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Molybdenum as a tracer to anthropogenic activity ALEXANDER TENNANT, STEPHEN LANE, University of Calgary Department of Physics and Astronomy, BERNADETTE PROEMSE, University of Calgary Department of Geoscience, MICHAEL WIESER, University of Calgary Department of Physics and Astronomy — The trace metal molybdenum (Mo) is not very abundant in the environment, but has numerous applications in anthropogenic activities. For instance, Mo sulphide (MoS_2) is a component of diesel fuel. Mo is used as a catalyst in many engines and is believed to be the most efficient catalyst for the hydro-cracking of bitumen, and has even been found in the emissions of coal-fired power plants. Hence, anthropogenic activities may release Mo in larger amounts to the environment that may affect terrestrial and aquatic ecosystems (e.g. via its coupling with the N cycle). We have therefore investigated the potential of Mo concentration and isotopic abundances as a tracer of androgenic emissions. Using a method of elemental double spiking, we measured Mo concentrations and isotopic composition of aerosols throughout the city of Calgary, Alberta, Canada. Airborne Mo was collected at several locations, ranging from an isolated weather station to a busy bus garage where buses were left to idle for extended periods of time. Mo concentrations ranged from 0.07 ng/m^3 in the laboratory 19.0 ng/m^3 in the bus garage. The isotopic compositions were variable from throughout the sampling sites. These results suggest that Mo has the potential to be used as a tracer of anthropogenic activity.

Alexander Tennant
University of Calgary Department of Physics and Astronomy

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