iFAST: The International Forum on Advanced Environmental Sciences and Technology

A series of distinguished seminars by eminent scientists

7 p.m. CST; 8 p.m. EST; 1 a.m. GMT (Jan. 20); 9 a.m. China (Jan. 20)

Wednesday, Jan. 19, 2022

Charles N. Haas
DREXEL UNIVERSITY
http://www.pages.drexel.edu/~haascn/

C. N. Haas is the L.D. Betz Professor of Environmental Engineering, at Drexel University, where he has been since 1991. Haas was also the head of the Department of Civil, Architectural and Environmental Engineering from 2004-2020. He has courtesy appointments in the Department of Emergency Medicine of the Drexel University College of Medicine and in the School of Public Health. He received his bachelor's degree in biology and master's degree in Environmental Engineering from the Illinois Institute of Technology and his doctoral degree in environmental engineering from the University of Illinois at Urbana-Champaign. He has served on the faculties of Rensselaer Polytechnic Institute and the Illinois Institute of Technology prior to joining Drexel. He co-directed the USEPA/DHS University Cooperative Center of Excellence – Center for Advancing Microbial Risk Assessment. He is a distinguished fellow of the International Water Association, and a fellow of the American Academy for the Advancement of Science, the Society for Risk Analysis, the American Society of Civil Engineers, the American Academy of Microbiology and the Association of Environmental Engineering and Science Professors. He is a board-certified environmental engineering member by eminence of the American Academy of Environmental Engineers. He has received the Dr. John Leal Award and the AP Black Award of the American Water Works Association and the Clarke Water Prize. In 2021, he was elected to the National Academy of Engineering. Over his career, Haas has specialized in the assessment of risk from and control of human exposure to pathogenic microorganisms, and in particular the treatment of water and wastewater to minimize microbial risk to human health. Haas has served on numerous panels of the National Academies of Sciences, Engineering and Medicine. He is a past member of the Water Science and Technology Board of the National Academies, and the U.S. EPA Board of Scientific Counselors.

Environmental Pathogen Engineering

Environmental engineering (EnvE) can be viewed as a discipline focused on designing solutions to reduce risks from exposures of humans and the ecosystem to adverse contaminants. I define "environmental pathogen engineering" (EnvPE) to be the particularization of this when the contaminants of interest are disease-causing organisms. Three broad paradigms in EnvE are applicable to EnvPE - the source-transport- receptor concept, the concept of intervention by (perhaps a series of) unit processes, and the concepts of risk assessment. I will highlight the unique features of pathogens in the environment which require the incorporation of new concepts. Illustrations from my work and those of others as applied to protection of human health from microorganisms in water, food, on surfaces and in air will be presented. Timely current interests include control of Legionella and understanding the role of environmental controls in mitigating risks from SARS-CoV-2. Research needs to improve our understanding and ability to improve public health will be outlined.

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