Abstract

Concentrations of PM_{10} and Black Smoke (BS) were measured during one winter and two summer periods in small village Albrechtice v Jizerských horách. Major source of aerosol in this village is domestic use of coal and wood burning.

15 minute concentrations of PM_{10} were measured by DustTrak and 24-h concentrations of PM_{10} were measured by Harvard impactor. 24-h concentrations of BS were measured too.

Concentrations of PM_{10} and 24-h concentrations of BS were highly correlated during the heating season (0,89). The correlation dropped to 0,68 during the second summer period. Concentrations of PM_{10} were negatively correlated with average daily temperature during the winter season (-0,41). Positive correlation between PM_{10} and temperature was found during the first summer period (0,34) and no correlation was found during the second summer period (-0,01). Concentrations of BS were negatively correlated with average daily temperature during all the three seasons. Negative correlation between PM_{10} and wind velocity was found during the winter season (-0,43). Daily maximums were found mainly between 4 and 12 pm. Comparison of PM_{10} data from Albrechtice with PM_{10} data from two urban areas Jablonec nad Nisou and Liberec and one background area Souš showed that average PM_{10} concentrations in Albrechtice were the highest during the heating season (37 $\mu g/m^3$). Average PM_{10} concentrations in the village were lower than average concentrations in urban areas during both summer seasons. 24-h limit for PM_{10} (50 $\mu g/m^3$) was exceeded in 21% of days measured in Albrechtice and only in 14% days measured in Jablonec and Liberec during the winter season.

Particle air pollution in the small village was not found to be substantially lower or higher than in surrounding towns. The results of the study support the idea that traditional heating in villages may represent an important problem.