

# A Study on Environmental and Health Impacts of Air Pollution

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**Abstract – Manageable advancement practices ought to be applied, along with data coming from research to deal with the issue viably. Now, worldwide participation as far as examination, advancement, organization strategy, observing, and legislative issues is indispensable for viable contamination control. Regulation concerning air contamination should be adjusted and refreshed, and strategy producers ought to propose the plan of an amazing asset of natural and wellbeing assurance. Accordingly, the fundamental proposition of this exposition is that we should zero in on encouraging neighborhood designs to advance insight and rehearse and extrapolate these to the worldwide level through creating successful strategies for maintainable administration of environments. Air contamination and environmental change are firmly related. Environment is the opposite side of the very coin that decreases the nature of our Earth. Toxins like dark carbon, methane, tropospheric ozone, and sprayers influence how much approaching daylight. Subsequently, the temperature of the Earth is expanding, bringing about the liquefying of ice, chunks of ice, and glaciers. In this vein, climatic changes will influence the frequency and commonness of both leftover and imported contaminations in Europe. Environment and climate influence the length, timing, and force of episodes emphatically and change the guide of irresistible sicknesses in the globe.**

**Keywords – Environmental, Health Impacts, Air Pollution**

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## INTRODUCTION

Human exercises adversely affect the climate by dirtying the water we drink, the air we inhale, and the dirt where plants develop. Albeit the modern transformation was an incredible achievement as far as innovation, society, and the arrangement of numerous administrations, it additionally presented the development of immense amounts of toxins transmitted very high that are destructive to human wellbeing. No doubt, the worldwide natural contamination is viewed as a global general medical problem with numerous features. Social, monetary, and regulative worries and way of life propensities are identified with this serious issue. Obviously, urbanization and industrialization are arriving at extraordinary and disturbing extents worldwide in our period. Anthropogenic air contamination is one of the greatest general wellbeing perils around the world, considering that it represents around 9 million passings for each year[1-5].

Beyond question, all of the previously mentioned are firmly connected with environmental change, and in case of peril, the outcomes can be extreme for humanity . Environment changes and the impacts of worldwide planetary warming truly influence different biological systems, creating some issues, for example,

sanitation issues, ice and icy mass liquefying, creature eradication, and harm to plant.

Air contamination has different wellbeing impacts. The soundness of defenseless and touchy people can be affected even on low air contamination days. Momentary openness to air contaminations is firmly identified with COPD (Chronic Obstructive Pulmonary Disease), hack, windedness, wheezing, asthma, respiratory sickness, and high paces of hospitalization (an estimation of bleakness).

The drawn out impacts related with air contamination are ongoing asthma, aspiratory inadequacy, cardiovascular illnesses, and cardiovascular mortality. As per a Swedish partner study, diabetes is by all accounts actuated later long haul air contamination openness . Additionally, air contamination appears to have different insult wellbeing impacts in early human existence, for example, respiratory, cardiovascular, mental, and perinatal issues , prompting newborn child mortality or persistent sickness in grown-up age[6-7]

One of our period's most prominent scourges is air contamination, on account of its effect on environmental change as well as its effect on open and individual wellbeing because of expanding grimness and mortality. There are numerous

contaminations that are central point in illness in people. Among them, Particulate Matter (PM), particles of variable however tiny width, enter the respiratory framework through inward breath, causing respiratory and cardiovascular sicknesses, regenerative and focal sensory system dysfunctions, and disease. In spite of the way that ozone in the stratosphere assumes a defensive part against bright illumination, it is hurtful when in high fixation at ground level, likewise affecting the respiratory and cardiovascular framework. Moreover, nitrogen oxide, sulfur dioxide, Volatile Organic Compounds (VOCs), dioxins, and polycyclic fragrant hydrocarbons (PAHs) are completely viewed as air toxins that are hurtful to people.

Carbon monoxide can even incite direct harming when taken in at significant levels. Weighty metals like lead, when retained into the human body, can prompt direct harming or persistent inebriation, contingent upon openness. Sicknesses happening from the previously mentioned substances incorporate essentially respiratory issues like Chronic Obstructive Pulmonary Disease (COPD), asthma, bronchiolitis, and furthermore cellular breakdown in the lungs, cardiovascular occasions, focal sensory system dysfunctions, and cutaneous illnesses. To wrap things up, environmental change coming about because of ecological contamination influences the topographical conveyance of numerous irresistible illnesses, as do cataclysmic events. The best way to handle this issue is through open mindfulness combined with a multidisciplinary approach by logical specialists; public and global associations should address the development of this danger and propose supportable arrangements.

### Climate and Pollution

Air contamination and environmental change are firmly related. Environment is the opposite side of the very coin that diminishes the nature of our Earth. Toxins like dark carbon, methane, tropospheric ozone, and vapor sprayers influence how much approaching daylight. Thus, the temperature of the Earth is expanding, bringing about the softening of ice, chunks of ice, and icy masses.

In this vein, climatic changes will influence the frequency and predominance of both remaining and imported contaminations in Europe. Environment and climate influence the span, timing, and force of flare-ups unequivocally and change the guide of irresistible infections in the globe. Mosquito-communicated parasitic or viral infections are incredibly environment touchy, as warming initially abbreviates the microbe hatching period and also moves the geographic guide of the vector. Essentially, water-warming after environmental changes prompts a high frequency of waterborne contaminations. As of late, in Europe, destroyed sicknesses appear to be arising because of the relocation of populace, for instance, cholera, poliomyelitis, tick-borne encephalitis, and malaria[8-12].

### Health and Environmental Concerns

On-going openness to particles adds to the danger of creating cardiovascular and respiratory sicknesses, and furthermore cellular breakdown in the lungs. In non-industrial nations, openness to toxins from the indoor burning of strong energizes on open flames or customary ovens builds the danger of intense lower respiratory contaminations and related mortality among small kids. Indoor air contamination from strong fuel use is additionally a significant danger factor for persistent obstructive aspiratory infection and cellular breakdown in the lungs among grown-ups. The mortality in urban areas with significant degrees of contamination surpasses that saw in generally cleaner urban communities by 15–20%. Indeed, even in the European Union, the normal future is 8.6 months lower because of openness to PM<sub>2.5</sub> created by human exercises. As indicated by the 2005 WHO AQGs (WHO, 2006), the PM rule esteems are set for PM<sub>2.5</sub> and PM<sub>10</sub> independently. The yearly mean of PM<sub>2.5</sub> and PM<sub>10</sub> ought to be equivalent to 10 and 20 µg/m<sup>3</sup>, individually, while the 24-hour mean ought not surpass 25 and 50 µg/m<sup>3</sup>, separately. It is essential that the 2005 AQGs incorporate interestingly a rule an incentive for PM. The point is to accomplish the least focuses conceivable. As no limit for PM has been recognized underneath which no harm to wellbeing is noticed, the suggested worth ought to address a satisfactory and attainable target to limit wellbeing impacts with regards to neighborhood requirements, abilities, and general wellbeing needs (WHO, 2006).

On account of O<sub>3</sub>, the recently suggested limit, which was fixed at 120 µg/m<sup>3</sup> 8-hour mean, was diminished to 100 µg/m<sup>3</sup> dependent on ongoing convincing relationship between day by day mortality and O<sub>3</sub> levels happening at O<sub>3</sub> fixations under 120 µg/m<sup>3</sup> (WHO, 2006). Ground-level O<sub>3</sub> is one of the significant constituents of photochemical brown haze. It is shaped by the response with daylight (photochemical response) of poisons like nitrogen oxides (NO<sub>x</sub>) from vehicle and industry discharges and unpredictable natural mixtures (VOCs) transmitted by vehicles, solvents, and industry. The most significant levels of O<sub>3</sub> contamination happen during times of bright weather[13-17].

Contrasted and LPG-utilizing ladies, biomass fuel clients showed a momentous expansion in the pervasiveness of respiratory manifestations, lung work decrease, aviation route irritation, and undercover aspiratory discharge. There was a huge decrease in superoxide dismutase (SOD) compound movement in blood plasma, recommending a decrease in the body's cell reinforcement safeguard. This was joined by a higher recurrence of micronucleus development in buccal and aviation route epithelial cells and comet arrangement in lymphocytes, proposing a higher pace of chromosomal and DNA harm. Besides, aviation route epithelial cells of biomass clients had more prominent occurrences of metaplasia and dysplasia,

inferring a higher danger of disease in the aviation routes.

Likewise, biomass clients had delayed monthly cycles, a higher danger of unconstrained early terminations, actually births, and underweight infants. They likewise experienced more discouragement and a few other neurobehavioral issues with going with modifications in conceptive chemicals. The progressions were personally connected with indoor air contamination level subsequent to controlling potential confounders like instruction, family pay, and ecological tobacco smoke. This study discovered that biomass fuel use for homegrown cooking is related with an undeniable degree of indoor air contamination that unfavorably influences the physical and emotional wellness of ladies cooking with these fills. Since a great many needy individuals in the nation actually utilize these powers, the discoveries warrant prompt measures for the improvement of the situation[18-20].

### **OBJECTIVES OF THE STUDY**

1. Study on Air Pollution and Health Effects
2. Study on Ozone Impact in the Atmosphere

### **Air Pollution and Health Effects**

#### **Disproportionate Impacts on Children and Women**

Family energy rehearses fluctuate broadly all over the planet, as does the resultant loss of life because of indoor air contamination. While more than 66% of indoor smokeattributable passings from intense lower respiratory contaminations in kids happen in WHOE's African and South East Asian Regions, more than half of the COPD passings because of indoor air contamination happen in the Western Pacific area. In many social orders, ladies are responsible for cooking and—contingent upon the requests of the neighborhood cooking—they spend somewhere in the range of 3 and 7 h each day close to the oven getting ready food. Consequently 59% of all indoor air contamination inferable passings happen in females. Little youngsters are frequently carried on their mom's back or held near the warm hearth. Thusly, babies spend numerous hours breathing indoor smoke during their first year of life when their creating aviation routes make them especially defenseless against dangerous toxins. Thus, 56% of all indoor air contamination inferable passings happen in kids under five years old. Notwithstanding the wellbeing trouble, fuel assortment can force a genuine time trouble on ladies and youngsters. Mitigating this work will free ladies' the ideal opportunity for useful undertakings and kid mind and can support kids' school participation and time for schoolwork.

#### **IAQ and Health Effects: Indian Estimates**

In India, a large portion of 1,000,000 passings every year are credited to indoor contamination from

customary biomass powers. India and China together record for roughly 60% of strong fuel utilizing families in the creating scene; this infers that, around the world, around 2,000,000 unexpected losses every year could be ascribed to family strong fuel use. Contingent upon the quantity of small kids altogether, indoor openness would represent 4–6% of the worldwide weight of infection. By correlation, metropolitan air contamination is assessed to be liable for 1–2% of the worldwide sickness trouble. These evaluations would have the wellbeing effect of indoor openness bigger than the weight from everything except two of the other major preventable danger factors that have been measured: ailing health (15%) and absence of clean water and disinfection (7%). It outperforms the worldwide weights from physically communicated illnesses, tobacco, illegal medications, hypertension, word related dangers, liquor, war, vehicle mishaps, or crime. It surpasses the worldwide weight for some, illnesses aside from complete ARIs, loose bowels, and the youth group of immunization preventable infections (measles, diphtheria, lockjaw, polio, and pertussis). Assuming these appraisals are precise, the worldwide weight of infection from indoor air contamination is bigger than that for such notable dangers to human wellbeing as tuberculosis, AIDS/HIV, jungle fever, coronary illness, or disease (Murray and Lopez, 1996).

#### **Indoor air pollution control**

Practically speaking, there are little contrasts to recognize the control of toxins and their treatment and moderation. Treating a current issue through alleviation or remediation is regularly similar exercise as preventive measures taken to control it in any case. Also once treated, a similar activity turns into a control method to forestall the reoccurrence. Some preventive measures can be taken that are not accessible in therapeutic treatment (e.g., building plan). To oblige the inhabitant needs, building proprietors and office administrators should perceive the numerous reasons for controlling the nature of indoor air. Above all else, government necessities for explicit poisons should be met. Moreover, fulfilling rules that don't have the power of law might in any case be legitimately reasonable as a safeguard against carelessness in possible claims. The hidden reason in all control techniques is to guarantee that the indoor air keeps up with the quality required for wellbeing and wellbeing; fulfills solace and usefulness needs; and is as savvy and energy successful as could really be expected. There are six methods for controlling indoor air contamination:

1. Removal or replacement at the source
2. Filtration and cleaning of toxins
3. Dilution or ventilation of the indoor air with the external air or separated reused air

4. Encapsulation or in any case meddling with materials' capacity to radiate toxins
5. Time of utilization of a potential toxin
6. Education and preparing of building inhabitants, particularly activity and upkeep faculty

The EPA has reliably expressed that source control is the most immediate and trustworthy control choice and is the main powerful one when solid poison sources are available. Ventilation is a favored method of control when the foreign substance/source is obscure, when source treatment is excessively exorbitant, or when the source is restricted. The IAQ the board may likewise wish to look for the guidance and advice of clinical specialists as a control support through clinical reconnaissance or treatment.

**Particulate Matter (PM) and Health**

Studies have shown a connection between particulate matter (PM) and unfavorable wellbeing impacts, zeroing in on either present moment (intense) or long haul (persistent) PM openness. Particulate matter (PM) is normally framed in the environment because of substance responses between the various poisons. The infiltration of particles is intently reliant upon their size (53). Particulate Matter (PM) was characterized as a term for particles by the United States Environmental Protection Agency (54). Particulate matter (PM) contamination incorporates particles with measurements of 10 micrometers (µm) or more modest, called PM10, and incredibly fine particles with distances across that are by and large 2.5 micrometers (µm) and more modest.

**Table 1 | Penetrability According To Particle Size**

Particle size	Penetration degree in human respiratory system
>11 µm	Passage into nostrils and upper respiratory tract
7-11 µm	Passage into nasal cavity
4.7-7 µm	Passage into larynx
3.3-4.7 µm	Passage into trachea-bronchial area
2.1-3.3 µm	Secondary bronchial area passage
1.1-2.1 µm	Terminal bronchial area passage
0.65-1.1 µm	Bronchioles penetrability
0.43-0.65 µm	Alveolar penetrability

**Ozone Impact in the Atmosphere**

Ozone (O3) is a gas framed from oxygen under high voltage electric release (62). It is a solid oxidant, 52% more grounded than chlorine. It emerges in the stratosphere, yet it could likewise emerge following chain responses of photochemical exhaust cloud in the lower atmosphere. Ozone can venture out to far off regions from its underlying source, moving with air masses. It is amazing that ozone levels over urban communities are low as opposed to the expanded sums occurring in metropolitan regions, which could become unsafe for societies, timberlands, and

vegetation as it is lessening carbon osmosis. Ozone diminishes development and yield and influences the plant microflora because of its antimicrobial limit. In such manner, ozone follows up on other normal biological systems, with microflora and creature species changing their species organization. Ozone expands DNA harm in epidermal keratinocytes and prompts hindered cell work [21].

**Carbon Monoxide (CO)**

Carbon monoxide is delivered by non-renewable energy source when ignition is deficient. The indications of harming due to breathing in carbon monoxide incorporate migraine, dazedness, shortcoming, sickness, spewing, and, at long last, loss of awareness. The liking of carbon monoxide to hemoglobin is a lot more prominent than that of oxygen. In this vein, genuine harming may happen in individuals presented to significant degrees of carbon monoxide for an extensive stretch of time. Because of the deficiency of oxygen because of the serious restricting of carbon monoxide, hypoxia, ischemia, and cardiovascular infection are noticed. Carbon monoxide influences the nurseries gases that are firmly associated with an Earth-wide temperature boost and environment. This should prompt an increment in soil and water temperatures, and outrageous climate conditions or tempests might happen. Notwithstanding, in research facility and field tests, it has been believed to create expanded plant development.

**Nitrogen Oxide (NO2)**

Nitrogen oxide is a traffic-related pollutant, as it is emitted from automobile motor engines. It is an irritant of the respiratory system as it penetrates deep in the lung, inducing respiratory diseases, coughing, wheezing, dyspnea, bronchospasm, and even pulmonary edema when inhaled at high levels. It seems that concentrations over 0.2 ppm produce these adverse effects in humans, while concentrations higher than 2.0 ppm affect T-lymphocytes, particularly the CD8+ cells and NK cells that produce our immune response. It is reported that long-term exposure to high levels of nitrogen dioxide can be responsible for chronic lung disease. Long-term exposure to NO2 can impair the sense of smell. However, systems other than respiratory ones can be involved, as symptoms such as eye, throat, and nose irritation have been registered. High levels of nitrogen dioxide are deleterious to crops and vegetation, as they have been observed to reduce crop yield and plant growth efficiency. Moreover, NO2 can reduce visibility and discolor fabrics[22].

**Polycyclic Aromatic Hydrocarbons (PAHs)**

The dissemination of PAHs is omnipresent in the climate, as the environment is the main method for their dispersal. They are found in coal and in tar silt. Also, they are created through deficient burning of

natural matter as in the instances of woodland flames, cremation, and motors. PAH compounds, for example, benzopyrene, acenaphthylene, anthracene, and fluoranthene are perceived as harmful, mutagenic, and cancer-causing substances. They are a significant danger factor for cellular breakdown in the lungs.

### **Volatile Organic Compounds (VOCs)**

Unstable natural mixtures (VOCs), like toluene, benzene, ethylbenzene, and xylene (90), have been viewed as related with malignant growth in people. The utilization of new items and materials has really brought about expanded convergences of VOCs. VOCs dirty indoor air (90) and may effectsly affect human wellbeing. Present moment and long haul unfriendly impacts on human wellbeing are noticed. VOCs are answerable for indoor air smells. Transient openness is found to cause bothering of the eyes, nose, throat, and mucosal films, while those of long-term openness incorporate harmful responses. Unsurprising evaluation of the poisonous impacts of perplexing VOC combinations is hard to assess, as these toxins can have synergic, opposing, or aloof effects[23].

### **CONCLUSION**

A later peaceful accord of pivotal significance for environmental change is the Paris Agreement of 2015, gave by the UNFCCC (United Nations Climate Change Committee). This most recent understanding was sanctioned by a plenty of UN (United Nations) nations just as the nations of the European Union . In this vein, gatherings ought to elevate activities and measures to improve various perspectives around the subject. Helping schooling, preparing, public mindfulness, and public interest are a portion of the pertinent activities for augmenting the chances to accomplish the objectives and objectives on the essential matter of environmental change and ecological contamination. Undoubtedly, mechanical upgrades makes our reality simpler and it appears to be hard to lessen the destructive effect brought about by gas outflows, we could restrict its utilization by looking for solid methodologies. Synopsizing, a worldwide avoidance strategy ought to be planned to battle anthropogenic air contamination as a supplement to the right treatment of the antagonistic wellbeing impacts related with air contamination. Maintainable advancement practices ought to be applied, along with data coming from research to deal with the issue viably. Now, global collaboration as far as examination, advancement, organization strategy, checking, and legislative issues is fundamental for viable contamination control. Regulation concerning air contamination should be adjusted and refreshed, and strategy producers ought to propose the plan of an incredible asset of ecological and wellbeing security. Therefore, the principle proposition of this exposition is that we should zero in on encouraging neighborhood designs to advance insight and rehearse and extrapolate these to the global level

through creating compelling arrangements for supportable administration of ecosystems[24-25].

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