

Assessment and Prediction of Vehicular Emissions in Commonwealth Avenue, Quezon City at Various Policy and Technology Scenarios Using Simple Interactive Model (SIM-Air)

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Abstract : The Simple Interactive Models for Better Air Quality (SIM-air) is an integrated approach model that allows the available information to support the integrated urban air quality management. This study utilized the vehicular air pollution information system module of SIM-air for the assessment of vehicular emissions in Commonwealth Avenue, Quezon City, Philippines. The main objective of the study is to assess and predict the contribution of different types of vehicles to the vehicular emissions in terms of PM₁₀, SO_x, and NO_x at different policy and technology scenarios. For the base year 2017, the results show vehicular emissions of 735.46 tons of PM₁₀, 108.90 tons of SO_x, and 2,101.11 tons of NO_x. Motorcycle is the major source of particulates contributing about 52% of the PM₁₀ emissions. Meanwhile, Public Utility Jeepneys contribute 27% of SO_x emissions and private cars using gasoline contribute 39% of NO_x emissions. Ambient air quality monitoring was also conducted in the study area for the standard parameters of PM₁₀, SO₂, and NO₂. Results show an average of 88.11 µg/Ncm, 47.41 µg/Ncm and 22.54 µg/Ncm for PM₁₀, NO₂, and SO₂, respectively, all were within the DENR National Ambient Air Quality Guideline Values. Future emissions of PM₁₀, NO_x, and SO_x are estimated at different scenarios. Results show that in the year 2030, PM₁₀ emissions will be increased by 186.2%. NO_x emissions and SO_x emissions will also be increased by 38.9% and 5.5%, without the implementation of the scenarios.

Keywords : ambient air quality, emissions inventory, mobile air pollution, vehicular emissions

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