

Monitoring of Respirable Particulate among Workers Exposure in Paper Based Industry

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Abstract

Paper based industry may contribute to the respirable particulate (RP) that affects the air quality associated with the chronic health problem of workers. Respirable particulate (RP) fraction can be defined as the fraction of inhaled airborne particles that can penetrate beyond the terminal bronchioles into the gas-exchange region of the lungs (WHO, 2006). As a preliminary study, this research conducted the monitoring of RP at two selected area which are production line and packaging line. A personnel monitoring was applied to calculate the Time Weighted Average (TWA) of RP among workers. An area monitoring was also used to measure the concentration of RP in ambient air. The personnel monitoring depicts most of the workers were exposed to the higher TWA. The recorded TWAs are not complied to Occupational Safety and Health Agency (OSHA) and American Conference of Governmental Industrial Hygienists (ACGIH) standard, respectively. The area monitoring indicates that the concentrations of RP are higher during noon operation session. It concludes that the workers may have respiratory impairment due to the exposure of excessive RP. The environmental physical parameters indicate that the temperature is higher and the relative humidity and air velocity are slightly lower at production station. This study can be used as a platform for proposing some preventive measures to control the excessive RP in paper based industry.

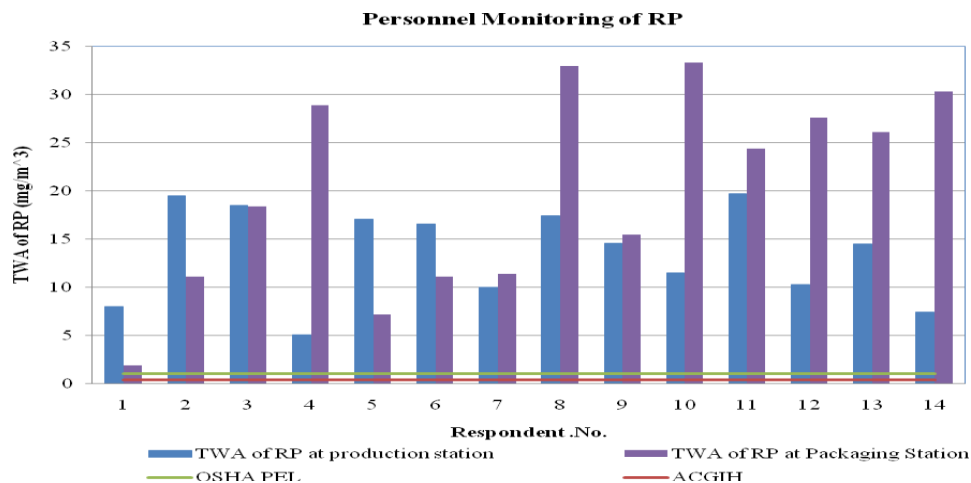


Figure 1: Personnel Monitoring of RP at Production and Packaging Stations

Table 1: Temperature, Humidity and Air Flow at Production and Packaging Stations (n=14).

	Temperature [°C]		Relative Humidity [%]		Air Velocity [m/s]	
	Production	Packaging	Production	Packaging	Production	Packaging
Mean	31.8611	30.5714	67.4333	70.7357	2.1061	2.1836
Minimum	28.10	28.60	54.50	60.80	1.04	1.68
Maximum	36.00	32.60	84.60	78.80	2.82	2.65

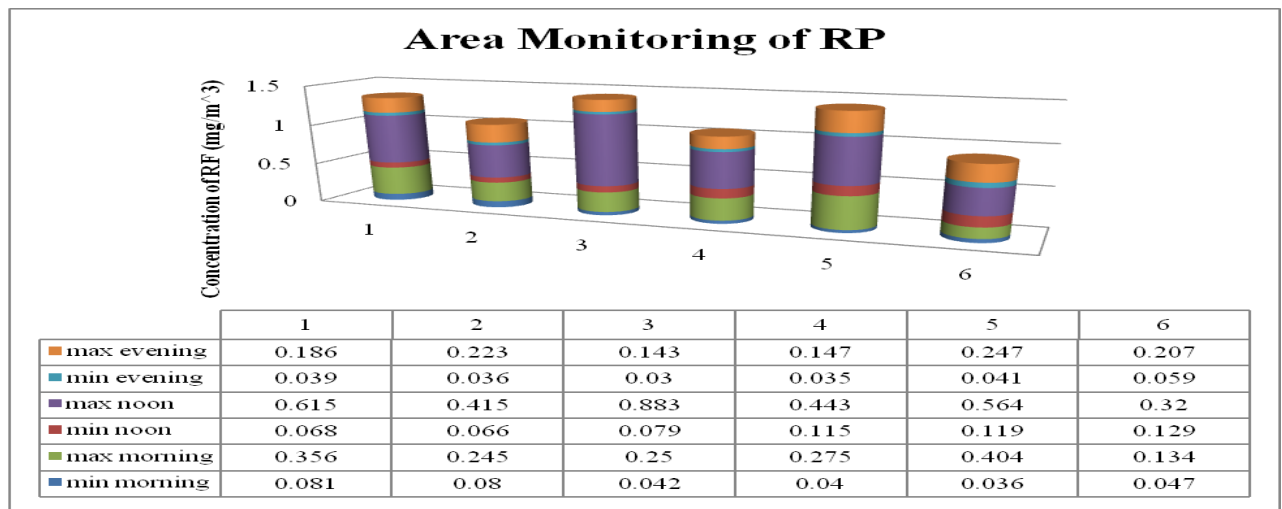


Figure 2: Area monitoring of Respirable Particulates

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Reference

World Health Organization, 2006, Health Risk of particulate matter from long-range trans-boundary air pollution. Available at <http://www.euro.who.int/Document/E88189.pdf>