

Determination of Select Heavy Metals in Air Samples from Aurangabad City

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Abstract

Living organisms require trace amounts of certain heavy metals, including cobalt, copper, manganese, molybdenum, strontium, and zinc but excessive levels can be detrimental to the organism. Other heavy metals such as mercury, lead, and cadmium are known to have vital impact on organisms; however, their accumulation over time in the bodies of mammals can cause serious illness. The particulate heavy metals can have severe toxic and carcinogenic effect for humans when inhaled in higher concentration. Therefore monitoring of heavy metals present in particulate matter is an important environmental issue. In this work, the atmospheric concentrations of selected heavy metals including Lead (Pb), Cadmium (Cd), Nickel (Ni), Manganese (Mn), and Zinc (Zn) were measured for different sampling sites in Aurangabad city of Maharashtra. High volume air samplers and glass fiber filters were used to collect the samples. The collected samples were digested using a mixture of analytical grade hydrogen fluoride and analyzed to evaluate the levels of heavy metals by Atomic Absorption Spectrophotometry. Five heavy metals (Pb, Ni, Mn, Cd, and Zn) were monitored. Locations namely Kranti Chowk, Railway Station, Waluj Industrial area, SB College, Gulmandi Chowk and Harshul T Point have revealed high concentrations of selected heavy metals. To determine the emission sources of these metals, it is recommended to undertake more detailed and comprehensive study.

Keywords

Heavy metals Air pollution Atomic absorption spectrophotometer Particulate matter Filters
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Abstract

Living organisms require trace amounts of certain heavy metals, including cobalt, copper, manganese, molybdenum, strontium, and zinc but excessive levels can be detrimental to the organism. Other heavy metals such as mercury, lead, and cadmium are known to have vital impact on organisms; however, their accumulation over time in the bodies of mammals can cause serious illness. The particulate heavy metals can have severe toxic and carcinogenic effect for humans when inhaled in higher concentration. Therefore monitoring of heavy metals present in particulate matter is an important environmental issue. In this work, the atmospheric concentrations of selected heavy metals including Lead (Pb), Cadmium (Cd), Nickel (Ni), Manganese (Mn), and Zinc (Zn) were measured for different sampling sites in Aurangabad city of Maharashtra. High volume air samplers and glass fiber filters were used to collect the samples. The collected

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