

## Issues and Challenges of Sustaining Clean and Healthy Water under Changing Climate and Landuse Scenarios

**Asit Mazumder, University of Victoria**

As we entered the 21st century, our effort to sustain clean and healthy water for communities, especially the rural and remote ones, is being challenged by a variety of stressors, such as pathogens, toxins, pharmaceuticals associated with land- and resource-use and development, water-level fluctuations from high water demands, drought and heavy rainfall. These stressors are leading to chemical and fecal contamination of water used for drinking, and close to 3-4 million people die a year from contaminated drinking water, and 35 out 1000 children in the rural and slums of developing countries die before the age of 5 from water related illnesses. Unfortunately, the environment that provides us with water are being compromised because it is assumed that any water regardless of source and quality can be treated to make them safe and healthy for drinking. It is often suggested that small, rural and remote communities are at greater public health risks from contaminated drinking water, because of lack of expertise, resources and lack of control over the protection and management of water sources used for drinking. As a part of the NSERC-Industry Research Chair program on water and watershed management, we have been developing inter-disciplinary science and knowledge integrating source water environment, treatment and distribution and public health. In addition to providing a general overview of the issues and challenges with providing clean and healthy water, I will present results on some of the innovative tools we developed to track sources of chemical and fecal contamination of water that could be used to develop strategies to optimize and manage public health risks from water.

### **Dr. Asit Mazumder, Ph.D.**

Dr. Asit Mazumder; faculty member at Université de Montréal for 10 years; joined University of Victoria in 1999 as an NSERC Senior Research Chair and Professor in water and aquatic sciences research. During the last 10 years, he developed extensive partnership with water utilities, communities, academics, government and industries for inter-disciplinary research for sustainable clean and healthy water for communities in Canada, New Zealand, Australia, Hong Kong, Cambodia, China, Bangladesh and Haiti, and more recently with a significant focus on water quality and health issues of Canada's aboriginal and rural communities. Served on numerous provincial, national and international committees on water and environment issues, as members on many national and international grant selection panels, and as editorial board members for several international scientific journals. Published over 100 peer-reviewed papers in international journals, trained 100s of undergraduate students, and around 70 masters, doctoral and post-doctoral students. Passion: Work with small, rural, aboriginal and slum communities to assist them with the protection of health and well being through sustainable clean and healthy water and food.