iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 **Issue:** X **Month of publication:** October 2023

DOI: https://doi.org/10.22214/ijraset.2023.56348

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue X Oct 2023- Available at www.ijraset.com

A Review Paper on Study of Air Pollution and its Control Measures

Prof. Lokesh Harsulkar[1], Janhavi V. Dere[2], Vedant V. Lokhande[3], Rani P. Landge[4], Bhavesh P. Giratkar[5], Pawan P. Girolkar[6]

[1]*AssistantProfessor,* [2, 3, 4]*Students, Department of Civil Engineering, Jagadambha College of Engineering & Technology, Yavatmal, Maharashtra, India*

Abstract: ***In this paper, we walked you through the definition of air pollution and it's introduction, and then classified the various causes of air pollution and then it's different hazardous effects on us. The Pollution refers to any unwanted change that occurs in the environment.***

The air pollution is caused by pollutants that are harmful substances. Air pollution refers to the contamination of air due to the presence of chemicals, harmful gases, and dangerous elements. These include methane, ammonia, nitrogen, carbon monoxide, sulphur dioxide, and so on.

The effects of air pollution on the environment include depletion of the ozone layer, global warming, an increase in CFCs, skin problems, breathing disorders, and so on. It is time we look for fresh control measures for air pollution. We should try everything, from switching to an electric car to using renewable sources of energy and many other control measures are mentioned below to control the air pollution.

I. INTRODUCTION

Air pollution is a contamination of the indoor or outdoor environment by any chemical, physical or biological agent that modifies the natural characteristics of the atmosphere.

Households combustion devices, motor vehicles, industrial facilities and forest fires are common sources of air pollution.

It may cause diseases, allergies or death in humans, harm animals and may damage the natural or built environment. Human activity and natural processes can both generate air pollution.

It refers to the release of pollutants into the air which are determinental to human health and the planet as a whole. According to the World Health Organization (WHO), each year air pollution is responsible for nearly seven million deaths around the globe.

As the pollutants in the air cannot be seen with our naked eyes, we don't realize the sources of the increasing pollution levels. In order to understand the sources of air pollution, we need to first go through the basic causes of air pollution and its control measures.

II. OBJECTIVES

1) To know what exactly air pollution is.
2) To be aware of causes of air pollution.
3) To informed others about the control measures we should do to avoid air pollution.
4) The objective of air pollution control is to prevent adverse responses by all receptor categories exposed to the atmosphere: human, animal, vegetable, and material.
5) Reduction of population exposure to air pollution
6) Harmonize national legislation with international approaches
7) Address air quality standards
8) mention air quality monitoring

III. CAUSES OF AIR POLLUTION

A. Burning of Fossils Fuels

The combustion of fossil fuels emits a large amount of sulphur dioxide. Carbon monoxide released by incomplete combustion of fossil fuels also results in air pollution.

©IJRASET: All Rights are Reserved



Fig 1.1 showing burning of fossil fuels.

B. Automobiles

The gases emitted from vehicles such as jeeps, trucks, cars, buses, etc. pollute the environment. These are the major sources of greenhouse gases and also result in diseases among individuals.



Fig 1.2 air pollution due to vehicle emission.

C. Agricultural Activities

Ammonia is one of the most hazardous gases emitted during agricultural activities. The insecticides, pesticides and fertilisers emit harmful chemicals in the atmosphere and contaminate it.



Fig 1.3 pollution due to agricultural activities.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue X Oct 2023- Available at www.ijraset.com

D. Factories and Industries

Factories and industries are the main source of carbon monoxide, organic compounds, hydrocarbons and chemicals. These are released into the air, degrading its quality.



Fig 1.4 showing pollution from factories.

E. Mining Activities

In the mining process, the minerals below the earth are extracted using large pieces of equipment. The dust and chemicals released during the process not only pollute the air, but also deteriorate the health of the workers and people living in the nearby areas.



Fig 1.5 showing air pollution due to mining activities.

F. Domestic Sources

The household cleaning products and paints contain toxic chemicals that are released in the air. The smell from the newly painted walls is the smell of the chemicals present in the paints. It not only pollutes the air but also affects breathing.



Fig 1.6 shows air pollution from domestic sources.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

IV. EFFECTS OF AIR POLLUTION

A. Diseases

Air pollution has resulted in several respiratory disorders and heart diseases among humans. The cases of lung cancer have increased in the last few decades. Children living near polluted areas are more prone to pneumonia and asthma. Many people die every year due to the direct or indirect effects of air pollution.

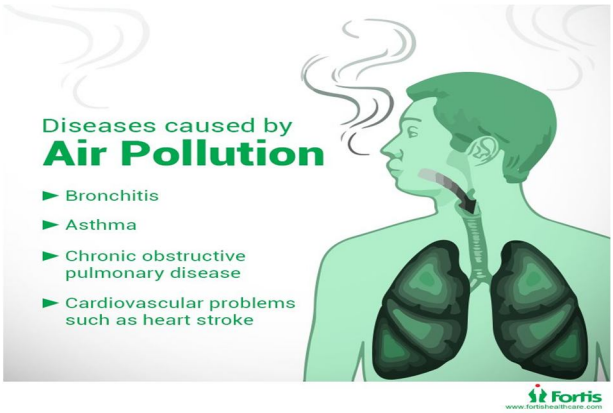


Fig 1.6 shows diseases caused due to air pollution.

B. Global Warming

Due to the emission of greenhouse gases, there is an imbalance in the gaseous composition of the air. This has led to an increase in the temperature of the earth. This increase in earth's temperature is known as global warming. This has resulted in the melting of glaciers and an increase in sea levels. Many areas are submerged underwater.



Fig 1.7 about the global warming.

C. Acid Rain

The burning of fossil fuels releases harmful gases such as nitrogen oxides and sulphur oxides in the air. The water droplets combine with these pollutants, become acidic and fall as acid rain which damages human, animal and plant life.

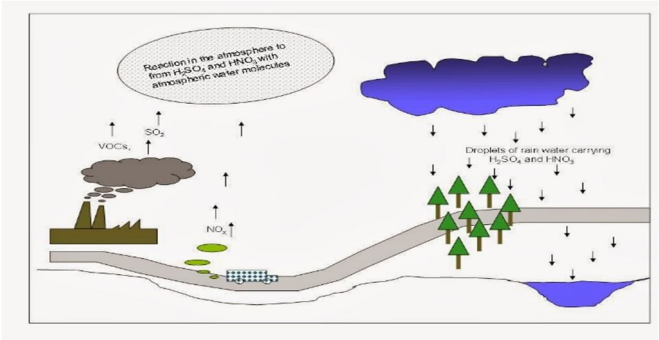


Fig 1.8 showing acid rain caused by air pollution.

D. Ozone Layer Depletion

The release of chlorofluorocarbons, halons, and hydrochlorofluorocarbons in the atmosphere is the major cause of depletion of the ozone layer. The depleting ozone layer does not prevent the harmful ultraviolet rays coming from the sun and causes skin diseases and eye problems among individuals.

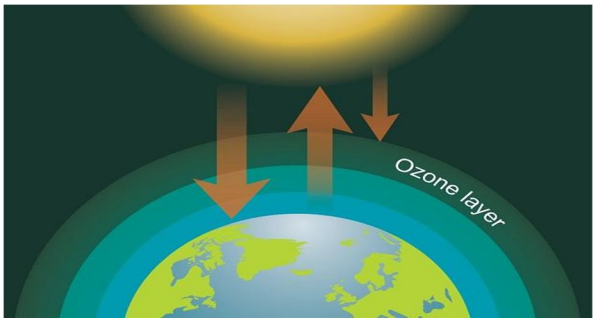


Fig 1.9 shows ozone layer depletion by air pollution.

E. Effect on Animals

The air pollutants suspend in the water bodies and affect aquatic life. Pollution also compels the animals to leave their habitat and shift to a new place. This renders them stray and has also led to the extinction of a large number of animal species.



Fig 2.0 shows effect on animals due to air pollution.

V. MEASURES TO CONTROL AIR POLLUTION CONTROL

A. Avoid Using Vehicles

People should avoid using vehicles for shorter distances. Rather, they should prefer public modes of transport to travel from one place to another. This not only prevents pollution, but also conserves energy.



Fig 2.1 is about use public transport to reduce air pollution.

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue X Oct 2023- Available at www.ijraset.com

B. Energy Conservation

A large number of fossil fuels are burnt to generate electricity. Therefore, do not forget to switch off the electrical appliances when not in use. Thus, you can save the environment at the individual level. Use of energy-efficient devices such as CFLs also controls pollution to a greater level.



Fig 2.2. is about switching off electrical appliances.

C. Use of Clean Energy Resources

The use of solar, wind and geothermal energies reduce air pollution at a larger level. Various countries, including India, have implemented the use of these resources as a step towards a cleaner environment



Fig 2.2 is showing use of wind and solar energy to reduce air pollution

VI. MEASURES TO CONTROL AIR POLLUTION

1) Since industrial emissions are one of the major causes of air pollution, the pollutants can be controlled or treated at the source itself to reduce its effects. For example, if the reactions of a certain raw material yield a pollutant, then the raw materials can be substituted with other less polluting materials.

2) Fuel substitution is another way of controlling air pollution. In many parts of India, petrol and diesel are being replaced by CNG (Compressed Natural Gas) fueled vehicles. These are mostly adopted by vehicles that aren't fully operating with ideal emission engines.

3) Although there are many practices in India, which focus on repairing the quality of air, most of them are either forgotten or not being enforced properly. There are still a lot of vehicles on roads which haven't been tested for vehicle emissions.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

4) Another way of controlling air pollution caused by industries is to modify and maintain existing pieces of equipment so that the emission of pollutants is minimised.
5) Sometimes controlling pollutants at the source is not possible. In that case, we can have process control equipment to control the pollution.
6) A very effective way of controlling air pollution is by diluting the air pollutants.
7) The last and the best way of reducing the ill effects of air pollution is tree plantation. Plants and trees reduce a large number of pollutants in the air. Ideally, planting trees in areas of high pollution levels will be extremely effective.

VII. LITERATURE REVIEW

1) *Akinbami L.J., Lynch, C.D., Parker, J.D., Woodruff, T.J. (2010).*
The association between childhood asthma prevalence and monitored air pollutants in metropolitan areas, United States, 2011-2004. Environmental Research. 110(3):294-301.

2) *Balti, E.V., Echouffo -Tcheuqui, J.B., Yako, Y.Y., Kengne, A.P. (2014).*
Air pollution and risk of type 2 diabetes mellitus: a systematic review and meta-analysis. Diabetes Research and Clinical Practice. 106(2): 161-172.

3) *Bell, M.L., Dominici, F., Samet, M. (2005).*
A meta-analysis of time-series studies of ozone and mortality with comparison to the national morbidity, mortality, and air pollution study. Epidemiology. 16(4): 436-445.

4) *Sameer Kumar1 and Dhruv Kotaria Department of Environment Engineering, Delhi Technological University (D.C.E), Bawana, Delhi, India. (2013).*
A Better technology to control the air pollution and toxic gases like NOX, VOC, SO2, Mercury : ISSN 2231-1319

5) *Kampa M et al*
Human health effects of air pollution. Environ Pollution 2008; 151: 362-367.

6) *Kader R et al*
Indoor environmental interventions and their effect on asthma outcomes. Curr Allergy Asthma Rep 2018; 18 (3): 17

7) *Zhu, J. M., & Wang, J. L. (2021)*
The effects of fuel content regulation at ports on regional pollution and shipping industry [J]. *Journal of Environmental Economics and Management*, *106*, 102424.

8) *Marcus, M. (2021).*
Going beneath the surface: Petroleum pollution, regulation, and health [J]. *American Economic Journal: Applied Economics*, *13*(1), 1–37.

9) *Beach, B., & Hanlon*
W. W. (2018). Coal smoke and mortality in an early industrial economy [J]. *The Economic Journal*, *128*(615), 2652–2675

10) *Currie, J., & Neidell, M. (2005)*
Air pollution and infant health: What can we learn from California's recent experience [J]. The Quarterly Journal of Economics, 120(3), 1003–1030.

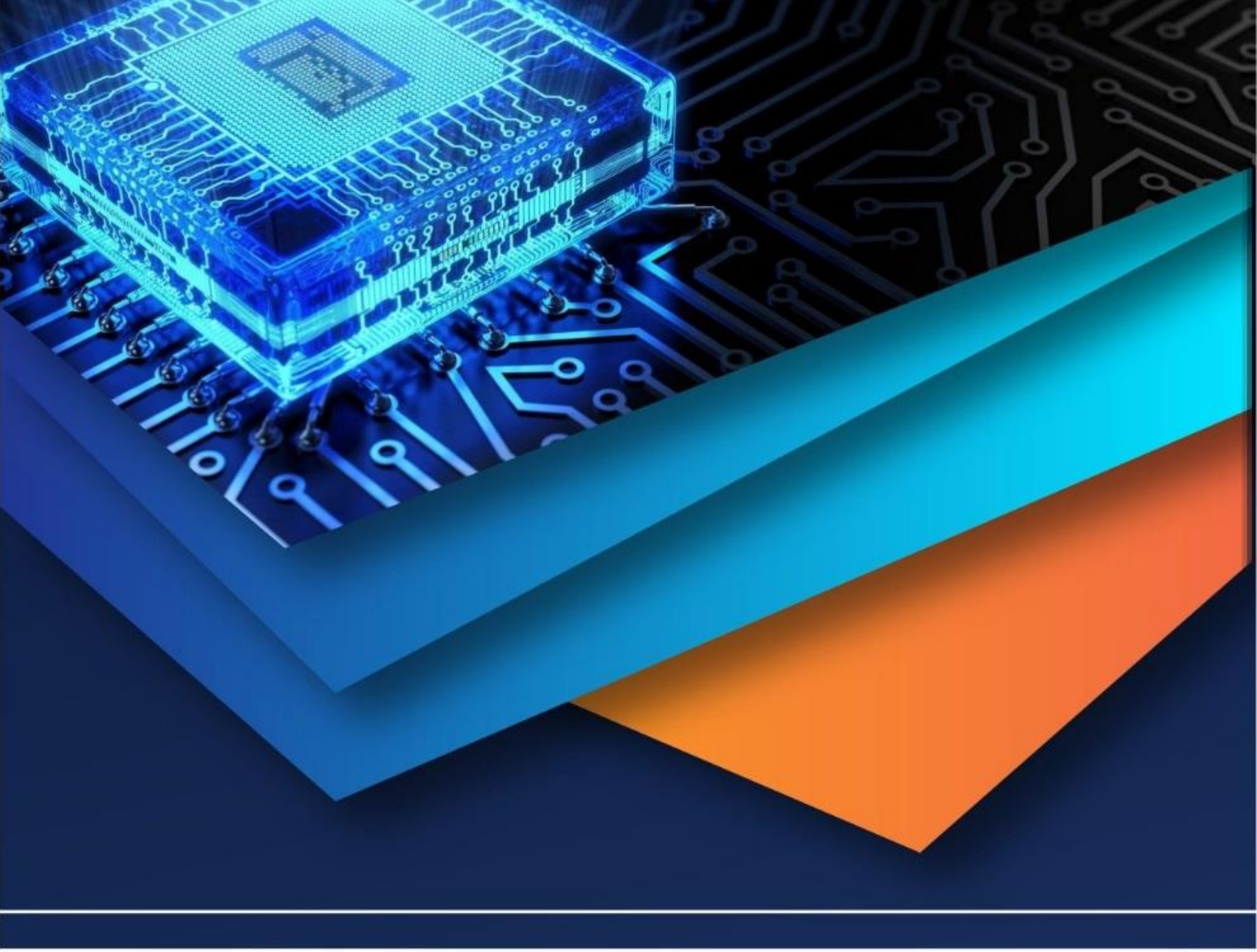
VIII. CONCLUSION

1) After studying the reviews, we conclude that every kind of pollution leaves a huge negative impact on our environment, human lives, animals etc. We, as responsible citizens, must take steps towards a better tomorrow.
2) Tackling air pollution can provide numerous benefits to society, from improving a city's resilience, to making our cities more inviting and pleasant places to live.

3) Addressing the air pollution challenge will therefore also help with a number of other challenges, particularly in light of a rising population.

REFERENCES

[1] Akinbami L.J., Lynch, C.D., Parker, J.D., Woodruff, T.J. (2010).
[2] Balti, E.V., Echouffo -Tcheuqui, J.B., Yako, Y.Y., Kengne, A.P. (2014).
[3] Bell, M.L., Dominici, F., Samet, M. (2005).
[4] Sameer Kumar1 and Dhruv Kotaria,Department of Environment Engineering, Delhi Technological University (D.C.E), Bawana, Delhi, India. (2013).
[5] Kampa M et al
[6] Kader R et al
[7] Zhu, J. M., & Wang, J. L. (2021)
[8] Marcus, M. (2021).
[9] Beach, B., & Hanlon
[10] W. W. (2018).



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)