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## REVIEW PAPER ON AIR POLLUTION CONTROL

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### ABSTRACT

One of the virtual components to sustain the life of all living beings is air. If the quality of air degrades, consequently affecting the environment causing from multi activities such as burnings of fuels, the advance of industries, population growth, construction, increase in a number of vehicles, mining and transportation. The entire machines required fossil fuels as a source of energy to function. Increase in the combustion of fossil fuels will progressively change in the atmospheric composition whereby affecting the lives of people, global warming, production activities, and other related development processes in all places around the globe. The smoke is the major contributing factor to the occurrence of various forms of respiratory diseases, skin diseases, and other related infections. The innovative technology and creative ideas must apply to control air pollution and zero emission into the atmosphere. Human has the power to change the world, so let us join hand to hand and be a part of the solution to the problem before it is too late. We just learned to appreciate, many agencies and authors have developed a preventive measure for controlling air pollution like use of public transportation instead of driving a private car, minimizing of use of chemical for agriculture production, recycle and reusing the items, venturing into the renewable forms of energy such as solar and wind. This paper will provide an idea to mitigate and control of air pollution.

**KEYWORDS:** degrades, fossil fuels, global warming, emission and chemical.

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### INTRODUCTION

The air pollution can be defined as an alteration of air quality, characterized by measurement of chemical, biological or physical pollutants in the air. Air pollution is a primary product of man's own activities and it occurs when harmful or excessive quantities of substances are introduced into the earth atmosphere including gases, particles, fossil fuels combustion, and biological molecules. Moreover, the deterioration of air quality is due to rapid population growth, an increase of vehicles ownership, accelerated use of solid fuels and poor waste management practice, industrial expansion. This invitation of diverse pollutants will harm both human health as well as leads to the environmental degradation, but this flare-up of air pollution is within our range to control and must shoulder the responsibility for controlling the air pollution individually. This is not an end, to bring better control of air pollution environmental agencies are providing public awareness education, efficiently controlling combustion, adopting the Eco-friendly environment and proper uses of resources in limited ways. The paper is further arranged, section II contains a literature review, second III solution to control the air pollution, section IV contains conclusion and section V contains acknowledgment respectively.

### LITERATURE REVIEW

**Duk-Dong Lee and Dae-Silk Lee (2001)**[1] 'Environmental Gas Sensors' it states that the natural atmospheric environment has polluted and rapidly deteriorates as dramatic growth in industrial expansion and urbanization. Thus, monitoring and controlling of such pollutants is imperative for the prevention of environmental disasters. The use of conventional analytical instruments for monitoring purpose is time-consuming, expensive and seldom used in the real field. It suggested that the effective control of pollution from various gases would be done by using solid-state gas sensors that are compact, robust with the versatile application and low cost.

**Brendon R. Barnes (2005)**[2], ‘Interventions to Reduce Child Exposure to Indoor Air Pollution in Developing Countries: Behavioral Opportunities and Research Need’ the author focused on indoor air pollution caused by the burning of biomass fuels that have been associated with increased risk of acute respiratory infections for children less than five years old. In this paper reviews, it suggests three technical intervention options: access to cleaner burning fuels, improved cook stoves, and modification to housing characteristics. So that there will be a sustainability challenge of technical and potential behavioral interventions to reduce child from indoor air pollution.

**A. Aziz & I.U. Bajwa, (2007)**[3], “Minimizing human health effects of urban air pollution through Quantification and control of motor vehicular carbon monoxide (CO) in Lahore”. The author concludes urban air pollution has been upshot due to high playing motorized vehicles and colossal expansion of cities tremendously, ultimately it effects to ecology, human health and economy, but only human health is always a matter of concern. Therefore, the authors focused on quantifying excess motor vehicular carbon monoxide by simplified mobile emission model and implementing emission control measures.

**Chen TM et al. (2007)**[4], ‘Outdoor air pollution: nitrogen dioxide, sulfur dioxide, and carbon monoxide health effects’ the authors study on the pollutants such as Nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), and carbon monoxide(CO). It confirmed that NO<sub>2</sub> has high-intensity to caused catastrophic injury to humans, including death. In addition, exposure may increase the risk of respiratory tract infections through the pollutant's interaction with the immune system. The sulfur dioxide (SO<sub>2</sub>) pays in respiratory symptoms for both healthy patients and underlying pulmonary disease. In this, studies it does not demonstrate a clear dose-dependent health risk response to increasing amounts of pollutants except at high concentrations. Nevertheless, authors exam the effects of ambient level exposure to NO<sub>2</sub>, SO<sub>2</sub>, and CO failed to find associations with adverse health outcomes.

**Colbeck I, et al. (2010)**[5] ‘The state of ambient air quality in Pakistan a review’ this review investigate the increase of air pollution in Pakistan due to population growth, urbanization, and industrialization, a great increase in motorization and energy use. It observed a substantial rise has taken place in the sources of air pollutants; lack of air quality management capabilities the country is suffering from deterioration of air quality. It has been mention by governmental organizations and international bodies; air pollution is a risk to the environment, quality of life, and health of the population. Thereafter, the government has taken positive steps toward air quality management in the form of Pakistan Clean Air Program and now it established continuous monitoring stations. Still, then, it could not recover the ambient air quality in standards. it was discuss on the data being available on the criteria air pollutants: particulate matter (PM), sulfur dioxide, ozone, carbon monoxide, nitrogen dioxide, and lead.

**L. Abdullah & Khalid, N.D (2012)** [6], “Classification of air quality using fuzzy synthetic Multiplication” The air quality count the condition of air in the atmosphere. The harmful emissions from natural and man-made sources reduce air quality. Good quality air refers to clear, pollutant-free, and clean air in the atmosphere and a vital to sustaining the fragile equilibrium of life on earth such as plants, animals, and human beings. But poor air quality arises due to the high concentration of air contaminants that put in danger of living wellbeing and the environment. Its take a few steps to bring a positive impact by reducing the amount of consumption, reusing things, recycling, reduce numbers of vehicles, avoid using non-decomposable things and always do walking for good health to contributes little changes in air pollution and save the world, said by the authors.

**Snehal Sirsikar and Priya Karemore (2015)**[7]‘Review Paper on Air Pollution Monitoring system’ it mainly to determine air pollution monitoring system even though it is an old but useful concept. This system existed since the traditional way to the most sophisticated computer to monitor the air quality, which is

necessary for today's human being. It has highlighted some technology to monitor air pollution and must implement effective so that it will control at least.

**R. Pitarma et al. (2017)**[8] 'Monitoring Indoor Air Quality for Enhanced Occupational Health' the people spend more than 90% of their time in indoor environments. Several researchers have pointed on the impact of indoor air quality with verities of symptoms like "Sick Building Syndrome", involving the skin, the upper and lower respiratory tract, the eyes and the nervous system, as well as many building-related diseases. Thus, indoor air quality (IAQ) is recognized as an important factor to be controlled for the occupants' health and comfort. The majority of the monitoring systems presently available is very expensive and it is based on random samples. This work describes the system a low-cost indoor air quality monitoring wireless sensor network system, developed using Arduino, XBee modules and micro sensors, for storage and availability of monitoring data on a web portal in real time. Five micro sensors of environmental parameters (air temperature, humidity, carbon monoxide, carbon dioxide, and luminosity) were used. The results reveal that the system can provide an effective indoor air quality assessment to prevent exposure risk and the indoor air quality may be extremely different compared to what is expected for a quality living environment. This types of systems will be a benefit for public health interventions to reduce the burden of symptoms and diseases related to "sick buildings".

**Mahendra Pratap Choudhary and Vaibhav Garg, (2019)**[9] 'Causes, Consequences, and Control of Air Pollution' it state verities of gases, dust particles, fumes (or smoke) or odor are introduced into the atmosphere. In a way, it's a threat to human health and all living organism this planet. It creates smog and acid rain, causes cancer and respiratory diseases, reduces the ozone layer atmosphere and contributes to global warming. In this industrial age, air pollution cannot be eliminated, but steps can be taken to reduce it. In order to control, the government has developed and continues to develop, guidelines for air quality and ordinances to restrict emissions. It also mentions that even individual level can contribute to reducing air pollution by use of public transportation, energy efficient light bulbs, and appliances to reduce electricity.

## SOLUTION TO CONTROL THE AIR POLLUTION

This section summarized the control measure of air pollution as suggested by the different authors and has mentioned that it must come either from the government in the form of law or individual responsibility.

- Implement technology to monitor and controlling of release pollutants to the atmosphere due to dramatic growth in industrial expansion and urbanization.
- It can even improve by sensitizing to public and effective air quality management.
- Technical intervention options such as access to cleaner burning fuels, improved cook stoves and modification to housing characteristics.
- Individual responsible for their own manufacturing activities by implementing emission control measure and efficient car.
- By qualifying excess motor vehicle by use of public transportation, energy efficient light bulbs and appliances to reduce electricity.
- Its take a few steps to bring a positive impact by reducing the amount of consumption, reusing things, recycling, reduce numbers of vehicles, avoid using non-decomposable things and always do walking for good health to contributes little changes in air pollution and save the world, said by the authors.

## CONCLUSION

It was learned that the deterioration of air quality is due to rapid population growth, an increase of vehicles ownership, accelerated use of solid fuels and poor waste management practice, industrial extension are the major contributors of air pollution. In fact, even the water treatment plant emitting harmful gasses to the atmosphere whereby is depleting the air quality. In another way, it is all caused by human activities with less concern towards an environment where by leading to an imbalance of air grades. It consists of different contamination leading to depletion of the ozone layer resulting in global warming and climate change. In

order to control air pollution, the authors suggested to continuously plant trees, maintaining a clean surrounding, reducing the numbers of vehicles and creating awareness on the importance of the environment.

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### AUTOBIOGRAPHY

I am Mr. Tandin Wangdi, currently working as Associate Lecturer in Jigme Namgyel Engineering College under Royal University of Bhutan. In this carrier, I start my teaching profession as an instructor since 2006, graduate from the Royal Bhutan Institute of Technology with a Diploma Certificate. I never felt that I would be a teacher neither cup of tea, however sometimes it depends on silence future 'fate'. Never the less, I did not regret to be a part of the teaching profession, it is interesting as time goes. In the beginning, it is a tough time to create a comfortable environment for students as well self, where I engaged most with my senior tutors for a consultation to my challenges. Moreover, to assist smooth teaching I attended teaching methodology workshops of 10 days in the year 2008.

I had the privilege to upgrade my qualification in Bachelor of Technology in Mechanical Engineering in the year 2009, where I could achieve personal development as well as professional growth. Indeed, I even attended Introduction to University Teaching and Learning program at Samtse College of Education in the

year 2014 (Bhutan). This is not my end, I also participate in many events like workshops, seminars, and conference, where I experience learning does not lie only in the course-based program. The series of events also lead to building confidence in my teaching. In most of the events or workshops, there would be always activities like a site visit, recreational, etc., indirectly it influences in learning process and ideas. In fact, a short period of tea session also added the value to participation as time pass debate. Besides, I am interested in research take up in the field of mechanical engineering as it integrates skills in my noble profession to ensure teaching quality. Moreover, until date I could publish only four-research journal and hoping that I will be a part of researcher near future.