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APPLICATION OF PASSIVE SAMPLERS FOR MONITORING O_3 AND NO_2 AND CORRELATION OF CONCENTRATION LEVELS WITH METEOROLOGICAL DATA

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Abstract

This research applied passive air pollution samplers to monitor the concentration of the pollutants nitrogen dioxide (NO_2) and ozone (O_3) in order to investigate the relationships between pollutant concentrations and meteorological variables. The study was carried out in three strategic sites in the municipality of Erechim, Brazil, which features intense traffic of small and large vehicles. The pollutant analyses were performed using the method of UV/VIS spectrophotometry. NO_2 concentrations varied between values below the detection limit of the passive samplers and 5.2 µg m^{-3}, whereas the concentrations of O_3 ranged from values below the detection limit of the passive samplers to 23.6 µg m^{-3}. These values are within the O_3 and NO_2 concentration ranges currently allowed by Brazilian law. Low values of correlation coefficients were observed between the meteorological variables and the concentration for both pollutants and the three sampling points. However, it was verified more evident trends for precipitation and wind speed. As the emission sources were found to be highly variable, O_3 studies have to be held for longer periods in order to allow the proposition of the most appropriate forms of emission control.

Key words: atmospheric pollution, nitrogen dioxide, ozone, passive monitoring, passive samplers

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