



Investigation of roadside pollution in Aliaga Industrial Zone (Izmir/Turkey) by using magnetic susceptibility

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Pollution of soils is significantly reducing environmental quality and affecting human health. As a condition for effective protection and remediation actions, the screening and detection of soil and sediment pollution has become increasingly important. The pollutants of most cases are usually heavy metals, organic contaminants and agricultural applications such as chemical fertilizers, pesticides and hormones. The aim of this study is to trace the distribution and concentration of contaminants in soils along roads carrying both appreciably high and low traffic along three roads around Aliaga industrial zone. Magnetic susceptibility (Bartington MS2E) is used for pollution mapping in the field. The distribution of the susceptibility values represents contaminated areas strongly influenced by traffic frequency, roadside topography, vegetation and meteorological conditions. It was determined that approximately 5 m along both sides of Canakkale-Izmir highway, which has a very high traffic density (250 car/min), shows very high susceptibility values in comparison with the rest of the profile. This value reduced to 2.4 m and 0.7 m along two side roads, which are 300 and 1100 m away from the highway. Also these roads were having traffic densities of 47 cars/min and 3 cars/min respectively. The measurements were repeated in summer and winter seasons in order to observe possible climate effects. Also soil samples were collected at 2 stations in both sides of the roads to compare the heavy metal content with the background values. According to geochemical data Fe-oxides are found to be responsible for the high values of magnetic susceptibility. It was determined that magnetic susceptibility is a rapid and cheap method for investigating potentially contaminated areas.