, groundwater, and the atmosphere

Polychlorinated dibenzo-*p*-dioxins and dibenzofurans (PCDD/Fs) are persistent, bioaccumulative and toxic pollutants found in the environment. The Passaic River in New Jersey is highly contaminated with 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (2,3,7,8-TeCDD), one of the most toxic of the PCDD/F congeners. Our on-going research at Rutgers is intended to better understand PCDD/F dichlorination by anaerobic organohalide respiring bacteria (OHRB). Results will be presented from various anaerobic enrichment cultures (including from the Passaic River) enriched on alternate organohalides such as trichloroethene and dichlorobenzene to stimulate OHRB. Activity against three PCDD congeners: 1,2,3,4-tetrachlorodibenzo-*p*-dioxin, a well-studied model PCDD congener; 2,3,7,8-TeCDD; and 2,7-dichlorodibenzo-*p*-dioxin, a potential metabolite of 2,3,7,8-TeCDD, have been investigated. After 1.5 years, dechlorination of all tested dioxin congeners was observed in one or more replicate of each Passaic River sediment treatment. Preliminary 16S rRNA gene sequencing indicates dominance of a specific *Dehalococcoidia* phylotype in the 2,3,7,8-TeCDD dechlorinating enrichment. Further characterization of the bacteria could provide methods for monitoring dechlorination in contaminated sites and lead to new *in situ* treatment technologies.

For more information contact Dr. Deng at [dengy@mail.montclair.edu](mailto:dengy@mail.montclair.edu)