Nowell, L.H. and Stephens, V.C., 2005, Contaminant mixtures in bed sediment from U.S. streams, and their potential toxicity to aquatic life [abs.]: Society of Toxicology, Contemporary Concepts in Toxicology Workshop on Charting the Future: Building the Scientific Foundation for Mixtures Joint Toxicity and Risk Assessment, 16–17 February 2005, Atlanta, Georgia.

**ABSTRACT**

Samples of bed sediment from 967 sites on rivers and streams across the United States were analyzed for trace elements, organochlorine pesticides, total polychlorinated biphenyls (PCB), polycyclic aromatic hydrocarbons (PAH), and other semi-volatile hydrophobic organic compounds. Sampling was conducted as part of the National Water Quality Assessment (NAWQA) program during 1992–2001 to assess the occurrence and distribution of contaminants in rivers and streams. Sampling sites were selected to represent basins of agricultural, urban, mixed, and undeveloped land uses, classified using the enhanced 1992 National Land Cover Data. The results showed that contaminants in sediment tended to occur as mixtures. For example, both organochlorine pesticides and PAHs were detected in sediment from about 50% of agricultural streams and about 75% of urban streams. Additional organic contaminants (such as azaarenes and PCBs) were also frequently present, and certain trace elements (including cadmium, copper, chromium, lead, mercury and zinc) were also elevated, at urban sites. Trace element concentrations in sediment, with the exception of arsenic, showed no significant difference for agricultural and undeveloped, non-mining impacted streams. Consensus-based sediment-quality guidelines were applied to assess the potential effects of sediment contaminants on aquatic life at the NAWQA stream sites. Probable-effect concentration quotients were used to assess the potential toxicity of the measured contaminant mixtures to aquatic life as a function of land use.