
METHOD OF PREDOMINANT SOURCE OF AIR POLLUTION IDENTIFICATION

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Key words: air pollution, source identification, method

Introduction: Institute of Public Health in Ostrava carries out monitoring of environment. Monitoring of ambient air started in the year 1985 and has been continuing till now. The main program is: to find out the level of air pollution in different parts of the city and to indicate areas with pollutants exceeding limits. This project described quality of ambient air in locality Ostrava-Bartovice during four years (2003–2006) and analyzed in detail 2005 data. Annual concentrations of PM_{10} , benzo(a)pyrene and arsenic exceed the limits. In the area of interest there is situated a lot of family houses. The main sources of air pollution are there local heating, traffic pollution from the main road connecting Ostrava with the other big city Havířov and the iron-work plant as the suspected predominated source of air pollution.

Objective: The goal of the study was to assess air quality in the most polluted city-quarter and to confirm/disconfirm a hypothesis that the industrial plant situated close to the quarter is the predominated source of air pollution.

Material and methods: Distance of the measurement station from industry complex was about 2 kilometers. Following pollutants were monitored: PM_{10} , ozone, NO_x , meteo-conditions (continual monitoring); metals, PAH, VOC (each 6th day). The concentrations were divided into 2 groups according the wind direction (from the industrial plant and wind-speed higher than 0.5 m/s – study, other wind directions and wind-speed less than 0.5 m/s – control). The differences were statistically analyzed using ANOVA.

Results: The study results confirmed that concentration in study group were statistically significantly higher ($p < 0.001$) than in control group for PM_{10} (101 % increase), NO_x (49 % increase), NO_2 (38 %) and metals (254–604 %). No significant differences were found between groups of concentrations for PAH.

Conclusions: The industrial plant significantly increased the concentrations of PM_{10} , NO_x , and metals in the surrounding living area in 2005.