5.071 Real time monitoring for NO2/NOx emission ratio from road vehicle.

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Abstract:

As a result of the promoted low-emission vehicles, the air concentrations of NOx are in decreasing trend in Osaka City, Japan. Besides, the NO2/NOx emission ratios are increasing, seemingly because of the onboard after-treatment of vehicular exhaust. Drastic change in these amount and composition in vehicular exhaust are expected for the next decade, which may affect NOx and O3 air pollution in the city.

A procedure to estimate the NO2/NOx emission ratio in near real-time was considered in this paper to assess the variation in the ratio and its impact. Traditionally, the emission ratio was estimated from routine monitoring data for NO2, NOx, and O3 in a roadside and the background site. The increments of NOx and PO (NO2 + O3) concentrations at the roadside site over the background site were calculated, and the emission ratio was estimated from there ratio (Δ[PO]/Δ[NOx]). The presented procedure is based also on the continuous monitoring of NO, NO2, and O3 by commercial instruments, just at a road side site, with 1-minute time resolution. The emission ratio was estimated in hourly basis by some statistical analysis of NOx and PO temporal variations. Thus one can estimate the ratio from a single monitoring site, with existing monitoring instruments, with higher time resolution. The preliminary investigation for temporal variation of the ratio, and its impact on NO2 and O3 air pollution, were presented in this paper.