AIR POLLUTION IN MITROVICA WITH PARTICULATE MATER AND THEIR TREIT DISPERSION- KOSOVA UNMIK

Afrim Syla, Agron Veliu,Gani Berisha,
[*]MESP – Ministry of Environment and Spatial Planning of Kosovo
Mitrovica - Kosova

Abstract

Kosova is a mountainous farm region which at past was in the process of industrialization because of its reach coal and mineral resources. The problem of air pollution in the surroundings of Trepça mine appeared as early as 1930 when English company "TREPÇA MINES Ltd".
The city of Mitrovica, approximately 40 km north of Prishtina, was the site of one the largest lead smelters in Europe. Lead – related industries have been a major element of the economy of Kosova, but created extensive health risk due to environmental pollution with lead and a variety of other substances. The most abundant air pollutant is this region was lead dust and PM (particulate substances) other substances.

Keywords: Particulate matter, heavy metals

Air Particulate Sampling

A primary pathway for human health exposure to heavy metals is inhalation of air particulates containing heavy metals. Air particulate samples were collected in the central of Mitrovica and in the vicinity of the primary industrial sources area.
The primary air sampling program utilized battery powered 24-hour volume samples through 37 mm quartz filters. Sampling with these samples was conducted at 6 locations in the Mitrovica area.

An inlet designed for measurement of total suspended particulate was used rather than a size selective inlet, since the total loading of heavy metals was of most concern, rather than the respirable or "PM10" fractions. The 37 mm filter samples were pre-and post-weighed to determine Total Suspended Particulates (TSP) concentrations and analyzed to determine airborne lead and selected heavy metal concentrations. Air sampling averages at the primary air monitoring stations are summarized in Table 1 and Table 2.

Results and discussion

Summarized mass concentration results of PM10, PM2,5 , lead and cadmium for both particle fractions are shown in Figure 1 and Figure 2. Seasonal trend for lead is obvious, showing elevated concentrations during autumn-winter period. For cadmium concentrations and other heavy metals no such trends could be seen.

Table 1. Concentration of PM2.5, PM10, PM1

		Annual average concentration, [microgr/m3]			
Nr.	Monitoring sites	Total- LG2.5	LG10-LG2.5	LG 2.5	LG 1
1	Sh.f. "BEDRI GJINA"	201.96	100.36	52.72	18.86
2	FAKULTETI-FXM	90.73	40.54	24.15	12.36
3	Sh.f. "1 MAJI"- SHUPKOVC	124.15	53.14	34.08	12.85
4	BAIR- MONOPOLI	89.35	37.62	12.78	3.84
5	Sh.f. "EQREM ÇABEJ"	113.49	36.11	6.56	1.49
6	OJQ "MITROVICA"	214.18	97.12	12.33	2.6
	Max value	214.18	100.36	52.72	18.86
	Min value	89.35	36.11	6.56	1.49

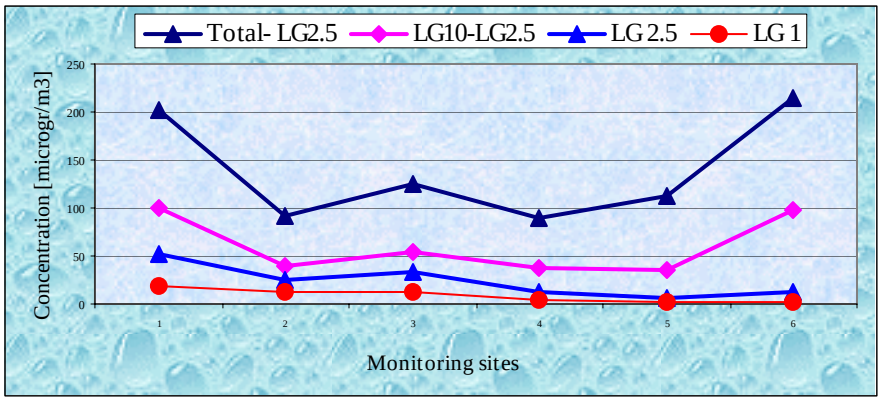

Figure 1. Diagram of Particulate Matter

Table 2. Concentration of heavy metals (Pb, Cd)

		Annual average concentration, [microgr/m3]	
Nr.	Monitoring sites	Pb	Cd
1	Sh.f. "BEDRI GJINA"	0.65	0.039
2	FAKULTETI-FXM	0.62	0.037
3	Sh.f. "1 MAJI"- SHUPKOVC	0.57	0.021
4	BAIR- MONOPOLI	0.31	0.009
5	Sh.f. "EQREM ÇABEJ"	0.56	0.041
6	OJQ "MITROVICA"	0.59	0.028
	Max value	0.65	0.041
	Min value	0.31	0.009

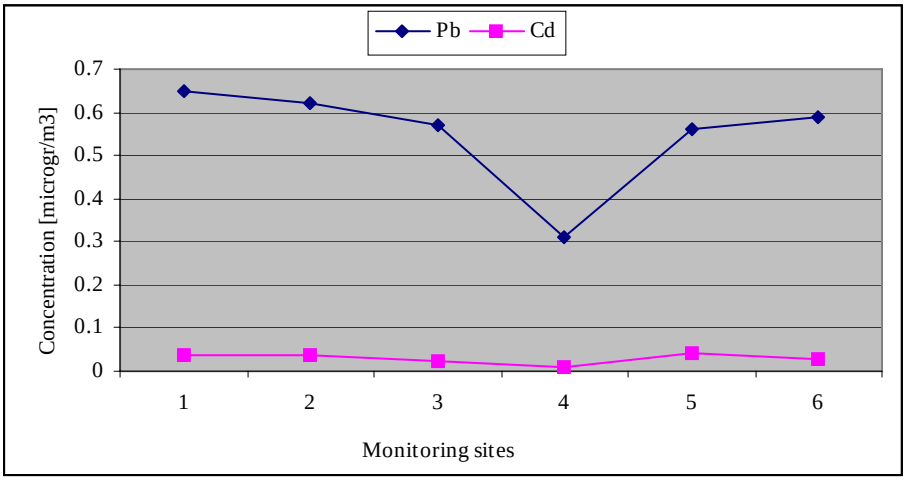

Figure 2. Diagram of heavy metals (Pb, Cd)

Conclusion

The overall lead and cadmium content is found in the PM fraction.
The was significant correlation between lead and cadmium concentrations.
While seasonal trend of lead concentrations is obvious, showing elevated concentrations during autunumn-winter period, no such trend for cadmium concentrations could be determined.

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