

ABSTRACT

Particulate Matter ($PM_{2.5}$) and Carbon dioxide (CO_2) are commonly found pollutants in house. $PM_{2.5}$ and CO_2 could be hazardous to health if found at high concentration. Pollutants with small sizes could get into human respiratory systems and disrupt human's health. Exposure to $PM_{2.5}$ could cause eye irritation and premature death to people with cardiovascular and cardiopulmonary diseases. Meanwhile exposure to CO_2 could cause shortness of breath, increase heart rate and organ damage. Inhaled exposure calculation is used to estimate exposure to $PM_{2.5}$ and CO_2 . In this study, $PM_{2.5}$ and CO_2 concentrations are conducted in two houses, which located in Kab. Bandung and Kota Garut. Static measurement devices are installed in each house in three points, namely kitchen, living room and outdoor. The measurements are conducted for 5x24 hours. Results in house A show that $PM_{2.5}$ concentrations are influenced by outdoor and at house B are influenced by kitchen. Meanwhile for CO_2 at both houses are influenced by the activity in each room. Further calculations regarding risk level to cardiovascular and cardiopulmonary are conducted for $PM_{2.5}$. Results show that people exposed in house A have 26% risk of cardiovascular disease and 29% risk of cardiopulmonary disease. Ordinary people exposed in house B have 28% risk of cardiovascular disease and 31% risk of cardiopulmonary disease. Meanwhile for cooks in house B have 30% risk of cardiovascular disease and 34% risk of cardiopulmonary disease.

Key words: *CO_2 , exposure estimation, $PM_{2.5}$, relative risk*