

VIDYASAGAR UNIVERSITY



MUGBERIA GANGADHAR MAHAVIDYALAYA
SUB:- ENVIRONMENTAL STUDIES

PROJECT NAME:- Air Pollution & its Effect Health and Environment



Name:- Debasmita Nanda

CLASS: (B.S.C Honours) 1st Year 2nd Sem

College Roll:- 2086

Roll:- 1122129 No:- 220212

Reg.No.: VU221201061 of 2022-2023

SESSION :-2022-2023

CERTIFICATE BY SUPERVISOR

This is to certify that Debasmita Nanda is a regular students of Mugberia Gangadhar Mahavidyalaya under Vidyasagar University in the session of 2022-2203. She he is a student of UG, Semester II, carried out her project work under my supervision and guidance in partial fulfillment of the requirements for the UG degree with her dissertation titled "Air Pollution and its effect on Health and Environment ". This dissertation is her original work and it has not previously formed the basis for the award to any candidate, for any degree, diploma, associate ship, or other similar titles. The dissertation represents, entirely an Independent work an the part of the candidate but the general guidance by me.

This is to certify that the above statement made by the candidate is correct and true to the best of my knowledge

.....*Rajni Majumdar*.....
Associated Professor
& HOD Department of Zoology
Mugberia Gangadhar Mahavidyalaya

This is to certify that the above statement made by the candidate is correct and true to the best of my knowledge.

[Signature]
.....
Head of the Department of Zoology (UG)
Mugberia Gangadhar Mahavidyalaya

HOD
Department of Zoology
Mugberia Gangadhar Mahavidyalaya

.....
External Expert

Date

MUGBERIA GANGADHAR MAHAVIDYALAYA

(4)

Bhupatinagar :: Purba medinipur

West Bengal :: India

Email: mugberia_college@rediffmail.com

NCTE Recognized & NAAC Accredited with CHLA 2.71 Institution

<http://www.mugberiangangadharmahavidyalaya.org>



This is to certify that *Mr/Miss Debanmita Nanda*

Roll..... Number..... a PG / UG student

of SEM... *2nd* ... Department of... *Zoology* ...

has successfully completed a dissertation project entitled.....

Air Pollution & its Effect Health and Environment

For the paper..... In the year... *2023* ...

[Signature] 29.08.23

Signature of HOD

HOD
Department of Zoology
Mugberia Gangadhar Mahavidyalaya

[Signature] 30.8.23

Signature of Principal

Principal
Mugberia Gangadhar Mahavidyalaya

Date:-

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Air Pollution :-

Air pollution is the refers to any physical, chemical or biological change in the air, it is contamination of air by harmful gases dust and smoke which effects plants animals and humans drastically.

There is a certain percentage of gases present in the atmosphere. An increase or decrease in the composition of these gases is harmful to survival. The imbalance in the gaseous composition has resulted in an increase in earth's temperature which is known as global warming.

Introduction :-

Air pollution is a mixture of solid particles and gases in the air. ~~emissions~~ chemicals from factories, dust, pollen and mold spores may be suspended as particles. Ozone in cities, when ~~o3~~ one forms air pollution, it is also called 'smog'.

Air pollution is the release of pollutants such as gases, particles, biological molecules etc. into the air that is harmful to human health and environment.



Source :-

Source of air pollution including vehicular emissions, industrial processes, fossil fuel combustion, and agricultural activities. These sources release pollution such as particulate matter, nitrogen dioxide, sulfur dioxide and volatile organic compounds into the atmosphere. Understanding the origins of these pollutants is crucial for comprehending their health impacts and devising effective strategies to mitigate air pollution's negative effects.



Air pollutions - Specific objectives :-

1. Describe the five-layered structure of the atmosphere and the % composition of gases with in it
2. List and describe the six major types of air pollution, distinguishing between primary and secondary air pollutions.
3. Explain the occurrence of urban smog and the impact of topography and climate on it.
4. List indoor sources of air pollutions.
5. Describe the effect of air pollutions on the ecosystem through acid deposition, global warming and ozone depletion.
6. Explain how air pollution can be mitigated.



Causes:

Following are the important cause of air pollution

① Burning of Fossil Fuels

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

② Auto mobiles

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

③ 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.

④ 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.

⑤ Agricultural Activities:

Ammonia is one of the most hazardous gases emitted during agriculture activities. The insecticides, pesticides and fertilizers of nitro-harmful chemical in the atmosphere and contaminate it.

⑥ 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.

⑦ Deforestation:

Plants and trees perform the function of taking in carbon dioxide and give out oxygen. As the number of plants and trees reduce, the carbon dioxide in the air increases and this is a major pollution. So, cutting of trees is a cause of air pollution.

Air pollution effect in health:-

Air pollution can have significant negative effects on health. Exposure to pollutants like fine particulate matter, ozone, nitrogen dioxide, and sulfur dioxide can lead to respiratory and cardiovascular issues, exacerbating conditions like asthma, bronchitis, and heart diseases. Long-term exposure has been linked to decreased lung function, lung cancer, and even premature death. It's important to minimize exposure to polluted air,

especially for vulnerable populations like children, the elderly, and individuals with preexisting health conditions.

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⊛ Certainly, here are some key points on how air pollution affects our health →

1. Respiratory Problems:-

Air pollution, particularly fine particles and pollutants like ozone and nitrogen dioxide, can irritate the respiratory system, leading to symptoms like coughing, wheezing and shortness of breath. Prolonged exposure can worsen conditions such as asthma, bronchitis, and chronic obstructive pulmonary disease (COPD).

2. Cardiovascular Impact:-

Air pollution has been linked to an increased risk of heart diseases such as heart attacks, strokes and hypertension. Particulate matter and other pollutants can contribute to inflammation and oxidative stress, damaging blood vessels and affecting the heart's function.

3. Lung Function Decline:-

Long term exposure to air pollution can result in reduced lung function over time. This is particularly concerning for children whose lungs are still developing and for individuals who work or live in areas with high pollution levels.

4. Cancer Risk:-

Certain air pollutants, including benzene and formaldehyde, are carcinogenic and can increase the risk of developing lung cancer and other respiratory-related cancers.

5. Premature Mortality:-

Studies have shown a clear connection between high levels of air pollution and premature death. People exposed to polluted air over an extended period are more likely to experience a shortened lifespan.

6. Neurological Effects:-

Emerging research suggests that air pollution might also have adverse effects on the central nervous system, potentially contributing to cognitive decline, neurodevelopmental disorders in children, and an increased risk of neurodegenerative diseases like Alzheimer's and Parkinson's.

7. Child Health:-

Children are particularly vulnerable to the effects of air pollution due to their developing bodies and higher breathing rates. Exposure can lead to lifelong health issues, affecting lung development, cognitive function, and overall growth.

⑧ Pregnancy Complications :-

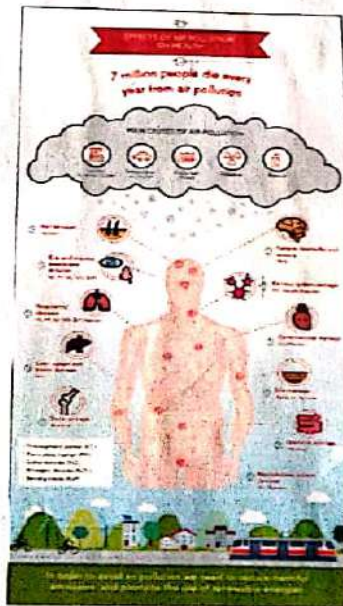
Pregnant woman exposed to air pollution may face increased risks of preterm birth, low birth weight and development problems in their children.

⑨ Worsening Allergies :-

Air pollution can exacerbate allergies and respiratory conditions like asthma, making symptoms more severe and harder to manage.

⑩ Skin disease :-

Air pollutants induce severe alterations of the normal functions of lipids, deoxy ribonucleic acid and proteins in the human skin. Oxidative damage, leading to extrinsic skin aging, inflammation or allergic conditions such as contact dermatitis, atopic dermatitis, psoriasis, acne and skin cancer.



12) Public Health Burden:-

The collective impact of air pollution on health contributes to a significant public health burden, leading to increased health care costs, lost work days, and decreased quality of life for affected individuals and communities.

Reducing exposure to air pollution through measures like improving quality standards, transitioning to cleaner energy sources, promoting public transportation, and planting more trees can help mitigate these health risks.



EFFECTS ON ENVIRONMENT

Acid rain:

Acid rain is precipitation containing harmful amounts of nitric and sulfuric acid. These acids are formed primarily by nitrogen oxides and sulfur oxides released into the atmosphere when fossil fuels are burned. These acids fall to the Earth either as wet precipitation or dry precipitation. In the environment acid speeds rain damages trees and causes soils and water bodies to acidify, making the water unsuitable for some fish and other wild life. It also speeds the decay of buildings, statues and sculptures that are part of our national heritage. Acid rain has damaged Massachusetts lakes, ponds, rivers and soils leading to damaged wild life and forest.

Eutrophication:

Eutrophication is a condition in a water body where high concentrations of nutrients stimulate blooms of algae, which in turn can cause fish kills and loss of plants and animals diversity. Air pollution of nitrogen oxides from power plants, cars, industries, and other sources contribute to the amount of nitrogen entering aquatic ecosystems.

Haze:

Haze is caused when sunlight encounters tiny pollution particles in the air. It is an atmospheric phenomenon in which dust, smoke, and other dry particulates suspended in air obscure visibility and the clarity of the sky. It impacts the environment by reducing visibility, blocking sunlight, causing acid rain, and harming forests, wild life and agriculture.

Effects on wild life:

Toxic pollution in the air

When deposited on soils or surface waters can impact wild life in a number of ways like humans. animals can experience health problems if they are exposed to sufficient concentration of air toxics over time. studies show that air toxics are contributing to birth defects, reproductive failure and diseases in animals. persistent toxic air pollutants are one of particles of concern in aquatic ecosystem.

Ozone depletion:-

The ozone depletion process begins when CFCs and other ozone depletion substances are emitted into the atmosphere. CFC molecules are extremely stable and they do not dissolve in rain. At ground level ozone is a pollution that can harm human health. The ozone is destroyed by man made chemicals referred to as ozone depleting substances. Thinning of protective ozone layer can cause increased amounts of UV radiation to reach the Earth which causes skin cancer, cataracts and impairs immune systems, and also damage sensitive crops.

Crop and forest damage:-

Air Pollution can damage crops and trees in a variety of ways. Ground-level ozone can lead to reductions in agricultural crops and commercial forest yields, reduced growth and survivability of tree seedlings and increase plant susceptibility to disease pests and other environmental stresses.

Conclusion and Recommendation 2

In Conclusion, the detrimental impact of air pollution on health is an urgent need for comprehensive measures. Unpleasant and practical experiment highlights the urgent need for comprehensive measures to reduce pollution levels. Stricter emission regulation, widespread adoption of cleaner technologies, and public awareness campaigns are recommended by taking proactive steps we can create a healthier environment, ensuring the well-being of current and future generations.

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