

## Abstract

This study was carried out to assess levels of personal exposure to  $PM_{10}$  in the Prague underground system. The mass concentration of  $PM_{10}$  was measured with a portable optical device DustTrak. The measurements were taken on a fixed route which included transport microenvironment, 2 indoor and 3 outdoor microenvironments to make comparison between concentrations found in each microenvironment. The average  $PM_{10}$  concentrations at two underground stations were  $69,7 \mu\text{g}\cdot\text{m}^{-3}$  and  $68,4 \mu\text{g}\cdot\text{m}^{-3}$  and the corresponding  $PM_{10}$  concentrations from outdoor environment were  $51,9 \mu\text{g}\cdot\text{m}^{-3}$  and  $89,3 \mu\text{g}\cdot\text{m}^{-3}$ . The average  $PM_{10}$  concentration in an underground train was  $60,8 \mu\text{g}\cdot\text{m}^{-3}$ . These findings indicate that the source of fine particles is street traffic. Personal exposure levels were reasonably correlated with fixed site monitor (FSM) concentrations. Because of the fact that the DustTrak systematically overestimates aerosol concentrations, two collocated measurements with gravimetric method Harvard impactor were carried out. There are high levels of correlation between both methods – 0,986 for outdoor environment and 0,966 for indoor environment. To evaluate influence of meteorological factors, a multiple regression was performed. The  $PM_{10}$  concentrations were only found to be associated with wind speed.