



## **Assessing the impact of the forthcoming decrease in diesel exhaust particulate matter emissions on air quality: implications for black carbon concentrations in ambient air**

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Forthcoming regulations (e.g. EURO 5 and EURO 6) are planned to reduce particulate matter emissions (PM) in the exhaust of forthcoming vehicles. In this study we assess the impact of such reduction in the diesel PM exhaust emissions on the urban ambient air PM concentrations. This has been done by studying the relationship between black carbon (BC) and carbon monoxide (CO) in urban ambient air and in the exhaust of current and forthcoming vehicles. The slope of the BC-vs-CO linear relationship is mainly affected by the percentage (%) of diesel automobiles in the urban vehicles fleet. This slope is a better indicator of the diesel PM emissions than bulk BC concentrations in urban ambient air. BC-vs-CO slopes within the range 1-3 and 7-14 ngBC/ $\mu$ gCO are typically observed in urban areas with low (<25%) and high ( $\geq$ 50%) proportions of diesel-fuel consumption for on road transportation, respectively. The entry into force of forthcoming regulations will decrease the BC-vs-CO slope in urban ambient air from about 10 to 5 ngBC/ $\mu$ gCO in the next decade, according to calculations based on the current data on diesel vehicles in urban fleets in Spanish cities. However, this will not necessarily prompt a significant decrease in the urban BC concentrations if road traffic volume follows the increasing trend of the last decade. The results of this study shows that the analysis of the BC-vs-CO slope trend in ambient air is an useful tool for understanding the involvement “of the changes in the vehicle exhaust emissions rates” and “of the changes in the road traffic volume” in the BC and PM<sub>x</sub> trends in urban ambient air.