



Mercury and Other Trace Metals in the Surface Soils of Ny-Ålesund, Arctic

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Received: 17 February 2020 / Accepted: 29 June 2020
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Abstract Mercury contamination and its rate of transformation and transport are increasing in the environment due to climatic variations. The mercury contamination is also rising in the polar ecosystems too. The present study assessed the content of mercury and other metals in the surface soils of tundra ecosystem of Ny-Ålesund, Svalbard. The samples were taken during summer months of 2015–2018 as part of Indian Arctic expedition. Mercury content in the surface soils were ranged from 0.01 to 0.14 $\mu\text{g/g}$ and is comparable with the earlier studies carried out in the circumpolar regions. Total mercury content in plant samples was also comparable and the mean concentration was 83.45 ng/g . The mercury content is significantly varied from site to site; however, no significant variation was found between years. The interrelationship shown by mercury and other metals indicated a common contaminant pathway. The results indicated that the metals might have influenced by the local variations in the environment especially the increased thawing of permafrost as it led to

1 Introduction

The contamination rate of the Arctic terrestrial ecosystem is increasing and is mainly due to the anthropogenic activities like industrialisation, fossil fuel burning, and other natural calamities in the various part of the world (Mohan et al. 2019; Mohan et al. 2018; Pacyna and Keeler 1995). The contaminants reaching in the Arctic through long-range transport have made the pristine environment as a sink for pollutants (Halbach et al. 2017; Slemr et al. 2011). However, the changing climatic conditions altered the Arctic from sink to source of pollutants (Dastoor and Durnford 2013). The surface soils are important sink for contaminants, especially for metals (Obrist et al. 2017; Nygård et al. 2012). Trace elements can be deposited in the surface soils from local bedrock and through the atmospheric supply (Halbach et al. 2017). Atmospheric deposition of metals from various anthropogenic sources influences the natural