



The BRACE CENTRE FOR WATER RESOURCES MANAGEMENT



McGill

## Dr. Miriam Diamond

Departments of Earth Sciences, and Chemical Engineering and Applied Chemistry  
University of Toronto

### FOLLOWING THE PATHS TRAVELLED BY HALOGENATED FLAME RETARDANTS

It's both astounding, and yet explicable, that most of Canadians, and human and wildlife populations distributed worldwide, contain halogenated flame retardants. Halogenated flame retardants are added to a very wide variety of consumer products and building materials to reduce the risk of death and injury from structural fires. This seminar follows the path of flame retardants starting with the motivation to add them to products. The next step in the path is quantifying the inventory and material flow analysis of the most well studied flame retardants, polybrominated diphenyl ethers or PBDEs, using Toronto as a case study. We then quantify and track emissions from consumer products to the indoor environment using our Multimedia Indoor Model. The indoor environment provides the greatest opportunity for human (and pet) exposure. From indoors, the flame retardants migrate outdoors which is an urban environment for 80% of Canadians. We found that outdoor air PBDE measurements match the geographic distribution of the PBDE inventory, with downtown Toronto having the highest concentrations and building volume being the best predictor of air concentrations. The final part of the story of halogenated flame retardants is questioning the presumption that the reduced risk of death and injury from structural fires due to flame retardants justifies the potential health risk to humans and biota posed by these compounds. Do the data support this contention?

Miriam Diamond is a professor in the Department of Earth Sciences at the University of Toronto. She is cross-appointed to the Department of Chemical Engineering and Applied Chemistry, the Dalla Lana School of Public Health, School of the Environment, and the Physical and Environmental Sciences Program at Scarborough College. She received her B.Sc. in Biology from the U. Toronto (1976), M.Sc. from the U. Alberta in Zoology (1980), M.Sc.Eng from Queen's University in Mining Engineering (1984), and her Ph.D. from the Dept of Chemical Engineering and Applied Chemistry from U. Toronto (1990). The goal of her multidisciplinary research program is to improve our understanding of chemical contaminants from emission, through to transport indoors and outdoors, and ultimately human and ecological exposure. Miriam is an Associate Editor of the journal *Environmental Science and Technology* which is a leading journal in the field, a member of the Board of Directors of the Canadian Environmental Law Association and was, until recently, a member of the Science Advisory Board of the International Joint Commission of Canada.

**Thursday, January 31<sup>st</sup>, 2013**

McGill Downtown Campus, Macdonald Engineering Building, Room MD497

1:00 pm - 2:00 pm

**EVERYONE WELCOME**