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Developing World and Occupational Health Impacts

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***Abstract*—** *The environment is an integral part of human life the quality of which plays a critical role in human health. Occupational environment presents potential health hazards to workers employed in a variety of positions. This review adds to a growing body of evidence that PM is really harmful to health increasing overall mortality mostly deaths from cardiovascular disease as well as deaths from respiratory diseases.*

Keywords*— *Occupational Health Impacts, human life, traffic.

Review

The environment is an integral part of human life the quality of which plays a critical role in human health. Unfortunately in today's world that air is not exactly fresh. As a result of increasing traffic city size, economic development and industrialization, we have more air pollution problems than even before. Occupational environment presents potential health hazards to workers employed in a variety of positions. The scope of occupational environment is diverse and poses hazards to the workers who are employed in different types of employment settings. A large number of agents and a diversity of unhealthful work place settings are associated with occupational diseases. The disease is defined as those health outcomes that are caused or influenced by exposures to general conditions or specific hazards encountered in the work environment .Occupational illness and injuries are a substantial cause of morbidity and mortality in US. The agent factor associated with occupational disease and injuries include dust, noise, CO, respiratory diseases, fumes, toxic metals, microbial agents, ionizing radiations, work related stress, and accidents..

Pollution can come from traffic, factories, power generation, wildfires or even cooking with a wood stove. We are all exposed to a certain degree of effects may be immediate or longer term. Acute short term effects of air pollution tend to strike people who are elderly or already struggling with heart disease.

Medical researchers are particularly concerned about pollution particles smaller the 2.5 micron which are usually related to fuel combustion. Because they are so tiny, they are not easily screened and more readily enter the human body. They then begin to irritate the lungs and blood vessels around the heart. Data suggests that overtime pollutants aggravate or increase the process of disease in the arteries.

There is a necessity 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 it may be important to translate these into health economic terms. 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.

Road transport and all other sources (other forms of transport, energy production, industry, and domestic sources) to emissions of five key pollutants therefore the particulates (fine dust and soot particles – PM), CO, NO_x, Benzene and HC's (2). Analysis by Government experts shows that when particulate levels exceeds health standards, then road traffic contribution is in the range of 75% - 85% (8). Population risk from air pollution include young children, pregnant women, elderly, and people suffering from heart and lung disease.

Premature deaths from outdoor air pollution could double by 2050, with the largest increases, expected to occur in the emerging economies of Southeast Asia and the western Pacific, the authors of a Nature study found that air pollution based on 2010 figures in killing over 3 million people are mostly in Asia. Ozone and tiny particle that reach deep into the lungs contribute to causes of mortality such as strokes, heart disease and lung cancer.

Globally, the Nature study found the number of premature deaths is expected to double to 6.6 million due to a worsening pollution and a sharp rise in pollution from 3.6 billion in 2010 to 5.2 billion in 2050. Much of that population growth will be in megacities, where the authors project that 65% of the premature deaths will occur.

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China and India have some of the world's worst air pollution due to their growing economies and dependence on coal. The biggest source of this particulate pollution known as $PM_{2.5}$ according to the study is from heating and cooking since meals are prepared and homes heated mostly cow dung, wood or other biomass agriculture is the next biggest contributor to premature deaths from air pollution. Ammonia from livestock and fertilizer cause the formation of ammonium nitrate and sulphate particles, which contribute to air pollution. Agriculture is the leading source of premature deaths from air pollution in the eastern United States, Russia, Turkey, Korea, Japan and Europe according to the study. This study clearly shows that its important to reduce pollution emissions from residential energy especially in Asia by reducing agriculture emission (Jos Lelieveld from Max Planck Institute for Chemistry). These results are surprising and potentially important for protecting public Health globally.

Particles less than 100 microns which are also called inhalable (6) since they can easily enter the nose and mouth. Particles less than 10 microns (PM_{10}) often labelled fine in Europe. These particles are also called thoracic since they can penetrate deep in the respiratory system (3). Particles less than 4 microns. These particles are often called respirable (5). Because they are the small enough to pass completely through the respiratory system and enter the blood stream. Particles less than 2.5 microns ($PM_{2.5}$microns , labelled fine in the US). Particles less than 0.1 micron (PM_{10}, Ultrafine). Sulphur compounds were responsible for the traditional winter time sulphur smog in London in the mid 20th century. These atmospheric pollutants have sometimes reached lethal concentration in the atmosphere such as during the infamous London episode 1952 (4).

Even at low exposure levels, urban air pollutants can cause asthma, allergies, respiratory disease and cardiovascular diseases if the exposure is continuous or long term. Heavy metals have been shown to cause neurological disorders and various cancers POP's can also cause various cancer are suspected of causing birth defects, reproductive disorders (Colborn et al 1996). In addition to physical diseases, environment contamination can also cause psychological problems, noise one of the determinants of the quality or urban life, can have an impact on human health, decreasing the quality of life and potentially contributing to depressions.

Secondary pollutants are not directly emitted from sources, but instead form in the atmosphere from primary pollutants (also called precursors). The main secondary pollutants known to cause harm in high enough concentration are the following : NO_2 and HNO_3 formed from NO, Ozone formed from photochemical reactions of nitric acid droplets formed from NO_2 . Sulphuric acid droplets formed from SO_2 and nitric acid droplets formed from NO_2. Sulphates and nitrates aerosols (ex ammonium bisulphate and ammonium nitrate) formed from reactions of sulphuric acid droplets and nitric acid droplets with NH_3 respectively. Organic aerosol formed from VOC's in gas to particle reactions.

In 2012 additional studies on the cancer causing potential of diesel exhaust published since ARB's determination led the International Agency for Research on Cancer (IARC, a division of WHO) to list diesel engine as carcinogenic to humans.

The authors of Nature paper suggested instituting air quality control measure including providing cook stoves in developing nation with the worst air and making farming more efficient could save 1 million lives each year. A separate study in Nature Geosciences' also offer on other solutions. It found that reducing forest fires a key source of haze in South East Asia – could help. By combining satellite and ground based measurements with chemical transport models, they found that concentration of PM dropped about 30% during the dry season when fires were reduced. This finding suggests that wider efforts to reduce tropical deforestation as a climate mitigation may have air quality CO benefits.

This review adds to a growing body of evidence that PM is really harmful to health increasing overall mortality mostly deaths from cardiovascular disease as well as deaths from respiratory diseases in non smokers.

Residents of developing countries suffer far more from problems associated with environment degradation than do those who live in developed countries. In the developing world, the pursuit of natural resources has caused widespread deforestation of tropical rain forests and destruction of wildlife habitat. Many of the countries in this region are experiencing declines in the amount of forest land, unintentional conversion of arable land to desert lands and rising levels of pollution.

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REFERENCES

[1] Colborn T, Dumanoski D, Myers J.NewYork, , Nil: DuHon;1996. Our Stolen Future: Are we threatening , our Fertility, Intelligence and Survival? A scientific Detective Story.
[2] Department of Transport: Transport Statistics Great Britain 1996.[Benzene Figures from :Department of the Environmental National Air Quality Strategy (1997)
[3] http://lwf.ncdc.noaa.gov/oa/climate/gases.html#n2o
[4] http://www.metoffice.com/education/secondary/students/smog.html
[5] http://www.aiha.org/abs05/po105.htm
[6] Inhalable particles are also defined, especially in the US, as particles of 15 micrometers or less in diameter:
[7] PM10 particles are often defined as "respirable", especially in the US
[8] http://www.epa.gov/eogapti1/module3/category/category.htm .
[9] Quality of urban Air Review Group Airborne Particulate matter in the UK (1996) Pg, 146.