

The significance of point source emission (NO₂) by petrochemical plants at North East of Peninsular Malaysia.

ABSTRACT

Petrochemical industry is one of the major pollutant generators around the world. The same scenario is observed occurring at North East of Peninsular Malaysia. The ISCT3 air dispersion of Gaussain Transport Model was used to simulate the average predicted on ground concentration of NO₂ emitted by point source from the petrochemicals plants. The simulation covers major input of geographical domain was set up, including NO₂ generators specification and meteorological parameters. The geographical domain set up is at 20 km x 20 km covering area centre of the petrochemicals plants with 0.5 km receptors grid spacing. The NO₂ emission rate was estimated through the use of ultimate fuel analysis method. The NO₂ generated combined with 5 yearly meteorological data obtained were applied to perform the simulation at the optimum correlation of wind direction. The simulation performed discovered that the predicted monthly and yearly average of on ground NO₂ concentration range from 13.97 to 20.43 ug/m³ and 691 to 8.49 ug/m³ respectively. The yearly predicted average concentration shows that the value is below the WHO guideline which is at 40 ug/m³. No benchmark could be performed at the monthly average since there is no standard guideline available.

Keyword: Meteorological modeling; Correlation; NO₂; ISCT3.