

## **Name of Special Session**

### **S7. The Biotic Exposome of Emerging Flame Retardants in the Global Environment**

#### **Chairs and/or Organizers**

Prof. Stuart Harrad (University of Birmingham, U.K.)

Dr. Robert Letcher (Environment and Climate Change Canada, Canada)

#### **Objective**

The use of flame retardant (FR) chemicals are intended to protect the public from fires by reducing the flammability of combustible materials, and comprise a large and diverse class of additive and reactive substances. The discontinuation of commercial polybrominated diphenyl ether (PBDE) and hexabromocyclododecane (HBCDD) products has stimulated the production and usage of a number of alternative FRs to meet product flammability standards. Recent studies have increasingly reported the environmental occurrence of many alternative FRs, such as 2-ethylhexyltetrabromobenzoate (EH-TBB), bis(2-ethylhexyl)-3,4,5,6-tetrabromobenzoate (BEH-TEBP), 1,2-bis(2,4,6-tribromophenoxy)ethane (BTBPE), decabromodiphenylethane (DBDPE), Dechlorane plus (DP) and related compounds, as well as organophosphate ester flame retardants (OPE FRs). One of the trends in flame retardant industry is to produce even more highly brominated chemicals to replace DecaBDE or HBCDD, partially based on the assumption that heavily brominated chemicals have exceedingly low bioavailability and are more resistant to environmental or metabolic transformation. These include 1,2-bis(2,3,4,5,6-pentabromophenoxy)ethane, ethylene bis(tetrabromophthalimide), tetrabromobisphenol A-bis(2,3-dibromopropyl ether), and 2,4,6-tris(2,4,6-tribromophenoxy)-1,3,5-triazine. However, compared with numerous PBDE and HBCDD studies, investigations on these emerging FRs are still very limited. Knowledge remains insufficient as to the sources, environmental behaviour, spatiotemporal distribution of emerging FRs, as well as their exposure in wildlife and potential effects that can lead to toxic or ecotoxic impacts. Exploration of these themes will advance our knowledge of environmental contamination of FRs and consequences.

**S7: “The Biotic Exposome of Emerging Flame Retardants in the Global Environment”** focuses on FRs in the biotic exposome and in the global environment and biota.

**S8: “Legacy and Emerging Flame Retardants: Biotransformation and Bioavailability”** focuses on FR metabolism and bioavailability only.

**S9: “Flame Retardants in Human Tissues; Implications for Human Exposure”** focuses on FRs/biomarkers in human matrices (blood, urine and milk) and thus no non-human information.