

Association between air pollutants with FeNO among primary school children at petrochemical industries

ABSTRACT

Children's increased risk of respiratory diseases is possibly due to air pollutants exposure. This study aims to determine the association between air pollutants and respiratory inflammation among school children at petrochemical industries in Kemaman, Terengganu. A cross-sectional comparative study was conducted among selected healthy school children from primary schools in Kemaman. Questionnaires were used to determine reported respiratory symptoms. Indoor exposure to PM_{2.5} in classrooms was measured using DustTrak DRX Aerosol Monitor; VOCs using PbbRAE, while NO₂ and SO₂ using LaMotte Air Sampler. Fractional exhaled Nitric Oxide (FeNO) was measured by instructing respondents to exhale directly into the NIOX MINO device. The median and interquartile range of concentration of PM_{2.5}, VOCs, NO₂ and SO₂ in classrooms and homes of studied group was higher than the values in comparative group at $p < 0.001$. FeNO shows a significant difference between studied and comparative group at $p < 0.001$. NO₂ and SO₂ were found to be significantly associated with FeNO at $p < 0.05$. Exposure to NO₂ and SO₂ is associated with FeNO in petrochemical industries area suggesting that greater exposure may influence children's respiratory health.

Keyword: FeNO; PM_{2.5}; SO₂; NO₂; VOCs