Title: Flow and diffusion characteristics inside the urban area

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Abstract: Uniqueness of different towns, consists of various shapes of buildings. The main topic of this work is to compare concentration diffusion within groups of buildings of various types. We pursued houses made of single blocks of two different lengths – they were placed parallel or in courtyards. For research of pollution diffusion within the housing estates a method of physical modelling has been used. For this purpose we summarized a theory of atmospheric boundary layer and physical modelling at first. Then we pursued experiments. Measuring took place in a model in scale 1 : 300 inside an aerodynamic wind tunnel of the Institute of Thermomechanics AS in Nový Knín. We checked out the requirements placed on similarity of the real boundary layer and boundary layer modelled in the tunnel. By the measuring of concentration in urban areas we weren't watching a plume from the pollution source but we were studying an inversion task. We measured concentrations in two fixed points from different point sources inside the defined areas. A sensitivity of concentration diffusion upon on the type of urban areas and the inlet flow direction has been demonstrated from the results of the experiment.

Keywords: atmospheric boundary layer, physical modelling, urban areas, dispersion of passive contaminant.