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Short Commentary

The Impact of Global Warming on Allergic Diseases

Connor Bamford*

Editorial Office, Journal of Climatology & Weather Forecasting, London, United Kingdom

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Climate change is a public health crisis. Significant scientific data points to an unmistakable upward trend in global surface temperature, which has resulted in higher atmospheric moisture retention, which has resulted in more frequent extreme weather events, declining ice volume, and progressively rising sea levels. Because warm and damp conditions favour the multiplication of common allergens such as pollens, dust mites, moulds, and fungus, the rise in the prevalence of allergy illnesses is intimately linked to these environmental changes. Ecosystems are also under stress as a result of global warming, hastening the loss of vital species. Ocean acidification and oxygen depletion are aided by excessive carbon dioxide and warmer saltwater. This causes a gradual drop in phytoplankton and fish development, which encourages the formation of wider oceanic dead zones, causing food chain and biodiversity disruption. In human populations, poor environmental biodiversity and a decline in the microbiome range are risk factors for allergy disorders. While rigorous international research links climate change to the emergence of an allergy epidemic, efforts to reduce this have met with strong opposition due to vested economic and political interests in various countries. For forest protection and energy conservation, international collaboration to produce legally binding regulations should be required. Individual lifestyle and behavioural changes should be encouraged by emphasising low-carbon living, reducing food waste, and following the 4Rs: reduce, reuse, recycle, and replace principles. These lifestyle changes are completely in line with current allergy prevention recommendations. Climate change mitigation, biodiversity preservation, and chronic illness prevention are all linked disciplines.

According to epidemiological studies, there is a strong link between global warming, air pollution, and allergy illnesses. The biggest sources to air pollution are the industrialisation process, increased automobile emissions, and a westernised lifestyle. Global warming contributes to air pollution by increasing the demand for space cooling, increasing the natural formation of air pollutants (e.g., wildfires, soil erosion, decomposition of organic substances such as plants and animals), and amplifying the urban heat island effect, which leads to secondary pollution formation (such as ozone). Pollutants in the atmosphere, such as nitric oxide, ozone, and particulate matter, have long been linked to allergic respiratory disorders.

Extreme weather conditions drive people to use more energy, such as heating and air conditioning. As a result, secondary increases in fossil fuel consumption, deteriorating air pollution, and tropospheric ozone and particulate matter accumulation occur. Global warming also increases water evaporation and natural pollutant production, such as desert sand, sea salt, wildfires, and wood heating, promoting the growth of pollens, mould spores, and the spread of volcanic ash before they cool down, all of which contribute to the amount of particulates in the air. Tobacco smoke, combustion products from heaters and cooking, asbestos, animal allergens, mycotoxins, fungal allergens, cleaning products, adhesive solvents, and furniture chemicals are all examples of indoor air pollution. Tobacco smoke, in example, includes at least 3000 chemicals and five billion particles per cigarette, greatly contributing to air pollution, particularly in enclosed areas. Pollen-adherent diesel particles have been proven to be more effective at triggering allergic reactions in the airways. Air pollutants directly damage the lungs and airways by reducing epithelial cell ciliary activity and increasing respiratory epithelial permeability. Inflammation is induced in the respiratory epithelium and lung parenchyma as a result of these actions

Correspondence to: Connor Bamford, Editorial Office, Journal of Climatology & Weather Forecasting, London, United Kingdom, E-mail: climatol@journalres.com.

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