Abstract

Air pollution has a great impact on human health, with acute consequences possibly resulting even in death. It is therefore important to inform the public about up-to-date air quality and its impact on health in a simple and easily undestandable way. Air quality indices seems to be ideal for this purpouse, but there is large variety of them.

In this master thesis, the air quality index most suitable for the capital city of Prague has been searched for. A comparison of the following indices has been carried out based on available data: of following indicies based on avaible data (concentration of O_3, PM_{10}, NO_2, SO_2 a CO): Air Quality Index, Aggregate Air Quality Index, Revised Air Quality Index, Common Air Quality Index a Pollution Index and their modifications according to european standards.

As a criterion of aptness of a particular index, a degree of correlation between the index itself and corresponding health problems (daily count of deaths, daily count of deaths caused by diseases of the respiratory system, daily count of deaths caused by diseases of circulatory system, daily count of hospitalization caused by diseases of the respiratory system, daily count of hospitalization caused by diseases of circulatory system) of the local population has been chosen. This relationship was verified with correlation analysis, Kruskal-Wallis test and regression analysis. Results show that all indices explain health effects sufficiently.

As a second criterion, suitable distribution of indices into qualitative categories has been used. It has been shown that indices differ significantly in the way they describe air quality on good-bad scale.

Due to Prague's monitoring station's facility, it was also examined potential influence of missing CO values. Wilcoxon paired test based on data from the only monitoring station able to measure concentration of CO (Praha – Libuš) has shown that differences between the values of individual indices are insignificant.

Keywords: air quality index, air pollution, health impact