Assessment of Air Quality Impacts on Women and Children in the Accra Metropolis

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2013

ABSTRACT

Women and children within developing countries and for that matter Ghana are engaged in domestic and commercial activities that make them prone to inhalation of outdoor particle pollution, which may have effects or exacerbate existing respiratory diseases. It is for this reason that this study investigated the adverse health effects of air quality on women and children. This was done through the measurement of particulate matter sizes less or equal to 10 microns (PM_{IO}) on major roadside stations and the collection of respiratory data from various public hospitals. The MiniVol air sampler model TAS - 5.0 was used for collection of PM_{IO} on a 24-hour schedule every sixth day for five (5) months unto a glass fibre filter in which the mass concentration was determined gravimetrically. Respiratory data on women and children composed of diagnoses recorded by the six hospitals around the PMIO sampling stations from 2010 to 2012 were used for the statistical analysis. Questionnaires were distributed to the female population above 15years to ascertain responses on exposure and awareness of Air Pollution. Meteorological data was also acquired to determine whether the changes in temperature and relative humidity have effect on the PM10 concentration and the rate of respiratory cases. Excel and SPSS software were used for the data analysis and to determine the correlation among PM 10, meteorological data and respiratory data. The results indicated that respiratory cases were higher in children below five years and in women between the ages 20 and 49 years. Also, majority of the PMIO measurements along roadside stations were above EPA-Ghana, WHO and USNAAQS reference levels and therefore the air

quality along major roads are unhealthy and impacting on the health of the largest active reproductive working class of women in our society as well as children that can be described as future leaders. Finally, the correlations among mean PMIO concentration, temperature, relative humidity and respiratory data for the study period were statistically significant ($P < 0.05$ and $P < 0.01$) indicating an association between the environmental variables.

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