POSTER SESSION

CORRELATIONS BETWEEN MUTAGENIC POTENCIAL AND MEASURED POLLUTANTS IN OSTRAVIAN URBAN AIR (YEAR 2006)

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Introduction: Air quality is frequently evaluated by comparison of contaminant's concentration with the legislative limit. However, real environmental air is a complex mixture of many together acting contaminants (both measured and unknown). The interactions among all of them are complicated not only on the chemical level. Resulting biological (mutagenic) effect is dependent on an ability of live organism to react to all together acting components of the complex mixture on the biological level (the real cells with the real genetic material).

Objectives: The aim of the study was to find correlations between measured pollutants and biological (mutagenic) effect of the real air.

Material and methods: The most widely used test to identify biological (mutagenic) effect of chemical or a complex mixture is *Salmonella* (Ames) test. Urban air samples taken in three places of the industrial parts of the city (coking plants, chemical works, automobile traffic, local heating systems) during 2006 year were tested using Ames test (every month's pooled sample of air, 12 samples of every place) and concurrently chemical analysis of relevant carcinogenic and mutagenic compounds (about 60 measurements for every pollutant and every place) was carried out. The results of chemical analysis (benzene, styrene, trichlorethene – using gas chromatography with FID (Flame Ionization Detection) detector; arsenic, nickel, cadmium, chromium – using X-ray spectrometry of secondary emissions; selected polycyclic aromatic hydrocarbons – PAHs – including benzo/a/pyrene – using high performance liquid chromatograph with fluorescence detector) and results of Ames test (mutagenic potential of the real air) were statistically evaluated with the analysis of variance (ANOVA), the correlation and regression analysis.

Results and conclusion: The best correlations of biological (mutagenic) effect of the real complex mixture and observed pollutants were detected for B/a/P (benzo(a)pyrene) and PAHs (polyaromatic hydrocarbons), weaker correlations for mutagenic potentials of air and arsenic and volatile compounds.