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Environmental and Water Resources Group

Presented by

Department of Civil & Environmental Engineering
Massachusetts Institute of Technology

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ANNUAL JOHN R. FREEMAN LECTURE:
Capturing Domestic Wastewater's Resource Potentials

Perry L. McCarty
Silas H. Palmer Professor, Stanford University

MIT's Tang Center (E51) 70 Memorial Drive Cambridge, MA 02139
Reception: 6 p.m. | Lecture: 7 p.m. **Admission: Free**

Today, wastewater can be looked upon more as a resource than as a waste, a resource not only for water, but also for energy and fertilizer nutrients. Using wastewater as a resource can help address the problems of population growth, consumption of finite resources, and climate change from use of fossil fuel. What emerging processes offer the most promise for capturing all of wastewater's resource potential? Treated wastewater is widely used today in agriculture and industry. It can be treated additionally with modern membrane technology for indirect potable reuse and to meet stringent industrial requirements, though energy requirements for the latter can be quite high. Energy can be obtained from wastewater's organic content as well as from its thermal content. Microbial fuel cells offer potential for direct biological conversion of wastewater's organic content into electricity. However, significant improvements are needed for this process to be competitive with anaerobic biological conversion of wastewater organics into biogas, a renewable fuel that can be used for generation of electricity. Available physical and chemical processes can be used to capture phosphorus and nitrogen for reuse, and bio-solids can be applied to agricultural fields or used for landscaping and parks, helping offset the high-energy costs of synthetic fertilizers.

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