



Pollution Monitoring in Heavy Traffic Sites with Moss Sampling

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ABSTRACT

Biomonitoring studies have been done for the estimation of heavy metals (Pb, Cu, Co, Cr and Ni) in Heavy Traffic areas in Indore City by using the moss Physcomitrium pyriforme (common bladder moss). The concentration of these elements comes into the mosses mainly from vehicular activity and other major anthropogenic activities. A significant accumulation of metals has been found in Heavy Traffic areas in comparison to the Garden areas (our control site). Moss Physcomitrium pyriforme were collected from moist brick walls and from garden soil.

Key words: Moss, Accumulation, Monitoring, Heavy Metal.

INTRODUCTION

Mosses are very sensitive bioindicators of heavy metal pollution in environment [6]. Many authors have been using the moss plants for long term environmental monitoring in many countries such as Poland [6], Scandinavia [10,12] and Cumbria [5].

Due to some special characters bryophytes can be taken for pollution monitoring studies. They have habitat diversity, structural simplicity and rapid rate of multiplication, They are also very sensitive to air pollution, therefore their utility have been proved to use them as bioindicators for air pollution. The aim of this study is to present the levels of heavy metals in Heavy Traffic areas in Indore city.

MATERIAL AND METHODS

The Indore, is the economic capital of Madhya Pradesh state, situated in the upper Gangetic plain of the country at 470 m above sea level. The climate of this region is subtropical and characterised by hot and humid summers but cold and chilly winters. The maximum temperature normally remains between 4 -18° C in winters and in summers it goes up to 48 °C.

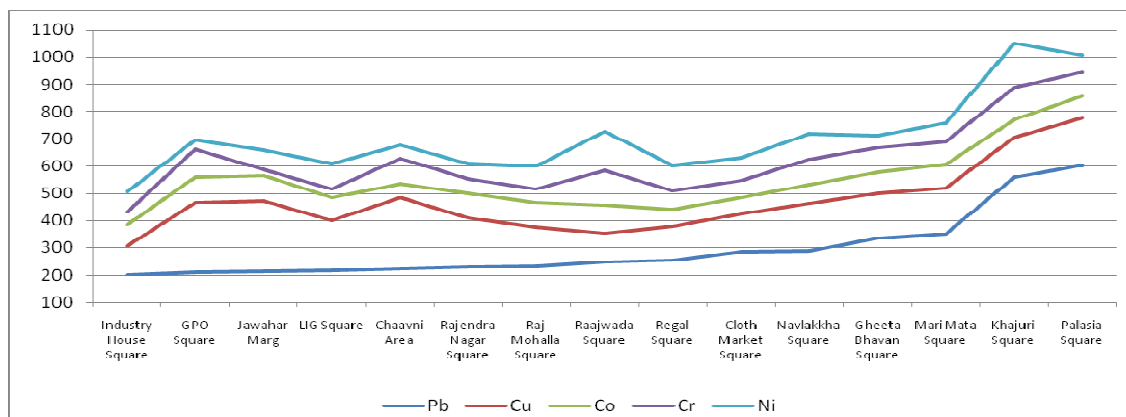


Two samples of moss *Physcomitrium pyriforme* (Hedw.) Hampe were collected from two different Garden sites and treated them as a control. Twelve different samples were also collected from 15 different areas accustomed with heavy traffic in the city. Samples were washed twice to remove the adhered soil particles from moss material in deionized water and thereafter shaken for 20 minutes and dried at 90 °C and digested them in 10:1 mixture of concentrated nitric acid and perchloric acid. Lead, Cu, Co, Cr and Ni were determined using a Perkin Elmer 280. Atomic absorption spectrophotometer [1].

RESULTS AND DISCUSSION

Table 1: metal concentration at different sites

Site No.		Pb	Cu	Co	Cr	Ni
1.	Industry House Square	200	106	78	46	76
2.	GPO Square	211	256	92	103	35
3.	Jawahar Marg	215	256	94	21	73
4.	LIG Square	217	184	82	34	93
5.	Chaavni Area	223	262	50	92	50
6.	Rajendra Nagar Square	229	181	90	52	56
7.	Raj Mohalla Square	231	146	89	49	83
8.	Raajwada Square	249	105	102	128	144
9.	Regal Square	253	126	63	67	93
10.	Cloth Market Square	286	139	59	64	83
11.	Navlakkha Square	289	175	67	93	94
12.	Gheeta Bhavan Square	336	164	78	90	43
13.	Mari Mata Square	350	168	87	84	68
14.	Khajuri Square	560	144	66	120	160
15.	Palasia Square	602	176	80	86	63



CONCLUSION

The data clearly indicate that Pb, Cu, Co, Cr and Ni concentration in moss samples collected from number of Heavy Traffic sites were found higher as compared to the heavy metal contamination found in the samples collected from the garden areas the present levels of heavy metals in the environment will be the base line record for carrying out further studies related to the state of the soil pollution in the heavy traffic areas in city.

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