

## **Association between school and residential air pollutants with respiratory symptoms among school children at an industrial area**

### **ABSTRACT**

**Background:** Industrial activities contribute to atmospheric pollution either directly or through background concentrations. The effects of industrial air pollution are pernicious especially to children. **Objective:** To determine the association between the concentration of air pollutants (PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and NO among the school children in exposed and comparative area. Sectional comparative study was conducted at selected primary schools in Kemaman. Questionnaires adapted from American Thoracic Society and International Study of Asthma and Allergies in Childhood were used to determine respiratory symptoms, history of exposure and demographic background.

**Results:** Significant associations between air pollutants in schools with respiratory symptoms; PM<sub>10</sub> with cough (PR=2.05, 95% CI=1.07-3.93), PM<sub>2.5</sub>CI=1.25-4.76), SO<sub>2</sub> with cough (PR=2.33, 95% CI=1.21-4.49), phlegm (PR=2.53, 95%CI=1.13-5.66), and wheezing (PR=4.22, 95% CI=1.35 (PR=3.14, 95% CI=1.48-6.72), and wheezing (PR=3.40, 95% CI=0.96) were also significant associations between air pollutants in residences with respiratory symptoms; PM<sub>10</sub> with cough (PR=3.04, 95% CI=1.41 (PR=2.29, 95% CI=1.08-4.86), and phlegm (PR=3.60, 95% CI=1.26

**Conclusion:** This study concludes that exposure to higher concentration of air pollutants increases the risk of respiratory symptoms, which may induce inflammatory responses.

**Keyword:** PM<sub>10</sub>; PM<sub>2.5</sub>; NO<sub>2</sub>; SO<sub>2</sub>; Respiratory symptoms