Abstract

Exposure to fine airborne particles causes deleterious health effects, particularly in urban zones where pollution levels are often high, particularly near heavily trafficked roads. A quantitative and qualitative estimate of PM2.5 emissions is a prerequisite for developing effective control strategies to mitigate their effects. To achieve this objective, the sources of pollution must be identified and quantified with precision. In this study, a sampling campaign was carried out on a traffic site in Zouaghi, Constantine. 115 samples were collected, and were then characterized by inductively coupled plasma spectrometry (ICP-MS) and inductively coupled plasma emission spectroscopy (ICP-OES) for their metal content. The statistical processing of the data resulting from this analysis by the EPA PMF v.5 tool led to the identification of five sources as well as the estimation of their mass contributions to PM2.5. The PMF model identified sea salts (15.1%), industrial activities (18.9%), non-exhaust emissions (24.2%), exhaust emissions (15.8%) and mineral dust (25. 9%) as the main sources of $PM_{2.5}$ in Constantine.