

## Changes of Ground Level Ozone as the Effect from High Particulate Event nearby Schools

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Ground level ozone (O<sub>3</sub>) negatively affects human health and the environment while having linear influence by its precursors. The effects are more perilous especially to vulnerable groups mainly children due to their not fully developed respiratory system. Even though particulate matter is not considered as ozone precursor, it may still influence the ozone formation especially during extreme episode namely high particulate event (HPE). Therefore, a study has been conducted nearby two schools area where one of which was experiencing HPE. The aim of this study is to determine the impact of PM<sub>10</sub> concentrations on O<sub>3</sub> levels during high particulate event due to the growing concern over the exposure of schoolchildren to these pollutants. Variations of 10-minutes average of O<sub>3</sub>, O<sub>3</sub> precursors i.e. NO<sub>2</sub>, CO and TVOC, PM<sub>10</sub> as well as meteorological parameters (AT, RH and WS) were recorded and analyzed. Results showed that during high particulate event at SMK Seri Nibong (SSN), in which PM<sub>10</sub> concentrations was nearly 300µg/m<sup>3</sup>, lower O<sub>3</sub> concentrations were observed than during non-high particulate event at SJK (C) Sin Hwa (SSH). The recorded 10-minutes average concentration of O<sub>3</sub> at SSN and SSH were 34.29 ± 19.32 ppb and 20.74 ± 10.90 ppb, respectively. Conversely, SSN recorded higher O<sub>3</sub> precursors if compared to SSH. High concentrations of PM<sub>10</sub> in ambient air may have caused light scattering due to the deflection of sunlight. The lack of sufficient incoming solar radiation may disrupt O<sub>3</sub> formation and therefore, decreasing the recorded O<sub>3</sub> concentrations. This pollutant may seem to be lower during high particulate event. However, extra precautions and well-planned strategies still need to be considered as repeated of short-exposure to O<sub>3</sub> concentrations by schoolchildren has proven to give adverse effects on health.

**Keywords:** ozone precursors, meteorological condition, photochemical reaction, vehicle emission