Chemical & Environmental Engineering

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Control of Emerging Waterborne Viral Pathogens: Inactivation Kinetics and Mechanisms

Many US drinking water utilities will be switching disinfection strategies in response to the 2006 Long-Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) and 2006 Stage 2 Disinfectants and Disinfection Byproducts (DBPs) Rule. Although new treatment processes will be designed to provide improved control of protozoan (oo)cysts (*Cryptosporium parvum* and *Giardia lamblia*) and regulated chloro- and bromo-DBPs (trihalomethanes, haloacetic acids, bromate), some emerging pathogens (e.g., viruses resistant to UV light and combined chlorine inactivation) and DBPs (e.g., nitrosamines and iodo-DBPs associated with combined chlorine disinfection) might become a greater concern. The focus of this presentation will be to address some of the impacts that certain changes in disinfection strategies might have on the inactivation kinetics of the emerging pathogen adenovirus, a double-stranded DNA virus, including the role played by key water quality parameters. A case will also be made for the need to elucidate the molecular mechanisms responsible for inactivation, including an illustration with a mechanistic study on the inactivation of adenovirus with UV light and chlorine. Such improved understanding could guide the development of more robust disinfection schemes. The presentation will close with recommendations for future research activities in drinking water disinfection.

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Friday October 30, 2009
9:30 - 10:30 AM
Bourns A265
Refreshments at 9:15 AM