Abstract:

Polycyclic aromatic hydrocarbons (PAHs) are reviewed including their chemical and chemical-physical features, their impact on health and the environment. Different behaviour of PAHs is mentioned. The detailed instruction for the measurement using high-volume cascade impactor BGI 900 (Hi-Vol) is described. Cleaning, equilibration, weighting, protection against contamination of the substrates and technique of the measurement were introduced.

The experiment was done: under the last teflon back-up filter the extra PUF substrate was placed, where after the air exposition the significant amounts of gaseous phase of phenanthrene, anthracene, fluoranthene, pyrene and benzo(a)anthracene were captured. The extent of the volatile PAHs capture correlated positively with the vapour pressure (ranging from 10^{-4} to 10^{-1} Pa.). The other measured PAHs (coronene, benzo(ghi)perylene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, dibenzo(a,h)anthracene and indeno(1,2,3-cd)pyrene) with vapour pressure from 10^{-5} to 10^{-10} Pa were not captured. The experiment found out that polyurethane (PUF) substrates captured in noticeable amount the volatile phase of PAHs and therefore the correction for the capture of gaseous phase in the particle size fractions of PAHs was calculated. The deduction for the gaseous volatile PAHs ranged from units to tens percent of measured particle size fractions of PAHs.

The experiment was performed during the winter inversion (February 2012) in Ostrava – Radvanice when the values of carcinogenic PAH were increased more than hundred times.