ABSTRACT

Vehicle emission is one of the major air pollution sources in big cities. Surabaya as the second biggest city in Indonesia is said to get the third rank of the highest air pollution level in South East Asia back in 2009. Whereas, bad air quality might trigger respiratory diseases like asthma and allergic rhinitis, especially for children as the most vulnerable age group in the population.

This study is done by taking sample of ambient air quality in the yard of SDN Babatan IV Surabaya and SDN Sumur Welut III Surabaya. The samples are first grade students aged 6-7 years old. Using modified ISAAC Questionnaires, the parents of students answered questions about their child's characteristics and behavior, also symptoms of asthma and allergic rhinitis that had been experienced. The data obtained then analyzed by chi-square test using computer program.

The result of ambient air measurement in SDN Babatan IV Surabaya showed the concentration of 9840 µg/m³ for CO, 21.413 µg/m³ for NO₂, 8.961 µg/m³ for O₃, 113 µg/m³ for PM₁₀, and 15.072 µg/m³ for SO₂. Meanwhile the result taken from SDN Sumur Welut III Surabaya showed the concentration was below 1230 for CO, 14.634 for NO₂, 14.345 for O₃, 61 for PM₁₀, and 13.326 for SO₂. The study was held by involving students from 2 schools with each 32 and 33 students. With total 65 samples there was no association found between school’s ambient air quality with both asthma symptoms and allergic rhinitis symptoms. Associations were found between the variables of parents' asthma history (p=0.024), students' asthma history (p=0.016), neighbors' behavior of burning trash (0.011), house in the roadside (p=0.045), and allergic rhinitis symptoms (p=0.037) with asthma symptoms but not with allergic rhinitis symptoms. Furthermore, other variables (sex, having pets, cockroaches in the house, smoking parents, wearing masker, family's behavior of burning trash, house located near factory with chimney, family's income, and poultry cage in the house) were found to have no association with both asthma symptoms and allergic rhinitis symptoms.

The conclusion of this study is that there is no association between the school's ambient air quality and symptoms of asthma and allergic rhinitis in students from both schools the study taken place. But, association between asthma symptoms with parents' asthma history, students' asthma history, neighbors' behavior of burning trash, house in the roadside, and allergic rhinitis symptoms are discovered.

Keywords: Ambient air quality, Asthma, Allergic Rhinitis, Elementary school students