



## **Use of multivariate statistic tools in order to identify emission sources that contributes to the chemical composition of PM2.5 in four industrial cities in Mexico.**

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Multivariate statistics tools (Factor Analysis, Principal Component Analysis, UNMIX) were used to identify the emission sources contribution to the chemical composition of PM2.5 particles collected over the last years in four of Mexico with an important industrial activity: Salamanca (Guanajuato), Tula (Hidalgo), Toluca (State of Mexico) and Guadalajara (Jalisco). These cities have a large diversity of industries, with specific predominant industrial activities in each of them. For instance, power generation, petroleum refinery and chemical industry are characteristics of Tula and Salamanca. Guadalajara and Toluca, in addition to a wide variety of industries, are capital cities with important population density and commercial activities. As a result of this analysis, qualitative and quantitative contribution of each source to the chemical composition was determined. A correlation between the emission source appointment resulting from the particulate chemical characterization and the type of industries was observed in some particulate events. Contribution of minor emission sources was also identified. The use of these statistical tools is intended to support the implementation of emission control programs by pointing out the specific contribution of sources to the air quality in these cities.