

Microbiological Analysis, Cytotoxic and Genotoxic Effects from Material Captured in PM2.5 and PM10 Filters Used in the Aburrá Valley Air Quality Monitoring Network (Colombia)

Authors : Carmen E. Zapata, Juan Bautista, Olga Montoya, Claudia Moreno, Marisol Suarez, Alejandra Betancur, Duvan Nanclares, Natalia A. Cano

Abstract : This study aims to evaluate the diversity of microorganisms in filters PM2.5 and PM10; and determine the genotoxic and cytotoxic activity of the complex mixture present in PM2.5 filters used in the Aburrá Valley Air Quality Monitoring Network (Colombia). The research results indicate that particulate matter PM2.5 of different monitoring stations are bacteria; however, this study of detection of bacteria and their phylogenetic relationship is not complete evidence to connect the microorganisms with pathogenic or degrading activities of compounds present in the air. Additionally, it was demonstrated the damage induced by the particulate material in the cell membrane, lysosomal and endosomal membrane and in the mitochondrial metabolism; this damage was independent of the PM2.5 concentrations in almost all the cases.

Keywords : cytotoxic, genotoxic, microbiological analysis, PM10, PM2.5

Conference Title : ICEPRM 2016 : International Conference on Environmental Pollution, Restoration and Management

Conference Location : Barcelona, Spain

Conference Dates : August 11-12, 2016