



## **Spatial distribution of anthropogenic pollution accumulated on tree leaves, soil and street dust in the park area in the centre of Warsaw**

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The magnetic method has been successfully used to evaluate and characterise the degree of air pollution. This method is based on investigation of properties of magnetic particles of pollution such as magnetic susceptibility, parameters of hysteresis loops and temperature-dependence of magnetic parameters etc.

The motivation to undertake this study was to find the distribution of pollution emitted by traffic vehicles in a green area situated in urban environment. The investigated area is the oldest public park named Saxon Garden in the centre of Warsaw, Poland. The Saxon Garden is located between the very busy main road with tram line, two local streets (low traffic volume) and big plaza without car traffic and trees.

In order to quantify the degree of pollution we measured magnetic susceptibility of pollution deposited on chestnut leaves (the most abundant tree species in the park), surface of the roads (street dust) and in soil from the park area.

The highest values of magnetic susceptibility of pollution were observed on tree leaves located along the edges/borders of park area (190 [m<sup>3</sup>/kg]), directly adjacent to busy roads. The lowest values of magnetic susceptibility (20 [m<sup>3</sup>/kg]) were obtained for leaf samples from the borders of park, directly adjacent to plaza and roads with low traffic volume. It was observed that the intensity of magnetic susceptibility decreases with the distance of pollution source i.e. main streets. A similar distribution of intensity of magnetic susceptibility was observed for the soil samples collected from park area. With the exception of a few samples, the magnetic susceptibility of soil samples were higher than for leaf samples.

Our study showed that the distribution of magnetic susceptibility of soil and leaf samples correlate with the intensity of magnetic susceptibility of street dust taken from the road surfaces situated along the boundary of the park area.

On the basis of the detailed research of the domain structure and grain size of the magnetic particles of pollution, we draw the conclusion that the anthropogenic particles emitted by traffic are the main factor affects the pollution level.