http://dx.doi.org/10.22161/ijeab/4.2.9 *ISSN: 2456-1878*

Road Transport and their Impacts on Health

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Abstract**—** *Traffic contributes to a range of gaseous air pollutants and to suspended particulate matter (PM) of different sizes and composition. The effects on health of transport related air pollution are among the leading concerns. Research in recent decades consistently indicates the adverse effects of outdoor air pollution on human health.*

Keywords**— Road Transport, PM, IARC.**

In the coming decades, road transport is likely to remain a significant contributor to air pollution in cities. Traffic contributes to a range of gaseous air pollutants and to suspended particulate matter (PM) of different sizes and composition. The effects on health of transport related air pollution are among the leading concerns of transport. Research in recent decades consistently indicates the adverse effects of outdoor air pollution on human health. The evidence points to air pollution stemming from transport are an important contributor to these effects.

In this view, a systematic reporting of diseases related to air pollution as well evaluation of health risks posed due to such pollution are documented. The discussion of the adverse effects on health aims to consider both epidemiological studies and toxicological assessments and studies of biological mechanisms are of great concern for further research work.

A major challenge facing India is to attain a proper balance between economic growth and environmental quality, of which air pollution is an important aspect. Particulate are mainly produced from coal combustion, diesel engines, construction and industrial activity.

Presence of toxic elements in the atmospheric is of great concern due to their adverse affect on human health and ecosystem. *Air pollution is a form of environmental degradation which has become widespread regarding economic and population growth. Such environmental degradation leads to public health consequence, thereby causing diseases impairing community welfare* ***(1,3)*** *a relationship between PM10, exposure and negative effects on health leading to respiratory and cardiovascular morbidity and mortality has already been established* ***(4,2)***. Air toxics can be defined as having three characteristics a. they have the potential to cause serious adverse health effects in the general population or to organisms in the environment as a result of air borne exposures b. they are released from anthropogenic sources c. they include 189 hazardous air pollutants listed in section 112.b.1 of the clean air act of 1990. WHO estimates that some 80% of outdoor air pollution related premature deaths were due to ischemic heart disease and strokes while 14% of deaths were due to chronic obstructive pulmonary disease or acute lowered respiratory infections, and 6% of deaths were due to lung cancer. A 2013 assessment by WHO's International Agency for Research on Cancer (IARC) concluded that outdoor air pollution is carcinogenic to humans, with the particulate matter component of air pollution most closely associated with increased cancer incidence, especially cancer of the lung. An association also has been observed between outdoor air pollution and increase in cancer of the urinary tract / bladder.

Ambient (outdoor air pollution) in both cities and rural areas was estimated to cause 3.7 million premature deaths worldwide per year in 2012; this mortality is due to exposure to small particulate matter of 10 micro or less in diameter (PM_{10}), which cause cardiovascular and respiratory disease and cancers.

Accurate estimates of human exposure to inhaled air pollutants are necessary for a realistic appraisal of the risks these pollutants pose and for the design and implementation of strategies to control and limit those risks. Except in occupational settings such estimates are usually based on measurements of pollutant concentration in outside (ambient) air, recorded with outdoor fixed site monitors. Whether a person is exposed once a week or several times a day can be an important determinant of air pollution injury. Individual exposure versus population exposure is as follows. The pollutant concentrations experienced by an individual during normal daily activities are referred to as personal or individual exposures. A personal exposure depends on the air pollutants concentration that are present in the locations the person moves through, as well as on the time spent in each location. Measuring any one person's exposure is a relatively straight forward procedure, but from a public health perspective it is important to determine the population exposure. The aggregate exposure for a specified group of people such as community or an occupational cohort is rarely necessary to measure the exposure of each member of the group. But some

measures of the distribution of individual exposure is needed. This typically includes at least a measure of the central tendency (ex: mean exposure and of its variability (ex :variance). An accurate and statistically valid characterization of even these simple descriptors of population exposure may require many personal exposure measurements.

However, even if one established that a particular specified hazard can be responsible for some unwanted health effect (asthma and air pollutants), this level of information on its own is of limited practical use, what is really needed is a quantitative measure of the likelihood of an adverse health effects i.e. the risk for a given level of exposure.

Another necessity is to determine the exposure response relationships for mixed exposures and the interaction between these and other risk factors. Having established causation, and exposure response relationships (no mean task) it may be important to translate these into health economic terms.

ACKNOWLEDGEMENTS

The author owes a heartfelt gratitude to Almighty and her Prophet (S.A.W) for giving her health, wealth and strength for carrying out the Post-Doctoral Studies at Andhra University.

The author is forever indebted to her Parents and Janab Abdul Khader and Family.

The author is thankful to her Guide, Professor K Kameswara Rao, for providing a helping hand in every walk of her research, support and guidance extended in pursuing her Post-Doctoral Degree.

The author acknowledges one and all for the support extended in fulfilling this endeavour.

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