

MODULE 3: Air Pollution

In the previous modules, we have discussed the causes and effects of land and water pollution to the environment which comprises the people, flora, and fauna living in terrestrial and marine habitats. We have also learned about the global responses and preventive measures that states across the world impose to mitigate the threats of land and water pollutants in their respective communities. Now, we are going to delve deeper into the major types of pollution that underlie climate change by looking into the realms of air pollution—what makes it up, its causes, effects, and government policies and actions that intend to reduce air pollution. Prepare your thinking hats and get ready to further expand your knowledge on pollution as a primary source of climate change.

3.1 What is Air Pollution?: https://www.who.int/health-topics/air-pollution#tab=tab_1

Air pollution occurs when the indoor or outdoor environment is contaminated by any biological, chemical, or physical agent that changes the natural traits of the atmosphere.

3.2 Causes of Air Pollution:

<https://www.niehs.nih.gov/health/topics/agents/air-pollution/index.cfm#:~:text=Vehicle%20emissions%2C%20fuel%20oils%20and,of%20human%2Dmade%20air%20pollution>.

<https://climatekids.nasa.gov/air-pollution/>

In exploring the resources on causes of air pollution, a common thread emerges. Most of the causes of air pollution are intertwined, they are difficult to describe in isolation. For example, the burning of fossil fuels is connected to vehicular emissions, which in turn is a consequence of urbanization and industrialization. A common denominator between them is how they are carriers of air pollutants.

3.2.1. Burning of Fossil Fuels

<https://ugc.berkeley.edu/background-content/burning-of-fossil-fuels/>

<https://www.epa.gov/nutrientpollution/sources-and-solutions-fossil-fuels#:~:text=When%20fossil%20fuels%20are%20burned,referred%20to%20as%20nitrogen%20oxides>.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5800116/>

3.2.2. Emissions from Automobiles

<https://www.dec.ny.gov/chemical/8394.html#:~:text=Carbon%20monoxide%2C%20nitrogen%20oxides%2C%20and,emit%20air%20and%20fuel%20residuals>.

<https://www.ucsusa.org/resources/cars-trucks-buses-and-air-pollution>

3.2.3. Household Cleaning Products and Paint Chemicals

<https://n.pr/4710b3V>

<https://www.lung.org/clean-air/at-home/indoor-air-pollutants/cleaning-supplies-household-chem>

3.2.4. Greenhouse Gas Emissions

<https://www.worldbank.org/en/news/feature/2022/09/01/what-you-need-to-know-about-climate-change-and-air-pollution#:~:text=Air%20pollutants%20and.mitigating%20climate%20change.>

<https://www.nationalgeographic.com/environment/article/greenhouse-gases>

3.2.5. Urbanization and Industrialization

<https://www.aeronomie.be/en/encyclopedia/air-pollution-major-concern-urban-industrialized-areas>

<https://www.nationalgeographic.com/environment/article/urban-threats>

<https://www.frontiersin.org/articles/10.3389/feart.2018.00131/full>

3.2.6. Unsustainable Agricultural Practices (e.g. use of pesticides and inorganic fertilizers containing Ammonia)

<https://foodprint.org/issues/how-industrial-agriculture-affects-our-air/>

Now knowing the interconnected relationship of these factors that contribute to air pollution, let us see how these impact our planet and our health.

3.3 Effects of Air Pollution: <https://news.un.org/en/story/2019/06/1039661>

3.3.1. Global Warming

<https://scied.ucar.edu/learning-zone/air-quality/air-quality-and-climate-change#:~:text=Some%20Air%20Pollutants%20Cause%20the%20Climate%20to%20Warm>

3.3.2. Acid Rain

<https://www.nationalgeographic.com/environment/article/acid-rain>

https://www3.epa.gov/acidrain/education/site_students/whyharmful.html#:~:text=Acid%20Rain%20Damages%20Buildings%20and.reduces%20their%20value%20and%20beauty.

3.3.3. Ozone Layer Depletion

<https://www.epa.gov/ozone-layer-protection/health-and-environmental-effects-ozone-layer-depletion#:~:text=Effects%20on%20Human%20Health,role%20in%20malignant%20melanoma%20development.>

3.3.4. Destruction of Biodiversity and Ecosystems

<https://www.epa.gov/eco-research/ecosystems-and-air-quality#:~:text=For%20example%3A%20pollutants%20such%20as.affects%20scenic%20vistas%20in%20protected>

3.3.5. Threats on Human Health

<https://www.pca.state.mn.us/air-water-land-climate/air-quality-and-health#:~:text=Air%20pollution%20also%20increases%20the,underlying%20health%2C%20and%20other%20factors.>

With the myriad of effects seen, it is easy to say that a global response is well-due. The following show global responses to lessen air pollution.

3.4. Global Responses and Preventive Measures on Alleviating Air Pollution:

<https://www3.epa.gov/region1/airquality/reducepollution.html>

[https://www.who.int/news-room/fact-sheets/detail/ambient-\(outdoor\)-air-quality-and-health](https://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health)

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4311076/#sec-a.d.btitle>

https://www.ncbi.nlm.nih.gov/books/NBK11769/#_A6252_

<https://www.pca.state.mn.us/news-and-stories/what-you-can-do-about-air-pollution>

There are several methods to mobilize the collective into climate action.

3.4.1. Regulation of Vehicular Use

<https://www.epa.gov/transportation-air-pollution-and-climate-change/what-you-can-do-reduce-pollution-vehicles-and>

<https://www.dec.ny.gov/chemical/8394.html#ZEV>

<https://www.sciencedirect.com/science/article/abs/pii/S0048969722083486>

3.4.2. Energy Conservation

<https://www.epa.gov/p2/pollution-prevention-tips-energy-efficiency>

3.4.3. Reforestation

<https://onetreepanted.org/blogs/stories/how-trees-clean-air>

3.4.4. Sustainable Farming

<https://www.clarity.io/blog/the-two-way-relationship-between-agriculture-and-air-pollution>

To sum it all up, we have determined the different facets of air pollution as a major contributor to climate change and environmental degradation in general. From having identified its causes and effects on the biophysical environment, mankind, terrestrial, aquatic, and aerial species and ecosystems, we are able to understand how essential it is to address these taking inspiration from the global responses and preventive measures proposed by various institutions, environmentalists, and scholars in the field.

With that, let us join the movement to protect our precious land, water, and atmospheric resources! Take action now to fix air pollution and ensure a cleaner, healthier planet. Together, we can make a meaningful impact and work towards a cleaner, healthier, and more sustainable future for all. Take action today to fix air pollution and be a part of the solution!