

Carbon monoxide 'hot-spots' in urban area of Kota Kinabalu City, Sabah

Abstract

Air dispersion models have been widely used to address air quality problems at microscale in urban environments, as they are capable of providing valuable information for better and more efficient urban air quality planning. The aim of this paper was to measure the CO concentration near roadways and intersections at three major roads in Kota Kinabalu city centre during morning, afternoon and evening peak hours using CAL3QHC dispersion model and also to identify CO concentration "hot-spots". The maximum 1-hr averaging ground level concentrations of CO during peak hours were in the range of 5.2–10.8 ppm (morning); 5.4–11.2 ppm (afternoon); and 5.5–9.4 ppm (evening). CO concentration "hot-spots" were identified mainly at the major intersections. Comparisons between model outputs and measurements were made using quantitative data analysis technique and statistical methods and have indicated a good performance of the model. The present study has shown that the CO levels along the major roads were well below the Malaysian Ambient Air Quality Guideline of 30 ppm (1-hr, TWA). In the long term, however, receptors located close to the major intersections have the potential risk of being exposed to high CO concentrations and therefore deserve further attention in future urban transportation planning.