



Assessments of lead concentrations in atmospheric precipitation in context of trends in emissions of this heavy metal in the Czech Republic and surrounding states

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In this contribution lead concentrations in atmospheric precipitation are evaluated at CHMI localities and relationship between trends in precipitation concentration and emissions in the Czech Republic and surrounding states are assessed.

Trends are evaluated in the period 1997-2004, because in 1997 the special weekly bulk sampling for heavy metals analysis was introduced at CHMI localities. We assessed precipitation concentration at 11 localities CHMI, where concentrations have been measured at least 7 years continuously. Statistically significant decrease in lead concentration was recorded at 5 localities (Svratouch, Bílý Kůň, Pøimda, Èervená, SouŽ).

Airborne lead occurs in the form of fine particles with frequency particle size distribution characterized by the average aerodynamic diameter lower than 1 μm . Therefore this metal could be transported for a long distance.

According to published data from MSC-East (Meteorological Synthesizing Centre-East) in the period 2000-2003, lead deposited in the Czech Republic was emitted in the Czech Republic (at interval 17-40 %), in Germany (14-24 %), in Poland (11-24 %), and in Italy (3-15 %) The rest of deposited lead originated in Slovakia, Austria and France and from re-emissions.

Lead emission data have already been available in the Czech Republic from 1990. The emission data presented in this paper will be only for years 1997 -2003 due to corre-

spendence with the data evaluated for deposition of this heavy metal. Presented lead emissions were calculated on the basis of using relevant capacity data and emission factor database.

Trend of cadmium emission in the Czech Republic in the years 1997 -2003 is decreasing. The emission decreased by 78.6 % in these years. The biggest fall arose after year 2000 when the distribution of leaded petrol was determined. In other years the decrease of lead emission for each individual year was caused by changes of capacity data (different fuel consumption or production in the individual sector, the change of structure of fuel etc.).

Trend of lead emission in surrounding states (Germany, Poland and Italy) in these years that are the most contributors to deposition of this heavy metal in the Czech Republic is decreasing too. This trend is evident from data obtained from publication of MSC-West.