

COLLOQUIUM BY BARRY C. KELLY

CHEMICAL RISK ASSESSMENT IN THE 21ST CENTURY: GRAND CHALLENGES AND THE ROLE OF GOVERNMENT, INDUSTRY AND ACADEMIA

TIME: 2:00-3:00 PM, MONDAY, 22 AUG 2016

VENUE: AB 1079

Chemical Risk Assessment in the 21st Century: Grand challenges and the role of government, industry and academia

Speaker: Barry C. Kelly, Assistant Professor, National University of Singapore

ABSTRACT:

The use of commercial chemicals in manufacturing and other sectors of the economy are essential for economic and social benefit. However, release of some chemicals into the environment via household, municipal and industrial waste streams can result in adverse impacts on ecological and human health. This is particularly the case for high production volume (HPV) chemicals, which often can be produced annually in megatonne quantities. Today, widely used commercial chemicals of concern include halogenated flame retardants (HFRs), perfluoroalkyl substances (PFASs), pharmaceuticals and personal care products (PPCPs) and engineered nanoparticles (ENPs). Chemical risk assessment generally involves three phases, including (i) characterizing chemical effects via dose-response relationships, (ii) characterizing chemical exposure via monitoring and/or modeling techniques and (iii) risk characterization, which involves integrating exposure and effects data, as well as incorporating any uncertainties to determine the likelihood or probability of contaminant related impacts. In this seminar, the key aspects and challenges of this approach will be presented and discussed. Discussion will also focus on the role of government, industry and researchers in strengthening chemical risk assessment and toxic substance management in the future.

BIO:

Dr. Kelly has worked in the field of environmental science and risk assessment for nearly twenty years, with universities, government agencies and private consulting firms. He received a Master of Resource and Environmental Management (1999), as well as a Ph.D. (2006) from Simon Fraser University, Canada. Currently, Dr. Kelly is an Assistant Professor in the Department of Civil and Environmental Engineering at the National University of Singapore (NUS). His research

generally encompasses the fields of analytical chemistry, environmental toxicology, ecological risk assessment and public health. He has published over 40 papers in highly respected peer-reviewed journals, including *Science*, *Environmental Science & Technology*, *Analytical Chemistry* and *Science of the Total Environment* and *Environmental Toxicology & Chemistry*. His contributions to the field of environmental chemistry have been recognized by *Chemical & Engineering News* (C&EN, 2007). He is an active member of the American Chemical Society (ACS) and the Society of Environmental Toxicologists and Chemists (SETAC) and regular reviewer for a number of highly respected journals in the field of analytical chemistry and environmental toxicology. His research aims to decipher key biological and chemical factors that govern fate and transport, bioaccumulation behavior and biological effects of commercial chemicals. This work aids regulatory authorities to better identify, evaluate and manage potentially hazardous substances.