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# Health effect of Air Pollution within the Maiduguri Metropolis Borno State, Nigeria

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**ABSTRACT:** Air pollution occurs when gases, dust particles, fumes (or smoke) or odour are introduced into the atmosphere in a way that makes it harmful to humans, plant and animal. Air pollution affects the health of humans and other living beings in our earth. It creates smog and acid rain, causes cancer, lungs problem and respiratory diseases, reduces the ozone layer atmosphere and contributes to global warming. In this industrial era, air pollution cannot be control completely, but measures can be taken to reduce it. The government agencies and non-governmental organizations has developed, and continues to develop, guidelines for air quality and ordinances to restrict emissions in an effort to control air pollution. On an individual level, we can decrease our contribution to the pollution problem by controlling or using public transportation. Additionally, buying energy-efficient light bulbs and appliances or otherwise reducing our electricity use will reduce the pollutants released in the production of electricity, which creates the majority of industrial air pollution.

**KEYWORDS:** Pollution, air, Maiduguri

## I. INTRODUCTION

Air pollution is the release of toxic into the atmosphere of chemicals, particulates, or biological materials that cause harm, disease, or death to humans, disrupt other living organisms such as food crops, or damage the natural environment or architectural environment. A substance in the air that can be averse to humans and the environment is known as an air pollutant. Prof Singh A. (2016). Pollutants can be in the form of solid particles, liquid droplets, or gases. In addition, they may be natural or man-made. Pollutants can be classified as primary and secondary. Usually, primary pollutants are directly produced as a form of process, such as ash from a volcanic eruption, the carbon monoxide gas from a vehicle exhaust or Sulphur dioxide released from industries. Secondary pollutants are not emitted directly. Rather, they form in the air when primary pollutants react or interact. An important example of a secondary pollutant is ground level ozone – one of the many secondary pollutants that make up photochemical smog. Some pollutants may be both primary and secondary; that is, they are both emitted directly and formed from other primary pollutants. (M N Rao & H V N Rao, Tata McGraw-Hill, 2007)

## EFFECT OF AIR POLLUTION

Air pollution is a significant risk factor for multiple health conditions including respiratory infections, heart disease, and lung cancer, according to the WHO 2016. The health effects caused by air pollution may include difficulty in breathing, wheezing, coughing, asthma and aggravation of existing respiratory and cardiac conditions. These effects can result in increased medication use, increased doctor or emergency room visits, more hospital admissions and premature death. The human health effects of poor air quality are far reaching, but principally affect the body's respiratory system and the cardiovascular system. Individual reactions to air pollutants depend on the type of pollutant a person is exposed to, the degree of exposure, the individual's health status and genetics. The most common sources of air pollution include particulates, ozone, nitrogen dioxide, and sulphur dioxide. Both indoor and outdoor air pollution have caused approximately 3.3 million deaths worldwide. Children aged less than five years that live in developing countries are the most vulnerable population in terms of total deaths attributable to indoor and outdoor air pollution. The World Health Organization states that 2.4 million people die each year from causes directly attributable to air pollution, with 1.5 million of these deaths attributable to indoor air pollution. The worst short term civilian pollution crisis in India was the 1984 Bhopal Disaster. Leaked industrial vapours from the Union Carbide factory, belonging to Union Carbide, Inc., U.S.A., killed more than 25,000 people outright and injured anywhere from 150,000 to 600,000. The United Kingdom suffered its worst air pollution event when the December 4 Great Smog of 1952 formed over London. In six days more than 4,000 died, and 8,000 more died within the following months. An accidental leak of anthrax spores from a biological warfare laboratory in the former USSR in 1979 near Sverdlovsk is believed to have been the cause of hundreds of civilian deaths.



## II. METHODOLOGY

### STUDY AREA

Maiduguri metropolis is a capital city of Borno State located North-eastern part of Nigeria. Maiduguri metropolis is one of the twenty-seven Local Government Area that constitute the Borno. It covers more than 3000 km<sup>2</sup> of different land units. Maiduguri and its immediate environs are known for its dryness, with semi-arid climate, savannah or tropical grasslands vegetation, light annual rainfall of about 300 to 500 mm and the average daily temperature ranging from 22 to 35°C, with mean of the daily maximum temperature exceeding 40°C between March and June before the onset of the rains in July to September. It has mainly sandy loam soils (Beloit al., 2013; Isa et al., 2013; Arkuet al., 2011). Maiduguri is located in 11.85 latitude and 13.16 longitudes and is situated at elevation of 325 meters above sea level. Maiduguri has a population of 1,112,449 according to 2007 population census, making it the biggest city in Borno. Its residents are mostly Muslim including Kanuri, Hausa, Shuwa, Bura, Marghi, and Fulani ethnic groups. There are also a considerable Christian population and people from Southern states such as the Igbo, Ijaw, and Yoruba. Prof Nyanganji J. K. (1996).

### METHOD

For the purpose of this study, 200 structured questionnaires were distributed in eight randomly selected locations (Jajeri, Umarari, gwange, Kaleri, goniKachallari, London ciki, Mafoni, Abbaganaram, ward,) of the study area. No criteria were used for the selection of respondents with respect to gender, background or whatsoever. Responses from these questionnaires were analysed using SPSS statistical package were, simple

## III. EXPERIMENTAL RESULTS

This section tries to illustrate the result obtained in this research; simple frequencies and corresponding pie chart are shown in their order of responses and relevance.

*Table 1.1 location of the respondent*

Location	Frequency	Percentage
Jajeri	20	10.3
Abbaganaram	25	11.1
Umarari	21	9
Gwange	20	7
Kaleri	29	13
Gonikachallari	12	3
London ciki	21	9
Hausari	22	8
Mafoni	30	15

From the above table, it can be seen the responded from the sample areas across the study area were evenly distributed. About ten percent (10.3%) were from Jajeri ward of the study location, while about 11.1% were from abbaganaram. Both Umarari and London ciki ward had respondents of about 9%. While Mafoni has about 15% This has clearly shown that the research had an even coverage and response which make it easy to generalize findings



1	Statement	Response	frequency	Percentage
2	Is there air pollution in your area	Yes	180	90
		No	20	10
		Total	200	
3	Do you agree that air pollution is mostly affect new baby born	Yes	140	78
		No	60	22
		Total	200	
4	Do you agree that the air pollution can be prevented	Yes	147	58
		No	53	42
		Total	200	
5	Do agree that the air pollution can cause to death	Yes	40	37
		No	160	63
		Total	200	
7	Are aware of haze dusty occupy your atmosphere around 6pm in the evening	Yes	200	100
		No	200	0
		Total		
8	Is there any environmental protection in your area	Yes	0	0
		No	200	100
		Total	200	

Table 4.2 was on the air pollution revealed that 180(90%) of the respondents agreed that there is air pollution in their area. 20(10%) of the respondents agreed that there is air pollution in their respective environment

Table 4.4 ways and method of solving problem associated with the air pollution.

Statement	Response	Frequency	Percentage
Do you agree that the avoiding the use of vehicle will ensure effective dissemination of adequate air?	Yes	175	87.5
	No	25	12.5
	Total	200	100
Do you agree that carefully handling of industries will make them last longer?	Yes	188	94
	No	12	06
	Total	200	100
Do you agree that adequate storage of	Yes	172	86



trees used will help in providing accurate air?	No	28	14
	Total	200	100
Do you agree that training industries and local duellers on the proper way of utilizing carbon will encourage effective and efficient air?	Yes	194	197
	No	06	03
	Total	200	100
Do you agree that people will learn how to prevent air pollution better if allowed to practice with the learning aids themselves?	Yes	200	100
	No	00	00
	Total	200	100

Table 4.4 revealed that 175(87.5%) of the respondents agreed that avoiding the use of gas vehicles and industries will ensure the dissemination of adequate and healthy air. However, 25(12.5%) disagreed. The table showed that 188(94%) of the respondents and 12(06%) agreed and disagreed respectively that careful handling of air pollution last longer. The table indicated that 172(86%) of the respondents agreed that the adequate storage of trees will help them in providing accurate air while 28(14%) disagreed. The table also showed that 194(97%) of the respondents agreed that training of industries and local duellers on the proper way of utilizing carbon will encourage effective and efficient air. The table further revealed that 200(100%) of the respondents agreed that people will learn how to prevent air pollution better if allowed to practice with the learning aids themselves.

#### IV. CONCLUSION

Air pollution can be prevented only if individuals and businesses stop using toxic substances that cause air pollution in the first place. This would require the cessation of all fossil fuel-burning processes, from industrial manufacturing to home use of air conditioners. This is an unlikely scenario at this time. However, we have to make rules which set stringent regulations on industrial and power supply manufacturing and handling. The regulations are to be designed to further reduce harmful emissions into the Earth's atmosphere.

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