ABSTRACT

Particles with sizes <2.5 μm ($PM_{2.5}$) and> 10 μm (PM_{10}) are very risky for human health. This research aims to monitor the mass concentrations of $PM_{2.5}$ and PM_{10} and analyze their effects on public health in the Bandung Raya air basin. The application used to analyze health is AirQ +. Measurement of $PM_{2.5}$ and PM_{10} mass concentrations using the SKU: SEN0177 sensor at the Tokong Nanas Building Telkom University with the measurement period August 20, 2018 to August 19, 2019 with an average annual concentration of $PM_{2.5}$ 47.8 μg / m3 and PM_{10} 52.6 μg / m3. Health data is taken from hospital data with a radius of less than 6 km from the pollutant measurement location. Estimated mortality was caused by the long-term exposure of $PM_{2.5}$ that produced the highest AirQ + occurred in ischemic heart disease as many as 189 cases of death with attributable proportion (AP) of 21.2% and the lowest occurred in lung cancer with 2 cases with an AP value of 17.68%. Whereas the highest mordibality due to long-term exposure to PM_{10} occurred in chronic bronchitis in adults as many as 2479 cases of disease with AP 37.58% and the lowest occurred in post-neo-natal as many as 18 cases of disease with AP 15.39%. Morbidity due to short-term exposure to $PM_{2.5}$ and PM_{10} is also carried out in March-April and July-August 2019 with parameters of cardiovascular disease, respiratory disease and asthmatic where the cases are higher in July-August which is the dry season than in the month of March-April which is the rainy season. The associated health figures $PM_{2.5}$ and PM_{10} are also caused by sources of pollutants around the location of the disease such as close to the location of an industrial area, burning waste, housing construction and motor vehicle emissions. This proves that the high $PM_{2.5}$ and PM_{10} mass concentrations greatly affect the surrounding human health.

Keywords: *Particulat, Air Pollution, Health Risk, AirQ+.*