

Epidemiology analysis of the effect of air pollution on health at regional scale

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ABSTRACT

Work involves a health impact assessment of the air pollution of aerosol particles at the some important steps. It describes evidence on air pollution exposure in vulnerable groups of population and searches for the effects. An exposure is a component of causal chains of diseases coming from external origin. And just because it is the main condition. If there is no exposure, there is no health risk. For a possibility to prevent disease we need to know an exposure. We investigated exposure with an activity questionnaire in the three groups of population whose would be to the environmental factors, mainly air pollution, vulnerable. The personal exposure was monitored in a group of children. In preparing the questionnaire, we respect the recommendation of US EPA and WHO. Sensitivity is determined by the properties of the organism, specific period of its evolution, lifestyle and behaviour, the circumstances under which exposure to pollution occurs. We evaluated the effects on health which included short-time mortality, long-time mortality and respiratory morbidity in children. The air pollution and its development were evaluated in the Ustecky Region, Region of Prague and Moravskoslezsky region. The mortality was investigated at the same areas. Exposures of mothers with children from two months till three years age were studied in 30 mothers with children on maternity leave during working days in one week in autumn 2007. Exposures of pregnant women were studied in 40 women by the same way using the activity questionnaire for five all their days in the fall of 2008. Mothers with children under three years age and the pregnant women were living in the suburb of Kladno in family houses. The third exposed group we investigated were school children aged 9-14 years. In this case the activity questionnaires were only additional part of the study. Monitoring of the aerosol particles was performed in Litvinov, Usti nad Labem and Litomerice. In children was realized measurement of personal exposure to PM₁₀ particles using the sampler clipped to the sweater and with small pump fasted to the waist. The results were compared with data from the nearest point of automatic monitoring network provided by the CHMI. Samples were taken in winter and summer season and compared to one another. In the children exposed to the air pollution during the whole day, personal monitoring can characterize the topical exposure better than the outcomes from the monitoring network. The learning of exposure influence in the specific group of population as well as in mortality and morbidity seems to be helpful in the health impact assessment.