

IDENTIFICATION OF LOCAL AND LONG -RANGE SOURCES OF BENZO(A)PYRENE AND SOOT

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Different concentrations of benzo(a)pyrene and soot are determined throughout of Europe at the background sites [1,2]. It depends not only on local sources, but on long-range transport of pollutants as well. Drastic decline in the concentration of SO_2 and NO_2 is determined on the eastern coast of the Baltic Sea. Furthermore, the frequency of concentrations exceeding $10 \mu\text{g m}^{-3}$ is decreasing in the air masses coming from western and central Europe since 1990, while concentrations of benzo(a)pyrene (BP) and soot are changing insignificantly [3]. These facts encourage us to analyse reasons of variation in concentration of carbonaceous materials at the Preila background station (eastern coast of the Baltic Sea).

Concentrations of benzo(a)pyrene and soot were measured daily in the period of 1980-1994. Concentrations of the pollutants were divided into four groups according to the directions of air mass trajectories and directions of wind. The highest concentrations of pollutants are determined in the air masses coming from western and central Europe in the period of 1980-1984. An insignificant decline in concentration of benzo(a)pyrene is determined in cold season of the year (October-April) from these directions since 1985 and in concentration of soot since 1990. Since this time the concentration of $0.5\text{-}1.0 \text{ ng/m}^3$ for benzo(a)pyrene and of $0.1\text{-}1.0 \mu\text{g m}^{-3}$ for soot is prevailing in winter time at the background site. Analysis of the influence of wind directions in each sector of air mass trajectories showed that the highest concentrations of carbonaceous materials in each sector are transported to the Preila background site by southern and south-eastern winds, while the concentrations at western winds (from Baltic Sea) are lowest. From 1994, concentrations of benzo(a)pyrene and soot were determined monthly, and only some episodic periods of 1995-2001 will be analysed and presented. The results of investigation will be submitted for the verification and refining the mesoscale models.

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