

Abstract Submitted  
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**Analysis of the Isotopic Composition of Molybdenum in Water Samples Along the Athabasca River** HENRIETTE LUND, Department of Physics and Astronomy, Aarhus University, Ny Munkegade 120, DK-8000 Aarhus C, Denmark , WILLIAM SHOTYK, Department of Renewable Resources, University of Alberta, 348B South Academic Building, Edmonton, Alberta T6G 2H1, Canada , MICHAEL WIESER, Department of Physics and Astronomy, University of Calgary, 2500 University Drive NW, Calgary, Alberta T2N 1N4, Canada — The Athabasca bituminous sands, located in the northeastern region of Alberta, are sources of bitumen from which oil and other petroleum products are produced. The extraction of bitumen from the bituminous sands raises concerns that environmentally harmful byproducts may leak into the Athabasca River. The objective of this project was to investigate the concentrations and isotopic compositions of molybdenum in the Athabasca River, which is typically found in elevated amounts in bitumen, relative to the continental crust. Water samples were collected along the river upstream and downstream from Fort McMurray and in the vicinity of oil sand operations. Relative isotopic compositions of  $^{98}\text{Mo}$ : $^{95}\text{Mo}$  were measured and reported as delta values. The Mo isotopic compositions ranged between 1.50 - 1.79 per mill along the river. Mo concentrations were found to range between  $(0.2703 - 0.7038) \cdot 10^{-6}$  g Mo/L. These are significant variations in both isotopic composition and concentration and indicate that the sources of Mo change along the Athabasca River. Based on these results, a much more extensive study is underway to identify possible sources of Mo to the river.

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