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"Gh. Asachi" Technical University of Iasi, Romania

QUANTIFICATION OF LEAD POLLUTION IN BUCHAREST AREA AND POTENTIAL RISKS FOR HUMAN HEALTH

Mihaela Mihai [1*], Ioana Lacatusu [1], Alina Murariu [1], Aurelia Meghea [1], Aurelian Stanescu [2]

University POLITEHNICA of Bucharest,
[1]Faculty of Applied Chemistry and Materials Science, 1 Polizu Street, 011061, 1st district, Bucharest, Romania;
[2] Faculty of Automatic Control and Computers, 313 Splaiul Independentei Street, 060042, 6th district, Bucharest, Romania

Abstract

Lead is unique among the toxic air contaminants that the World Health Organization (WHO) has identified it in several ways. Lead concentration is increasing rapidly in the environment due to increased use in anthropic activity. Lead is released into the atmosphere from metallurgy and siderurgy industry, during coal burning, oil or wastes, from power plants which use solid fuel, from traffic and the building sites. Regardless the exposure mode, the presence of lead in urban air, even in relatively low concentrations, causes harmful health effects. Firstly, children are particularly susceptible to levels of lead in their blood due to exposure to lead. Secondly, the chronic non-cancer effects are related to blood lead levels as opposed to ambient air concentrations.

In order to investigate the lead pollution in the Bucharest's atmosphere, this paper presents a case study regarding to lead concentration measured in Bucharest and near by area. Lead concentrations in suspended particulate matter were monitored from March 2004 up to December 2006, in two urban areas (city centre of Bucharest) and two surrounding regions, in North and South-West parts of Bucharest (Balotesti and Magurele) have been chosen. The results confirmed that during the entire period analysed, North part of the city exhibits lower lead exposure, below maximum concentration level. An explanation is the existence of green space and forests. In the South-West parts of the city there were exceeding of maximum concentration level, probably due to intensive industrial activities. Higher values were always detected near the city centre. The results indicated that the highest concentrations of lead are ranging between 1 – 2.3 μg/m^3. A variation of lead concentration during the spring - winter seasons was clearly observed.

Keywords: lead pollution, lead air concentration, Bucharest, Balotesti and Magurele counties, health effects

* Author to whom all correspondence should be addressed: e-mail: mihai_mihaela2007@yahoo.com; ioana_laca@yahoo.com; phone: 021 3154193