CAUSES, EFFECTS, AND COMMUNITY RESPONSES TO PHOTOCHEMICAL SMOG IN LAGOS METROPOLIS, NIGERIA

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Abstract
Air pollutants are released from various sources into the atmosphere. These pollutants cause degradation of crops, forest, aquatic life, structural materials and human health. Air is one of the most basic natural factors of human life, but polluting agents in the air have involved in unique reactions that generates into photochemical smog and appears as an enemy of nature and humans**.** This ground level pollution causes respiratory problems to children, adults and the elderly**.** The weather in Nigeria is suitable to form a sustainable photochemical smog, and this has become 'big problem' in Lagos, the commercial hub of Nigeria and is threatening living conditions. Although industrialization and urbanization are markers of productivity, they are also potential causes of increased pollution in Lagos state. The aim of this study is to review the causes, effects and community responses to photochemical smog in Lagos, Nigeria. This paper relied on social environmental theory to find out the recent causes and effects of photochemical smog among rural urban dwellers in Nigeria. Data were collected from published materials over the last three decades to this recent time were utilized for this study. The study revealed that living in smog has become ''normal'' to most people living in rural-urban areas in Nigeria. The effect of these has caused long term damages to public health in Nigeria. The study recommends relevant lifesaving information to the reach of the public, especially the less privileged and the less informed. Also, there is the need for regular advocacy for clean industrial smoke, and sympathetic policy responses as common measures identified to manage air pollutions in Lagos, Nigeria.

Keywords: Emissions, photochemical, pollution, smog, Lagos.

Introduction

From a combination of fog and smoke, smog implies a poor quality of air. Records show that in 1272 and 1578, first Edward, King of England and Queen Elizabeth complained of coal fuel and fire during parliament meetings, respectively. Furthermore, reports in 1813, 1931 and 1952 showed that the atmosphere was so dense that people could not even see their feet across the street which resulted to the deaths of over 4,000 people and some cattle in England after nine days of air pollution. This incidence also killed around 60 people in a city in Muse Valley in Belgium after a three days polluted air. The term smog was first used in a report to the smoke abatement league of Great Britain concerning the 1909 deaths of 1,000 people in Edinburgh and Glasgow for heavy smoke and fog. Since the hub of the industrial revolution in1970s, there has been an increasing occurrence of thick, poisonous air throughout the nineteen centuries till date. Threats from atmospheric inversions are not a recent phenomenon, but it is not as old as man (Kumar, 2002; Deziel, 2017; Hare, 2002; Mohammadi, Cohen, Babazadeh & Rokni, 2012).

Over the years, there have been several death cases linked to photochemical smog. And when the dead bodies were found, no sign of violence was found on them. In 2018 Daily Post reported how generator fumes killed a family of seven in Lagos. Today, most of the smog we see is photochemical smog is produced and increases negatively when sunlight reacts with nitrogen oxides and at least on volatile organic compound (VOC). Nitrogen oxides emanates from car exhaust, coal power plants and factory emission. On the other hand, VOCs are released from gasoline, paints and many cleaning agents.When sun heat these chemicals, they form airborne particles and ground level ozone or smog.In Nigeria, it is a known fact that atmospheric inversion layers have played an important role in creating the harmful haze (smog) spreading primarily through a mix of particulate matter (PM), asbestos, sulfur dioxide (SO_2), nitrogen oxide (NO), carbon monoxide (CO), automobile emissions, products of smoke from coal of fires, industrial pollutions and partially unburnt hydrocarbons) both in the rural and urban, affecting over 18 million residents daily (Deziel, 2017; Ogundipe, 2018).Smog areas in some Nigeria cities with a population of over 1 million people are Lagos, Kaduna, Ibadan, Kano, Abuja, Jos, Benin Aba, Onitsha, Ogun, Port Harcourt (Fagbeja, Olumide & Rabiu, 2018).

According to Obanya *et al*. (2018), the *insitu* assessment of air quality around the transport sector in Lagos show the presence of CO, SO_2 and VOC. Among these pollutants, CO is highly toxic because of its ability to combine with hemoglobin to produce carboxyhemoglobin. When inhaled, this poisonous gas takes up the space of hemoglobin, the oxygen carrier in the red blood cell; but it is ineffective in distributing oxygen to tissues in the body. Concentration of CO as low as 667pm may cause up to 50% of body's hemoglobin to convert to carboxyhemoglobin. A level of 50% carboxyhemoglobin may result in seizure, coma and even death.The atmospheric oxidation of VOCs can produce secondary pollutants such as ground level ozone or peroxyl acetyl nitrate. VOCs are released into the atmosphere typically from anthropogenic activities and biogenic sources. Anthropogenic sources include the burning of fossil fuels while biogenic sources include releases from plant foliage and microbial decomposition of organic substances, fresh and marine waters, soil, sediments and hydrocarbons (Guenther, *et al*., 1995).

Health challenges caused by photochemical smog; either by exposure from occupational activities were increasingly being identified, and the number of occupational diseases now included various national compensation schemes had seen a steady increase in recent years (International Labor Organization, 2010). But this national compensation schemes have not been working in Nigeria as previous studies have shown that these photochemical substances contribute to the death of 7 million people (with 150 deaths per 100,000 Nigerian), 1 in 8 of the total global deaths. With a very high-risk disease-causing agent, air pollution is now the world's largest single environmental health risk and Nigeria is ranked 4th deadliest globally (Nwaegbulam, Alao and Muanya, 2015: Ogundipe, 2018).

Studies have identified this kind of dirty mists to influence the association in causing carcinogens (high susceptibility to cancer-causing substances or agents), eyes irritations, and respiratory distress, especially when smog is in contact to sunlight. Studies has linked threats to the diseases such as those of work-related hazards. (See also, Kumar, 2002; Patz, Githeko, McCarty, Hussein, Confalonieri, & de Wet, 2003).However, work-related hazards existed in almost all occupations, with traditional hazards continuing but also with recent ones emerging, such as those from new chemicals, musculoskeletal hazards from snowballing computer use, violence and mobbing (ILO, 2010).

Treating public health problems caused by photochemical smog in the human population today (especially in Nigeria) has become a major concern as many beneficiaries who occupy 'big positions' in the country makes it difficult to control the incidence of photochemical smog, since it may demand a relocation, or a stop to the businesses (like activities from transport and industrial businesses) that encourages the appearance of such smog in the environment. Some studies noted that the problem of photochemical smog is the problem of urban life, but the combination are not only found in industrial cities but also in areas in where fuel materials are in close association with human environment (Agarwalsk, 2005; Mohammadi, Cohen, Babazadeh & Rokni, 2012).In addition, climatic factors affecting the atmosphere in Nigeria, including rainfall, sunlight intensity, wind, topography, and daily temperature range from automobile emissions during traffic jam, have key roles in forming and continuing photochemical smog; and the quality and quantity of these pollutions depends on the cultural, social, and the economic structure of the cities or country (Nwaegbulam, Alao and Muanya, 2015; Williams & Crawford, 2006; Mohammadi, Cohen, Babazadeh, & Rokni, 2012).

Theoretical Underpinning

A theory is that set of integrated constructs, concepts, and proposition that present a systematic view of a phenomenon of interest by specifying associations among interconnecting variables with the deliberate purpose of explaining and predicting the outcome of that phenomenon. Therefore, the theoretical framework for this study is **ecological system theory**. This theory developed by Urie Bronfenbrenner (1979) helps account for the occurrence and outcomes of photochemical smog in various rural and urban environments like Lagos Metropolis in Nigeria.

Urie Bronfenbrenner in his ecological system theory identified five interrelated types of environmental systems that influence human health and development. They are Micro systems, Meso-systems, Ecosystems, Macro-systems and Chronosystem. The theory account for multidimensional health outcomes on humans from contacts with unique environments (Bronfenbrenner 1979).The ecological system theory explains how contact with an environment can determine a unique pattern of health outcomes in society.

The micro-system Micro-system explains various operational elements that influence proximal (immediately and directly) impact on human health. It shows the health effect on a growing human population in contact with environment polluted by smog. Staying longer in this populated environment like school, recreational centers, churches, childcare center, can make the residents more likely to experience health challenges than others are not near a smog environment. Studies have shown that about 80% of Nigerians consistently rely on combustible biomass, especially from wood and its charcoal derivatives for primary energy consumption amidst a serious shortage of access to modern energy sources (Mohammed, Mustafa, Bashir & Mokhtar, 2013). These structural or operational elements in the environment make the residents prone to experience daily exposures to harmful environmental activities, and those that show a more positive health outcome than others are those that are less exposed to either disease, or the smog effects. It directly influences the quality of a human life is directly by the activities it exposes them to in the environment, which may either improve a healthy identity or disrupt it.

Meso-system The meso level has to do with the factors interconnecting the individual's location (like the families or relatives, workplace, place of resident, etc.,) and the smog environment. For instance, Nigeria is a developing country and many people desire to own houses, or properties, etc., influence their proximity to a smog environment. Today, in rural areas, there are regular incidence involve burning, or use a generator or plants, especially where there is no regular electricity supply. It is a known fact that atmospheric inversion layers have played an important role in creating the harmful haze affecting over 18 million residents daily (Deziel, 2017; Ogundipe, 2018). This phase explains that there is a strong interconnection between micro-systems, proximity to a smog environment and the health challenges the resident will experience. The contact with external operational elements (workplace, etc., will affect the inner (family relatives, etc.,)

Exo-system This layer contains the outermost environmental elements whose influence does not directly influence the individual health in society. The exo-classification (decisions of significant others, peer groups, etc.,) interact indirectly with the development of people in society. For instance, a parent decision for a location can influence the children's health, especially when the

location is within a smog environment. This therefore shows that the occupation of significant others or decisions on location of guardians can influence the risks and hazards the children or other family members are daily exposed to in various areas.

Macro-system The macro system comprises beliefs, values, norms, religion and socio-economic status of people that governs the modus operandi of both the people and the environment. For instance, using firewood for cooking is not strange to those in rural areas but may not be common among those of high social class. Many Nigerians hold the belief that living in smog has become the new ‘‘normal’’ to most people living in rural-urban areas. Poor economic structures and poor standardized of living has also influenced high household hazards through industrial and automobile smog, indoor and outdoor pollutions. This has also increased the number of deaths and road accidents in Nigeria.

Chronosystem This aspect reveals the records of anecdotal evidence traced from the anthropogenic and zoonotic effects and how this has deliberately influenced health outcomes of Nigerians. It also poses traces of socio-historic threats from photochemical smog, especially in industrialized areas and how this threat has disrupted the rate of longevity. Anecdotal evidence has shown that photochemical substances contribute to the death of 7 million people (with 150 deaths per 100,000 Nigerian), 1 in 8 of the total global deaths. With a very high-risk disease-causing agent, air pollution is now the world’s largest single environmental health risk and; Nigeria was rank 4th deadliest global (Nwaegbulam, Alao and Muanya, 2015: Ogundipe, 2018).This explains that the effects of photochemical smog have increased compared to previous years where there were fewer industries and urbanization.

Causes of Smog in Lagos Metropolis, Nigeria

Atmosphere pollutions may have natural causes (volcanic eruptions, pollen, dust, forest fires). It may also be an anthropogenic influence from activities such as traffic-automobile emissions, industrial processes, agriculture, thermal stations, power plants, petrol-fueled generators, firewood cooking in public places and indoor pollutions (Cuciureanu & Dimitriu, 2006; Atubi, 2015). We have identified the following as the major of causes of smog in Lagos, Nigeria; **(a) Coal burning Over** 80% of Nigerians consistently rely on combustible biomass, especially from wood and its charcoal derivatives for primary energy

consumption amidst a serious shortage of access to modern energy sources (Mohammed, Mustafa, Bashir & Mokhtar, 2013). Forest generated emissions that changes a lot in temperature, they consider results from microbial metabolism and organic compounds related to trees in low atmosphere primary polluting agents (Cuciureanu & Dimitriu, 2006; Loreto, 1997). The effects of deteriorating air quality in the rural-urban areas connected to the unregulated agricultural waste burning are at alarming rates (UNEP, 2015).

(b) Industrial pollution A record in 2014 on importations shows that the principal imports of products into Nigeria, were manufactured industrial supplies (27%), machinery and transport equipment's (12%), capital and consumer goods (30%), fuel and lubricants (14%), with 43% coming from Asia, 34% from Europe, 15%, from America, 7% from other African countries (Trading economics, 2019). In the last two decades attention given to industrial pollutions is not commensurate to the trend in fossil fuel emissions that has continued to rise from the combined effect of pollution growth, industrial pollution and high dependence on low quality private machineries (Faboye, 1997; Atubi, 2015).

(c) Automobile emissions In Nigeria, living in smog environment has become ''normal'' to most people living in rural-urban areas as the population is affected by air pollutions above the limits set by the World Health Organization (WHO, 2002).It is as though no one cares anymore about the health implications from automobile emissions. For over three decades now, congestions and road traffic in the city centers is responsible for the 80-90% air pollutions from vehicle chemical-gaseous elements emissions (NCOx) which has been a consistent daily experience for many Nigerians. This is because of the increasing number of machinery-automobile importations and the distance travelled by each vehicle each year in the country (Savile, 1993; Trading economics, 2019; Atubi, 2015). In 2007, the Intergovernmental Panel on Climate Change (IPCC), reports that road transport accounts for 74% of the world energy-related co2 emissions originate and the growth rate of these emissions is highest the end-user sector (IPCC, 2007).

The economic growth of transport industry has undoubtedly brought these problems of environmental crisis, air pollutions, congestions and energy crisis. Although, many developed countries already have extensive transport

infrastructure (roads, railways, airports, bus systems). But the statistics has ranked Nigeria 4th deadliest air polluting country. In addition, there are public transport with more old vehicles than additional vehicles used by private companies or individuals with an increase of 32% vehicle registration between 2010 and 2011 (WHO, 2002; Atubi, 2009, 2015; Ogundipe, 2018; UNEP, 2015). This shows that the government is yet to have a successful plan to control the health hazards posed by the

(d) Indoor pollution Considering that air comprises 78% nitrogen, 21% oxygen, less than 1% carbon dioxide, and trace amount of other gases (Atubi, 2015). Indoor air pollution causes about 95,500 premature deaths every year and it's the single largest contributor to negative health effects. Wood is the dominant fuels used for cooking accounting for 82% of the energy mix and only 2% of the rural households have access to electricity in Nigeria (UNEP, 2015). Also, studies, has revealed that over 50% of the rural dwellers in Nigeria, depends on other sources of electricity for lightening at night such as using lambs (locally called Atukpa or Mpanaka) and wooden sources which has caused high-level exposures to indoor pollutions. The effects of these have resulted to burning eyes and nose, itchy irritated throat and breathing problems, and so on.

(e) Wind speeds Although the wind may not be a direct cause of smog, it is an obvious fact that photochemical smog spread through the wind speeds. The results of this has led to an increasing spread of airborne diseases, especially in Nigeria. The wind speeds in Nigeria range from about 2 to 9.5 meter per second (m/s) based on recent data and the trend show that wind speeds are low in the south, west and accumulates relatively top speeds in the north. The reasons behind this are from the recent global changes in the climate conditions (relative humidity) and the increasing deforestations in Nigeria.The highest potential for wind energy harvest usually falls between February and July (wet season) and varies within locations such as Kaduna, Maiduguri, Ilorin, Mina, Nguru and Jos have an average annual wind speeds range of 5 to 9.47 m/s, and Lagos, Ondo, Oyo state have the range of 2.85 to 5.20 m/s. (Dehghani, 2006; Adaramola & Oyewola, 2011).

This shows that the wind speeds are calmer in the south, west, and eastern part of the country than in the northern region of Nigeria. Notwithstanding, the

spread of photochemical smog drastically increased and affected a countless number of lives in Nigeria. Other common causes of smog in Nigeria include plant burning, local lantern and stove smog, indoor and outdoor petrol-fueled generators, power plant, commercial motorcycle and tricycle, 'mosquito coil', incense burning, and so on. In recent years, the rural and urban areas have experienced these common causes of smog which may appear to be less harmful to human health. Studies has shown that these smog in most cities and villages in Nigeria states, especially Urban areas.

Effects of Smog in Lagos Methropolis, Nigeria

Air pollution is a major problem of recent decades, which has posed a serious problem of toxicological effects on human health and the environment. The source of pollution varies from a compact unit of cigarettes and natural resources such as volcanic activities to an enormous volume of emission from motor engines of automobiles, industrial activities; and other common smog, especially those caused by indoor air pollution. There is a recent record that show that about 4.3 million people die from household air pollution and 3.7 million from ambient air pollution, most of whom (3.3 and 2.6 million respectively) live in Asia and Africa-Nigeria (Robinson, 2005; Habre, Coull, Godbold, Gruin, & Nath, 2014; Ogundipe, 2018).

Studies have identified these kinds of dirty mists to influence the association in causing carcinogens (high susceptibility to cancer-causing substances or agents), eyes irritations, and respiratory distresses. It contributes both to morbidity and mortality; especially in susceptible groups such as young children, inflammatory reaction on the surface of the lung, asthmatics and those with chronic bronchitis and related conditions which has affected over 44-75 per million population and 16-27 per million population, based on WHO unit risk factor for benzene (exposed toxic liquid from petroleum) (Morris & Naumova, 1998; Atubi, 2015) Other effects includes:

Increased Road Accidents Part of what has contributed to road accident in Nigeria and other part of the world are the roads, riddled with potholes and poor traffic law enforcement agencies which has resulted to road traffic injuries as major causes of road accidents globally with a disproportionate number occurring in developing countries; 70 (22.7%) out of 308 (100%) road accidents leading to deaths that occurred in Benin city alone between 2002-2003 were

because of road traffic injuries and over 80% of the cars imported into Nigeria are fairly used cars prone to frequent break-downs and car fumes (Murray & Lopez, 1996; Nzegwu, Banjo, Akhiwu, Aligbe & Nzegwu, 2008).Notwithstanding, there is an association between smog and road accident, as it was earlier reported that the weather was so dense that people could not even see their feet across the street and it killed several people (See, Kumar, 2002; Deziel, 2017; Hare, 2002; Mohammadi, Cohen, Babazadeh & Rokni, 2012; Ogundipe, 2018). This means that driving in a smog environment could cause road accident frequently in Lagos.

Increased number of diseases Previous studies have shown that photochemical substances contribute to high susceptibility to cancer-causing substances, respiratory distress, some of whose progression has led to increased number of deaths; with about 7 million people (with 150 deaths per 100,000 Nigerian), 1 in 8 of the total global deaths. With a very high-risk disease-causing agent, air pollution is now the world's largest single environmental health risk and Nigeria is ranking 4th deadliest globally (Kumar, 2002; Patz, Githeko, McCarty, Hussein, Confalonieri, & de Wet, 2003; Nwaegbulam, Alao and Muanya, 2015: Ogundipe, 2018).

Smog as cause of death Nigeria is reported to have the highest maternal mortality in the world. It is also the countrythat has the highest burden of fatalities from air pollution in Africa, 4th globally with 150 deaths in 100,000 people attributed to air pollution. There is a silent rage of air pollution in Nigeria. Air pollution is choking the life out of Nigerians especial residents in urban city like Lagos. In several Nigeria big cities, people in hospitals with health problems such as chest pain, dry throat, nausea, aggravated respiratory diseases such as emphysema, bronchitis, lung damage, asthma and death. It turns out they have been exposed to the effects of poor air. Generator fumes contain a poisonous gas (CO) which is highly lethal. It killed a family of seven Lagos (Vanguard Newspaper, 2018).

This means that the increase in number of deaths today is more compared to statistics of previous years. Below are images of photochemical smog captured by various sources from areas in Lagos, Onitsha and Port Harcourt respectively, and some other areas such as Ibadan, Ogun, Kano and many other states in Nigeria seen as one area with the highest rates of smog and deaths in Nigeria.

Source:https://www.google.com/search?q=images+of+smog,+burning+in+the +roads+in+Nigeria,(Atc mask.com; Und ark.org; bbc.com).

Community Responses to Smog in Lagos Methropolis, Nigeria

High level of smog occurs more often on sunny, hot and humid days. Ground level ozone is invisible, but fine particles of nitrogen oxide give the brown, hazy appearance. When the Air Quality Integrity (AQI) index is forecast to be high enough so that health is at risk (AQI = 50) and combined with certain (i.e. high temperature), an air quality advisory is usually issued in order to response swiftly.The response in countries like the US, is to notify the staffs in charge, and strategically organize a plan to reduce ground-level ozone and fine particles and increase energy conservation. Choosing our community strategies of reroofing, minimizing the use of solvent and oil-based paints, facilitate carpooling and planting shade trees can affect substantial energy saving, directly and indirectly (Rosenfeld and Pomerantz, 1998; Ministry of Environment, Ontario, 2010).

The Nigeria story of responding to pollution is a sad one. Living and working in smog polluted area has become the "new normal" for residents of Lagos and other major cities in Nigeria. For instance, the woman frying garri to earn a living is putting her health at risk by inhaling smoke. She may eventually be down with a lung disease. The case of a widow was reported by Nigeria Health Watch in March 2020, who earn her living from frying garri, later began to struggle for breath and by the time she was rushed to the hospital was down with chronic obstructive pulmonary disease. She later died, living her two daughters she was struggling for behind.

In major cities like Lagos, Owerri, Porth court and Onitsha people burn tyres, bushes and refuses, slaughterhouse, scraps, non-functional computers and parts and rooting food; and these produce dangerous plumes of smoke filled with high level particulate matter. When this particulate matter is inhaled it diffuses in the blood according health experts to different tissues of the body and can lead to cancer. With over 21 million people residing in Lagos, Nigeria most populated city where roads are jammed parked with vehicles filling the air with auto-exhaust fumes. Diesel-and petrol-guzzling generators power everything from shop freezers, welding machine to internet transmitted substation. In Lagos, there are so many landfill fires which are sometimes used as smoldering spot, thus releasing polluted air into the neighborhood. Women involve in the business of smoking of fish stay put there, inhaling all the smokes and endangering their lives, and such practice takes place in thousands of homes and marketplaces (Cunningham, 2018).

Some concerned Nigerians started a campaign on social media called The Soot Campaign against the uncontrollable pollution which people are exposed to, that has surreptitiously become the "new normal." Investment in cleaner cooking condition, cleaner transport system, energy-efficient housing, power generation and better industrial waste management can help reduce the major causes of pollution. The Nigeria National Environmental Standard and Regulation Enforcement Agency (NESREA) regulates air quality in Nigeria through the national policy on environment (Nigeria Health Watch, 2020).

Specific Interventions

The exiting urban transport policy measure could not ensure minimal mobility and accessibility crisis, nor focused on sustainable transportation approaches that can meet the recent challenges in Nigeria's development. Therefore, environmental policy needs related significance and intensified without compromising the ability of the future generation in trying to meet their personal needs (Atubi, 2015). The following have the identified to further the solutions.

The policy behavior To ensure good coordination between transportation and land use, physical development, better regulatory interventions, designed an integration on land use and physical planning regulations and effective development control of various land uses (without exceptions from the

government agencies and religious organizations). The development guidelines should ensure redistribution of human activities and provision of guidelines for emerging urban settlement sprawling in all directions of the cities (Atubi & Onokala, 2004; Atubi, 2015). In this study, the policy behavior is a proposed agent of social control that regulates the activities of any public or private business or properties that encourages the appearance of photochemical smog.

Promoting clean smoke for industries machineries and automobile Although, there are several types of emission control technologies in use, not all of them are common. In developing countries (like Nigeria), only catalytic converters and fuel injection systems are common. Therefore, temperature rise and climate change because of industrial pollution require de-carbonization of the transport and industrial energy system using alternative fuels, such as electricity, hydrogen and biomass (Atubi, 2015; IPCC, 2007). Therefore, stakeholders in the health sector and security and environmental agents are advised to take part actively by bringing in their professional training to multi-dimensionally accept all important humanitarian effort of protecting human life from impeding catastrophe of photochemical smog in Nigeria.

Public awareness Public awareness is the level of understanding a group of people have about the importance and implication of a phenomenon. Inadequate information on photochemical smog and its effects on human health will influence and determine the health consequences they will encounter. Just like human services personnel (from government and non-government organization) used in industries help to maintain safety through education and other form of enlightenment, environmental agents should create public awareness through seminars, workshops, media channels, town hall meetings to engage the public on the effects and protective strategies to avoid incidence of photochemical smog on human life.

Environmental health agents such as medical and industrial social workers, sociologists in advocating for a conducive, healthy workplace environment, especially in those areas that will empower the public with basic knowledge on how to prevent the harmful smog.

Conclusion/Recommendation

The general welfare of common humans as they strive to perform their daily functions and meet their basic needs should also be a primary concern of the

social profession. Therefore, bringing relevant lifesaving information to the reach of the public, especially the less privileged and the less informed, is of significant concern to social scientists (sociologists, social workers, psychologists, etc.,). Regular awareness creation, continuous advocate for clean industrial smoke, and sympathetic policy responses are some common measures identified to make this happen. As it has been on record that there is an increase in recent occurrence of photochemical smog in society, which has deliberately affected the health of most residents in Nigeria. In Africa, countries like Nigeria, there have been derogatory conducts by industries, motorists, among others who take for granted the conditions and responses for human safety.

It becomes necessary for Nigeria government to enforce and monitor a provision of effective environmental safety agents at every sector in the society, especially those directed towards the control of smog hazards. Therefore, these approved agents should possess supervisory authorities to control and limit usage of objects or appliances that generate harmful smog from indoor and outdoor sources in society. There should be a proper awareness on how people should respond and behave in a smog environment. For instance, government should make compulsory and available safety gears and gadgets (like air oxygen, face mask etc., for filtering bad air) for workers in industries as part of the workers agreement criteria with the industries for effective performance especially in the smog prone environment. It is of great concern health practitioners bring relevant lifesaving information to the general population, necessary for protecting the public from smog health hazards.

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