

POSTER SESSION

EXPOSURE RISKS TO PARTICULATE MATTERS PM₁₀ IN SOME URBAN AREAS OF THE SOUTH MORAVIA REGION

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Background: Air pollution poses one of the main problems in protection of public health and the environment. This poster concerns with aerosol PM₁₀ (including toxic metal content – As, Cd, Ni and Pb) and its impact on public health. The project was focused on respiratory diseases and carcinogen risk assessment of the South Moravia Region population.

Methods: The concentrations of PM₁₀ were obtained from the Ambient Air Monitoring Network of 13 towns and villages of the South Moravia including urban areas with an increased PM₁₀ concentration having been already reported previously. Monitoring net falls within authority of the Regional Institute of Public Health in Brno and the Czech Hydrometeorological Institute and from Transport Research Centre with their local observations. The Czech Hydrometeorological Institute was author of emissions maps as well. The aerosol content was analyzed for important toxic metals As, Cd, Ni and Pb by atomic absorption spectrometry. Epidemiological health status data were obtained from the Institute of Health Information and Statistics. Health Risk Assessment of PM₁₀ is based on the epidemiological methodology of Kristin Aunan and an inorganic toxic potency of PM₁₀ is assessed according to US EPA methodology based on HQ (or HI) for chronic and ILCR (Individual Lifetime Cancer Risk) for carcinogenic risks. A chronic bronchitis for children population was taken as an indicator of the morbidity due to PM₁₀ long term and the total mortality as an indicator of short term exposition.

Results: The number of children with bronchitis symptoms can increase of about 6–7 % of the children population due to increased

level of annual mean concentrations of PM_{10} in the most affected localities. Chemical compounds contained in particulate matters can be toxic or can have a mutagenic and/or carcinogenic potential. The most important result is the cancer risk to children population increasing above acceptable level in all localities. This finding is alerting mainly if the risk is linked to selected inorganic chemical compounds of PM_{10} only.

Conclusions: The areas with the increased concentration levels of PM_{10} determined by mathematic modelling correspond well to the real situation of the health status, mainly for respiratory diseases. A harmful effect of the air pollution is evident when the respiratory cause mortality and/or the respiratory diseases and PM_{10} levels are compared, especially in Znojmo district.