

SMOG; THE SILENT KILLER IN PAKISTAN

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Smog is profoundly an amalgam of smoke and fog. Dissipate clouds are the Chemical impurity of the air which are triggered by the human maneuvers. The blackish mist, which is surrounded by a mixture of barometrical toxins and the ground level ozone, is the blend of exhaust clouds and vapors. That leads to amplification of poisons in climate¹. In 1952, smog was documented in Landon due to unwarranted burning of coal. Undue deforestation, extortionate rise in vehicles, persistent increase in industries, hasty urbanization and diminution of rainfall have funded in this alarming scenario over the past few years. Smog is formed by the sunlight and organic volatile gases along with nitrogen gas leading to formation of particulate matter with ground level ozone. Ozone is favorable for human health but it became injurious when established at ground level. The basic origin of these precursors is hazardous which are released from vehicles, power plants and other global warming sources. Temperature, heavy traffic and other humid factors are responsible for these brown miasma issues. The low speed wind in winter season accountable for stagnate the mist in a form of exhaust clouds and that result to be disparaging the population².

The particulate matter PM range from PM 10 to PM 2.5 μm in size, particulate less than 2.5 μm is the main participant for poor health of population. These tiny matter particles can easily access into human lungs alveoli, impeding the gaseous exchange and even the can gain access into the blood stream and ominously contributes the health related issues. In global ranking particulate and ozone are ranked high for risk factor for the death causes per year³. Particulate matter is frequently used as gauge of air quality, the average PM_{2.5} concentration in Pakistan ranged from 45 $\mu\text{g}/\text{m}^3$ to 75 $\mu\text{g}/\text{m}^3$ in 2015. According to WHO PM_{2.5} concentration is 10 $\mu\text{g}/\text{m}^3$, whereas in Pakistan it is around 7.5 times high as compared to nontoxic level provided by WHO and Pakistan faces the major population weighted concentrations of ozone for the last 3 decades.⁴

Air quality index AQI scale is used to interpret the level of ambient air pollution for precise monitoring at a specific location while monitoring time e.g 1, 8 and 24

hours because of human activities in that cities. It is used to alert public regarding the risk and level of pollution on daily basis and to formulate the preventive measures regarding the hazards of pollution. Higher the PM concentration higher will be the AQI and level of pollution and that will explain the need of cautionary measures to the citizens for menaces. AQI upto 50 is considered safe and pure air while upto 150 it will be insalubrious for prone people, when it reaches upto 200 it becomes unsavory to all healthy people and above 500, it considered severe hazardous⁵.

In 2000, according to WHO around 2/3rd of total deaths had been reported due to air pollution. Tempestuous urbanization, increasing population and mechanization leads to motorization, usage of natural resources and energy, all these worsen the AQI of and other environmental reimbursements⁶. Among south Asian countries, Pakistan is the most urbanized country and Lahore city with the 4 % growth rate is the second biggest city of Pakistan. For the last few years, Lahore city immersed with thick layer of smog, which cloaked the whole metropolis, and detriment of lives and Lahore surpass the recommended cut off ranges of WHO and NEQS⁷. Lahori resident faced smog with eye infirmities, respiratory sickness and low distant vision in travelling along with many other problems. Deaths also reported due to agitated obstructive pulmonary diseases COPDs in few patients. Smog, cause lung irritation, breathlessness and precipitate asthma in patients, it also cause ischemic heart diseases, myocardial infarction and stroke^{8,9}. High risk groups who are more prone for all these problems from smog are extreme age groups, pregnant females, people with comorbid conditions like COPD, asthma and people who engaged in outdoor activities [9]. Iftikhar et al in 2018 documented that in Pakistan 311,189 deaths occurred due to air pollution. According to this, they documented and ranked Pakistan at 3rd place in the world where air pollution causes lung and skin cancers and leading cause of deaths and reduce life expectancy to 30 months if a baby born in smog today^{10,11}.

The vital strategies should be Multi- programmed through implementation of government rules and regulation, control on coal ignition, vehicular

emanations, industrial practices, crop scorching, construction industries. Public awareness is also very important through media, as prevention from smog exposure is best to jettison this from the bud. Individuals should be educated to adopt all preventive measures. Seminars, media, press and public awareness walks will be helpful. People should avoid outdoor activities and N 95 masks are effective and able to remove 95% of 0.3 μm particulates. Long-term prevention could be got through environmental friendly plantation, high chimneys; avoidance of crop burning and gas-controlled engines for vehicles should be used.

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