Geophysical Research Abstracts,
Vol. 10, EGU2008-A-01761, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-01761
EGU General Assembly 2008

Bioavailability of Trace Metals in Sediments in the Highly Urbanized Brunette Watershed of British Columbia, Canada

Loretta Y. Li, Ken Hall, Yi Yuan, Gevan Mattu and Don McCallum

The University of British Columbia, Vancouver, British Columbia, Canada

E-mail:lli@civil.ubc.ca

The highly urbanized Brunette watershed of the metropolitan area of Greater Vancouver, Canada provides an opportunity to examine how anthropogenic activity affects the composition of materials transferred from land through storm and surface runoff to streams and rivers of the watershed. This study investigated the bioavailability of selected trace metals (Cu, Fe, Mn, Pb and Zn) in the water-sediment system through the quality of stream and lake sediments. Surface sediment samples were collected in three tributaries (Still and Eagle Creeks and the Brunette River) as well as a transect across Burnaby Lake. Samples were analyzed for trace metal geochemistry (exchangeable, easily reducible, organic and residual phases) between 1974 and 1998, a period when vehicle fuel formulations were changing. The results indicate that the high manganese and the decrease in lead in sediments over this period are most likely due to the change in fuel additives. The exchangeable forms, the immediately bio-available species for Mn, Pb, and Zn, were generally low. The relatively high proportion of acid extractable Mn, Pb, and Zn represents very unfavourable conditions for organisms associated with the sediments, especially if one considers the cumulative effects of these toxic metals.