

LYLES SCHOOL OF CIVIL ENGINEERING AND
ENVIRONMENTAL AND ECOLOGICAL ENGINEERING

TECHNICAL SEMINAR:

WITH JEANNE VANBRIESEN

PH.D., P.E., BCEE, D. WRE, F. ASCE, F. EWRI, F. AEESP, F, AAAS

MARCH 22

11:30 A.M.



**JEANNE
VANBRIESEN**

DUQUESNE LIGHT COMPANY
PROFESSOR OF CIVIL AND
ENVIRONMENTAL ENGINEERING
AND PUBLIC POLICY
CARNEGIE MELLON UNIVERSITY

SEMINAR TOPIC: EFFECTS OF WASTEWATER FROM ENERGY EXTRACTION AND UTILIZATION ON DRINKING WATER SOURCES AND RISK

Natural and anthropogenic sources of bromide can alter source waters in ways that affect drinking water quality and human health risk. Bromide, while unreactive in surface waters, interacts with treatment chemicals at the drinking water facility to produce halogenated organic compounds called disinfection by-products (DBPs). DBPs containing bromide are more toxic and carcinogenic than chlorinated DBPs, and the current regulatory structure may not adequately protect drinking water consumers from this changing risk.

Energy extraction and utilization activities produce wastewaters that are elevated in bromide. Produced waters from oil and gas extraction are often high in salts and bromide, and discharge of these wastewaters can increase surface water concentrations of dissolved solids and bromide. Coal-fired power plants can also produce wastewater with high dissolved solids and bromide, with levels depending on the coal quality and air pollution controls such as flue gas desulfurization units and bromide addition for mercury control. These new sources of bromide can affect drinking water sources, especially under low flow conditions where dilution does not adequately reduce bromide concentrations at drinking water intakes.

Several areas of the United States not traditionally associated with high bromide have been reporting increasing bromine incorporation into DBPs in treated drinking water due to these new sources. Watershed-, state-, and national-level analyses highlight the critical characteristics of regions where current bromide loads are affecting drinking water consumers. Additionally, these multi-scale analyses identify regions at risk for impaired drinking water quality resulting from energy wastewater discharges.

**ROBERT E. HEINE PHARMACY BUILDING (RHPH)
ROOM 172**

CONTACT KATHY HEATH AT HEATHK@PURDUE.EDU FOR MORE INFORMATION