ACTA SCIENTIFIC AGRICULTURE (ISSN: 2581-365X)

Volume 4 Issue 1 January 2020

Review Article

Air Pollution, Heat Island and Global Warming: An Urban Scenario

S Jeevananda Reddy*

Former Chief Technical Advisor, WMO/UN and Expert – FAO/UN, Fellow, Telangana Academy of Sciences, Convenor, Forum for a Sustainable Environment, India

***Corresponding Author:** S Jeevananda Reddy, Former Chief Technical Advisor, WMO/UN and Expert – FAO/UN, Fellow, Telangana Academy of Sciences, Convenor, Forum for a Sustainable Environment, India.

Received: November 18, 2019; **Published:** December 10, 2019

DOI: 10.31080/ASAG.2020.04.745

Abstract

In the last five years there has been a spurt in reports pertaining to air pollution, heat island and global warming and their impacts on human health and environmental disasters from several international agencies. All the three have natural components and human induced components. In urban areas several factors contribute to changes in temperature that includes both the natural and human induced factors. Air Pollution is the major contributor in this direction. The other important contributor is the urban heat island formation associated with the prevailing weather conditions at local and regional levels. The higher rise in temperature has been recorded in clear winter months with higher Pollutability condition of the atmosphere. They are all local variations. They are not part of the so-called global warming. Global warming is not an urban issue. Health is the major casualty in urban areas with the Air Pollution and Urban Heat Islands formation. However, they are localized and not regionalized/globalized. Air pollution does not contribute to global warming as it is not cumulative like carbon dioxide over years/decades, etc.

Keywords: Air Pollution; Urban Heat Island; Global Warming; Climate Change; Pollutability; Human Health; Environmental Disasters

Introduction

Science has empowered humankind with the knowledge and secrets of universe and the role human beings can play towards ensuring sustainable Planet, the "Earth" and ensuring a healthy and happy life within one's life span and transferring the pro planet growth systems and strategies to the future generations. Playing with the nature is like scratching the head with the fire. Yet we need development to meet the needs of non-linearly increasing population. But this development must meet the basic needs of people today without ruining the chances of future generations to do the same that comes under sustainable development. Under rapidly changing innovative technologies and consequent changes in the lifestyle under globalization scenarios, which is profit driven is leading to, unfortunately, unsustainable path. This scenario has been resulted numerous environmental problems which humankind has been facing.

As part of 67th Independent Day address to the Nation our Respected President of India Shri. Pranab Mukherjee put fine word of "inclusive growth" but what is happening is selective growth. Under globalization scenario 25% of the population of the world including India consumes 75% of its natural resources annually. Unfortunately, world over sustainable growth or development in itself is not a political theory but it has been recognized that without political mind set change, sustainable growth or development is a mirage. Thus, pollution has become a part and parcel of growth and development. Pollution impacts environment directly and indirectly. Humans are part of environment. The presence of pollution in the environment causes numerous problems based on the type of the pollution and place of occurrence of such pollution directly and indirectly.

In the last few years the print and electronic media has been flooding with "Fake News" reports pertaining to air pollution, heat island and global warming and consequent impacts on human health and environmental destruction. This spurt has a link with US Government announcement to withdraw from the Paris Agreement signed in December 2015 by UN under COP21. The survival of this agreement depends up on the countries coming forward to contribute to $500 billion towards Green Fund that is going to be shared by the countries who signed the agreement as part of "global warming and carbon credit". The basic question is how realistic is the agreement is a different issue? In fact Pope Francis, US President and UN Secretary General put forth the concept of pollution but the multinational companies who are primarily responsible for causing pollution, a profit driven activity, lobbied not to include pollution aspects in the Paris Agreement Final Document. They were successful as the agreement put forth one point agenda of 1.5oC temperature limit and to achieve this goal need to collect $500 billion as Green Fund. Also the pollution aspect was moulded by saying carbon dioxide as pollution, which is not true.

Thus, the three components of urban air pollution (?) have natural component in built in nature/environment and human-induced components associated with human greed. However, all the three were linked to human health.

Air pollution

Air pollution (Figure 1) refers to the release of pollutants into the air that are detrimental to human health and the planet as a whole. The Clean Air Act authorizes the nations to protect public health by regulating the emissions of these harmful air pollutants. This was come in to force after 1972 Stockholm Summit Agreement. The session was chaired by Late Smt. Indira Gandhi, the then Prime Minister of India. In 1974 Water Act has come in to operation and pollution control boards were established to implement them. In 1981 Air Act has come in to operation. In 1986 comprehensive Environmental Act was introduced and prepared procedures for operation but the departments and ministries at the State and Centre levels failed miserably in implementing them. Even the courts directions were put in to dust bins.

Figure 1: Air pollution scenario from an industry.

The two most prevalent types of air pollution are "smog", or "ground-level ozone", as it is more wonkily called, occurs when emissions from combusting fossil fuels react with sunlight; and "soot", or "particulate matter", is made up of tiny particles of chemicals, soil, smoke, dust, or allergens, in the form of gas or solids that are carried in the air. The sources of smog and soot are similar. "Both come from cars and trucks, factories, power plants, incinerators, engines—anything that combusts fossil fuels such as coal, gas, or natural gas. The tiniest airborne particles in soot—whether they're in the form of gas or solids—are especially dangerous because they can penetrate the lungs and bloodstream and worsen bronchitis, lead to heart attacks, and even hasten death. Smog can irritate the eyes and throat and also damage the lungs—especially of people who work or exercise outside, children, and senior citizens. It's even worse for people who have asthma or allergies—these extra pollutants only intensify their symptoms and can trigger asthma attacks.

These are either deadly or have severe health risks even in small amounts. Almost 200 are regulated by law; some of the most common are mercury, lead, dioxins, and benzene. "These are also most often emitted during gas or coal combustion, incinerating, or in the case of benzene, found in gasoline. Benzene, classified as a carcinogen, can cause eye, skin, and lung irritation in the short term and blood disorders in the long term. Dioxins, more typically found in food but also present in small amounts in the air, can affect the liver in the short term and harm the immune, nervous, and endocrine systems, as well as reproductive functions. Lead in large amounts can damage children's brains and kidneys, and even in small amounts it can affect children's IQ and ability to learn. Mercury affects the central nervous system. However, some of these were brought down drastically with vehicle technologies and thus fuel technologies. However these are counteracted by human greed related fuel adulteration with kerosene and other substances; open burning of domestic waste, plastic wastes and crop residue; poor town planning [narrow roads, poor quality roads, cutting of trees, and destruction of water bodies]. With these added another component, namely dust.

Polycyclic aromatic hydrocarbons, or PAHs, are toxic components of traffic exhaust and wildfire smoke. In large amounts, they have been linked to eye and lung irritation, blood and liver issues, and even cancer. In one recent study, the children of mothers who'd had higher PAH exposure during pregnancy had slower brain processing speeds and worse symptoms of ADHD.

The less gasoline we burn, the better we're doing to reduce air pollution. Make good choices about transportation. When you can, walk, ride a bike, or take public transportation. For driving, choose cars that get better miles per gallon of gas or choose an electric car. You can also investigate your power provider options—you may be able to request that your electricity be supplied by wind or solar. Buying your food locally cuts down on the fossil fuels burned in trucking or flying food in from across the country. And perhaps most important is Support leaders who push for clean air and water.

However in urban areas all these are countered by human greed actions. Here the good governance plays the key role. Judiciary only serve the lip sympathy with no powers to implement. For example the Hon'ble Supreme Court order dated 14th August 2003 has directed Union of India and the states of Maharashtra, Andhra Pradesh, Gujarat, UP, Karnataka and Tamil Nadu to draw a plan for lowering the rate of RSPM level in the cities of Sholapur, Hyderabad, Ahmedabad, Lucknow, Kanpur, Bangalore and Chennai respectively. Also court appointed a committee review the progress in the action plan. But this order put in to the cupboard. The AP government in its action pan said that "Issue of necessary amendment of Motor Vehicles Act to Apprehend and penalise the use of adulterated fuel in vehicles with effect from January 2004". With the steep hike in petrol and diesel prices, the kerosene sold under PDS entered in to adulteration process that provides huge profit that practically countered the vehicle and fuel technology benefits. The central government announced increase in kerosene supply.

With bulging of urban areas unmanageable waste has been started burning openly along with hut dwellers using wood for water heating and cooking. In some parts of India, crop residues are burnt in winter months causing severe pollution in the downwind areas, like in Delhi from Punjab and Haryana. That is additional pollution is caused by: Garbage/wood burning, Adulterated fuel use, Construction dust, Narrow roads, Poor town planning-high rise buildings, Use of old vehicles, etc. Let me present my recent mail to police department on some of these with no response or acknowledgment.

Ground realities

I am an environmentalist working on water bodies, pollution and traffic related issues for the last two decades. When CV Anand was CP/Cyberabad, they wanted to adapt Osmansagar and Himayatsagar and presented a big plan to develop around these lakes. I brought to his notice the real dangers with that project. He was convinced and withdrew from the project. This year under heavy rains the inflows are practically nil in to the two drinking water lakes Himayatsagar and Osmansagar with uncontrolled illegal activities. This shows the state of affairs in Hyderabad and its surroundings. Government and government departments forget the fact on what we read in school books "Health is Wealth" but looking for "Wealth" at the cost of "Health".

Governments turned festivals as money spinning activities for the businessmen and government departments at the cost of environment and vulnerable people from all walks of life. Vinayak Chathurdhi runs into thousands of crores business. It not only causes air, noise and water pollution but also reducing the water holding capacity of water bodies that help in causing Urban Floods and thus traffic vows. Also, this makes city filthy and roads unusable.

Dipawali is another festival causes air and noise pollution – instant high pollution levels cause severe health hazards for children and aged people. Though at huge burden on vehicle users governments introduced vehicle and fuel technologies to bring down pollution per vehicle more particularly SO_2 levels; but on Dipawali day SO_2 goes up beyond 1000%; NOx goes beyond 200%; RSPM goes beyond 60% over the base values. Business houses talk like "it is one day affair why you environmentalists make hue and cry"? They mint money so they make such statements and government departments go hand in hand with such people.

Here nobody bothered to implement Court directions. They make hue and cry only when something goes wrong. In all those police department is a mute spectator!!!

Traffic police are eager to book somebody for traffic related violations. Also government makes rules every now and then in that direction under the some pretext and at the same time government create avenues to commit such offenses'.

One of the major issues is drunk and drives and drug addiction. When the government for profit running liquor shops with facilities like bars [legal and illegal] even along the main busy roads; and converting water bodies surroundings under the disguise of beatification as addas for anti-social activities that includes drugs, police department acts as mute spectator. This way government is corrupting younger generations to meet their selfish interests. Then, why police department is so much enthusiastic to book such people. Why not book the concerned government departments who were behind such issues and ask the government stop those.

In 2000, APPCB/Transport Department issued a GO to stop vehicles older than 15 years flying on the city roads, bureaucrats got it withdrawn as most of the vehicles used by government departments come under that!!! Police look at PUC but rarely look at adulterated fuel sale [domestic waste is burnt all around the urban sprawl] even though government submitted under action plan to Supreme Court in 2003 they will stop this menace by December 2004. Adulterated fuel use and open burning of garbage raised the pollution levels by 30-50%. The air pollution problem aggravates in winter with the urban heat-island effect. Few suggestions to reduced traffic snarls:

- The main problems in the traffic have been created by police department only. For example, suddenly every now and then change the traffic flow, for example in Begumpet - Metro Office stretch. This in fact instead making smooth flow creating congestion as two lanes traffic merge at one point with criss-cross. Criss-crossed at merging create more problems – some go on to the bridge and others may not.

- The other important issue is in non-commercial and residential areas running commercial activities. This not only causes traffic problems but also pollution problems. Look at for example Film Nagar. It is filthy, parking and shops on either side of the narrow roads. In fact government allocated lands for building houses and provided lands for studies under 33 year lease [some sold them]. Yet they are destroying the privacy in the neighbouring Jubilee Hills through "commercial activities" such as film suiting, TV serials suiting, establishment of film offices, etc. through unlimited number of vehicles haphazard parking on roads and on footpaths in lanes and bye-lanes causing innumerable hardships to residents. Sometimes there won't be a way to go out for the residents in emergency cases also. In my own case [we are senior citizens] I brought to the notice of Police Department but nothing happened. Things are going as usual.

- Police depart permits the film suiting on already congested main roads with heavy traffic, for example Road no. 78 of Jubilee Hills, – traffic police put a board 35 kmph --, and thus parking in bye-lanes creating nuisance to residents.

- Also establishing offices in rented houses with huge traffic causing inconvenient to residents. People who are renting houses and purchase cars rarely think whether they have sufficient parking place in their houses or not. Many think with poor ethics footpaths/roads are meant for parking.

- The main roads footpaths are used for running food stalls and other venders. This is creating the problem for pedestrian movement. People coming to those venders park their vehicles on the roads/footpaths. Let the government identify some piece of land for such people without obstruction smooth flow of vehicles and pedestrian users. A classic case is Road No. 80 of JBH.

Appeal: Please do something on such issues. Though I made the reference of Film Nagar, it is also true in high tech city zone or any other part of Cyberabad.

Urban heat island

Metropolitan areas around the globe irrespective of developed or developing nations are growing at unprecedented rates, creating extensive urban landscapes with more than 30% of population living in urban areas in which around the same percentage living in huts. Many of the farmlands, wetlands, forests, and deserts have been transformed during the past 150 years in to human settlements, known as "concrete jungle". Almost everyone has seen these changes to their local environment but without a clear understanding of their impacts on environment and life forms. It is not until we study these landscapes from a spatial and temporal perspective that we can measure the changes that have occurred and predict the impact of changes to come [1,2].

Most major metropolitan areas face the growing problems of urban sprawl, loss of natural vegetation and open spaces as well water bodies and converting these into concrete structures in both horizontal-vertical spectrum with roads. Kenneth Chang presented a report in New York Times, which was reproduced by San Jose Mercury News on August 22, 2000 "Urbanites feel the heat when cities replace trees and greenery with buildings and blacktop". Luke Howard, an amateur meteorologist in England, first recorded the heat-island effect more than 200 years ago. Beginning in 1807, he started comparing temperatures from several sites within London with those measured a few miles beyond the city's edge, and through the years, he noticed that the city was consistently warmer. Thus, Howard wrote in his book, "The Climate of London", in 1818, "Under the varying circumstances of different sites, different instruments, and different positions of the latter, we find London always warmer than the country, the average excess of its temperature being 1.579 degrees". Today, the effect is more noticeable. In the largest cities, average temperature can range 5 to 10 degrees Fahrenheit hotter than surrounding areas. However, urban Air Pollution in the presence existing weather condition plays major role in the rise of temperature at ground and air.

These relate to two principal components, namely Pollutability that is defined based on the prevailing weather conditions and Pollution expressed in terms of concentration. Air pollution affects atmospheric properties in a variety of ways. Pollutants interfere with human activity by their intensity and residence times which are a function of the meteorological parameters responsible for the transport and diffusion in the lower layers of the atmosphere. Generally low wind speed and temperature inversions associated with high rate of emission of pollutants results in adverse conditions. Raman., et al. [3] and Padmanabhamurthy and Reddy [4] suggested a Pollutability index as a measure of the transport and diffusion of pollutants in the atmosphere. The Pollutability index was defined in terms of atmospheric stability and wind speed. In India persistent heavy rains and strong winds during the Southwest Monsoon months, June to September, help washout pollution except in Tamil Nadu and extreme south coastal Andhra Pradesh. From March to May the convective turbulence in most parts of the country rapidly disperses the pollutants. Therefore, from the meteorological stand point October through March (clear/winter months) could be a favourable period for high pollution potential. Area north of 18 degrees latitudes the maximum frequency of stable layers in association with low winds varied from 80-100% from October to March. Stable air where temperature increases with height is conducive for formation of pollution layer – mixing depth. As the height of inversion base affect smog density ordinarily, the lower the base, the worst the smog.

Figure 2 presents the horizontal cross section of heat-island day and night temperature profiles at the surface and in the air. That is, the heat-island effect is not only felt at surface of the Earth but also in the air above the ground. Atmospheric urban heat islands are often weak during the late morning and throughout the day and become more pronounced after sunset due to the slow release of heat from urban infrastructure. Surface urban heat islands are typically present day and night, but tend to be stronger during the day when the Sun is shining. The temperature difference usually is largest at night than during the day, larger in winter than in summer, most apparent when winds are weak".

Figure 2: Horizontal cross section of Heat-island "day and night" temperature profiles at "Surface level and above the surface level" in the atmosphere.

Reddy and Jayanthi [5] observed that "Percentage depletion in the total solar radiation is a measure of Air Pollution concentration. The effect of pollution over the alteration in radiation is appreciable in winter and summer seasons and least in monsoon season. It is also seen that the particulate matter present in the atmosphere reduces the incoming shortwave solar radiation and outgoing longwave radiation and increases the net radiation balance at the surface. This increase in net radiation counteracts to compensate the decrease in net radiation due to reduction of total solar radiation by particulate matter in the atmosphere". However, during the night the net radiation increases as no counteraction by incoming radiation component.

The winter and night temperatures go up with height depending upon the Pollutability and pollution concentration in the below the mixing depth/inversion point. Thus, urban heat island effect on temperature increases night temperatures, more in winter months. This is more felt in north Indian latitudes with low winds. Also this is influences by cold waves prevailing in that zone. The pollution might be in-situ sources or from ex-situ sources. In cities like Delhi, the latter is playing critical role in increasing the pollution condition. In 1969 February I visited Delhi to attend UPSC interview. I found Delhites using night worming pots in which coal is burned and causing pollution. With this in the early morning hours the visibility was very low. You cannot see a person standing in front of you. Now this is replaced by heating with electricity.

We rarely look at the weather factor while dealing with air pollution. Because of this, with the same pollution levels, weather condition changes the pollution impact.

Global warming

The term "global warming" is a misnomer. The observed temperature is influenced by several localized/regionalized/nationalized factors. Pro-global warming groups around the world including UN Agencies are shy of using the word "global warming" instead use the word "climate change", which is a vast subject in which climate change [1,6] was there in the past, is there now and will be there in future and needs developing adaptive measures. Global warming rhetoric is nothing more than a cover for wealth redistribution. With the entry of global warming, the study of the science of climate and climate change took back seat and thus people are suffering and nations are wasting public money.

United Nations Secretary General, Ban Ki-Moon and U.S. Environmental Protection Authority Administrator Gina McCarthy assertions on climate change and its impacts [here climate change means global warming and carbon credits only] countered through (a) an open letter signed by 125 scientists [I am one of the three from India in this list] dated November 29, 2012 addressed to the Secretary General of United Nations saying that the current scientific knowledge does not substantiate Ban Ki-Moon assertions on weather and climate; and (b) an article by Tom Harris "Nine experts slam EPA Administrator Gina McCarthy's 'clean power plant' speech" published in PJMedia, August 26, 2015. I am one of the nine. Tom Harris in an article titled "Reconsidering climate change", published in World Commerce Review, March 2015 observed that "climate sceptics include many of the world's most qualified scientists – ignoring them is causing disaster for the world's most vulnerable people". Mediocre are enjoying the patronage of IPCC/UN in writing reports.

Oxford Dictionary defines global warming as "a gradual increase in the overall temperature of the Earth's atmosphere generally attributed to the greenhouse effect caused by increased levels of carbon dioxide, chlorofluorocarbons', and other pollutants". This means, by trapping the Earth's heat in the atmosphere, greenhouse gases lead to warmer temperatures and all the hallmarks of global warming: rising sea levels, more extreme weather, heat-related deaths, and increasing transmission of infectious diseases like Lyme.

Carbon dioxide (CO_2) was responsible for 81 percent of the country's total greenhouse gas emissions. It is not pollution in real terms. We inhale air from the atmosphere. We use oxygen (O2) and release CO_2. Plants take CO_2 and release O_2. In these two systems, if there is any imbalance, O_2 availability will be severely affected. Methane (CH_4) made up 11 percent. CO_2 comes from combusting fossil fuels, and methane comes from natural and industrial sources, including the large amounts that are released during oil and gas drilling. We emit far larger amounts of CO_2, but CH4 is significantly more potent, so it's also very destructive. However CO_2 has a longer life in the atmosphere and CH_4 has shorter life in the atmosphere. CH_4 can be used in power production. Another class of greenhouse gases, hydrofluorocarbons (HFCs), are thousands of times more powerful than CO_2 in their ability to trap heat. In October 2016, more than 140 countries reached an agreement to reduce the use of these chemicals—which are used in air conditioners and refrigerators—and find greener alternatives over time.

Imbalance in Carbon Dioxide data with space and time

To understand the global warming the two main inputs are Temperature and CO_2. The factor that accounts the greenhouse effect, known as "climate sensitivity factor" was 1.95 in IPCC's AR4 of 2007 and 1.55 in AR5 of 2013. That shows that they are merely employing trial and error, and not following the physical process path to integrate them. Total fossil fuel consumption, which is identified as the main source of the observed CO_2 increase, in Southern Hemisphere [SH] and Northern Hemispheres [NH]. The projections for the year 2000 compared with those of 1960 indicate that consumption will have more than quadrupled in the SH (1.6 to 8.30 Gegatons), while that in the NH will have more than doubled (10.20 to 22.90 Gegatons) in relative terms; but in magnitude the NH consumes several times more over the SH. From the WMO Fact Sheet No. 4 (August 1989), it is clear that very few stations are measuring changing composition of the atmosphere, including the increases of greenhouse gases [CO_2 (45 stations), CH4 (5 stations), N_2O, tropospheric O_3 (22 stations), CFCs (7 stations)] especially in tropics (by that time no data) and the SH (by that time only three sites). With such data sets, presenting un-believably smooth curve [Figure 3 – the data prior to 1960 was estimated through indirect methods (Source: Siegen Thaler and Oeschger, Tellus, 398: 140-154, 1987)], scientists are filling the literature with highly hypothetical inferences. This also presents high seasonal variation.

Imbalance in temperature data with space and time

Figure 4 presents the year-wise change in number of met stations and length of station record. Both the parameters present high variations. In the case of met network, initially increased the number gradually but with satellite data measurements the ground based met stations started gradually decreasing. Based on such data several organizations built data series with following differ-

Figure 3: Atmospheric Carbon Dioxide increase in the past 200 years.

ent data adjustments. Same was the case with the satellites data series built by different organizations. Initially the satellite data series were lower than ground based data series, which showed no increasing trend [1]. This was put on the net. However, this was removed from the net and the data was adjusted to fit with ground data series. The ground based adjusted data series showed 0.3oC per century of global warming and superposed on the trend a 60-year cycle of natural variation changing between -0.3 and +0.3oC. However the raw temperature data series of USA showed no trend but natural variability pattern (Figure 5). This figure includes both raw and adjusted data patterns. The raw data showed no trend but adjusted data showed a trend as the initial data was lowered.

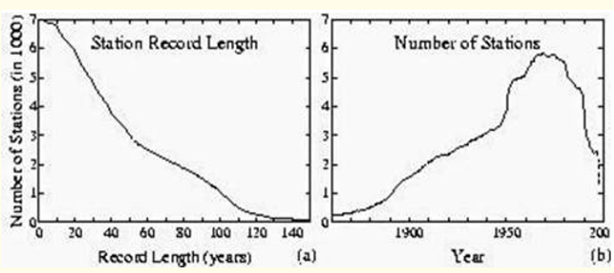

Figure 4: Number of stations and length of station record.

Figure 5: Measured and reported temperature.

India Meteorological Department brought out a meteorological monograph on "State level climate change trends in India". The report used 280 met stations data and 1451 rain-gauge stations data out of 500 and 2500 stations respectively for 48 years [1951-2010] that forms the so-called global warming period. Annual mean temperature trend was zero in major part of central India. Even in other parts, some showed positive [increasing] trend and some others showed negative [decreasing] trend. Reddy (2016) presented such studies over different parts of the globe. That means there is no uniformity in temperature change with space and time. The average of such data, we say global warming. Here another flaw is the network of met stations and period of data are highly variable with space and time. So, based on the manipulated-adjusted data series warmist groups claim there is global warming. Based on their forecasts scientific groups around the world have been trying to present thousands of papers in each year with no verification with ground realities. We must remember the fact that the Climate System (Figure 6) and General Circulation Patterns (Figure 7) play major role on local and regional temperatures.

Figure 6: Climate system.

Figure 7: General Circulation patterns.

Effects of pollution on human health

Air pollution can cause death, impairment of health, reduce visibility, bring about vast economic losses and contribute to the general deterioration. It can also cause intangible losses to historical monuments. Minor symptoms include headaches, mucosal irrita-

tion (eye, nose, throat or respiratory discomfort). Severe reaction can include nausea or asphyxiation and prolong exposure can lead to various system effects of toxic poisoning or to cancer of the lungs or other organs. They are Odour nuisance, Increase in mortality rate, Increase in mobility rate, Asthmatic attack, Bronchitis, Cardio vascular diseases, Pulmonary diseases, Furosis, Motting of fat and Silocosis, asbestosis. In urban areas pollution under heat-island based rise in temperature at surface and air, these health hazards are aggravated.

WHO report on "Air pollution and child health: prescribing clean air" in 2018 summarizes the latest scientific knowledge on the links between exposure to air pollution and adverse health effects in children. It is intended to inform and motivate individual and collective action by health care professionals to prevent damage to children's health from exposure to air pollution. Air pollution is a major environmental health threat. Exposure to fine particles in both the ambient environment and in the household causes about seven million premature deaths each year. Ambient air pollution (AAP) alone imposes enormous costs on the global economy, amounting to more than US$ 5 trillion in total welfare losses in 2013.

This public health crisis is receiving more attention, but one critical aspect is often overlooked: how air pollution affects children in uniquely damaging ways. Recent data released by the World Health Organization (WHO) show that air pollution has a vast and terrible impact on child health and survival. Globally, 93% of all children live in environments with air pollution levels above the WHO guidelines. More than one in every four deaths of children fewer than 5 years is directly or indirectly related to environmental risks. Both AAP and household air pollution (HAP) contribute to respiratory tract infections that resulted in 543 000 deaths in children under 5 years in 2016.

Although air pollution is a global problem but it is local in nature. So, the burden of disease attributable to particulate matter in air is heaviest in low- and middle-income countries (LMICs), particularly in the WHO African, South-East Asia, Eastern Mediterranean and Western Pacific regions. LMICs in these regions – especially the African Region – have the highest levels of exposure to HAP due to the widespread use of polluting fuels and technologies for basic daily needs, such as cooking, heating and lighting. Poverty is correlated with high exposure to environmental health risks. Poverty can also compound the damaging health effects of air pollution, by limiting access to information, treatment and other health care resources.

Children are society's future. But they are also its most vulnerable members. The immense threat posed to their health by air pollution demands that health professionals respond with focused, urgent action. Although more rigorous research into how air pollution affects children's health will continue to be valuable, there is already ample evidence to justify strong, swift action to prevent the damage it clearly produces. Health professionals must come together to address this threat as a priority, through collective, coordinated efforts. For the millions of children exposed to polluted-air every day, there is little time to waste and so much to be gained instead of wasting billions and trillions of US$ wasting on non-entities like global warming, a misnomer. In urban areas pollution triggers more hazards through directly and indirectly through urban heat-island.

All UN agencies talk and present reports on such issues but in reality no tangible action by these agencies and governments. In fact in India brought out a Food Security Bill in 2013 but this was not implemented in true spirit either by the states or by the centre. Because of this India was put at the bottom end of 102 out of 117 countries. Also, governments have been encouraging corporatization of health care and wasting public money. In fact these issues were dealt in a book by Stan Cox titled "Sick Planet: Corporate Food and Medicine". No government is looking at controlling but looking at post-mortem. This is bad system. This is global system [7-11].

Conclusion

The main problems are bulging of urban areas and unabated population growth and thus the solution lies in the controlling of urban and population growth. Controlling the population was a prime agenda in 80s in India. With caste based politics-reservations this took back seat. At the current rate, 80 million people are added to global population every year — that's about 200,000 every day Scientists say population must be stabilised and reduced overtime to bring depleting resources and environmental damage under control. Dropping global fertility rates, though, show promise for population control. However with population growth, the human greed increased the levels of pollution in urban areas with poor governance. For example, globally to bring down the pollution from vehicular traffic introduced new technologies in terms of vehicles and in terms of fuels such as URO-1, URO-II, ---/Bharat –I, Bharat-II, --. However, to counteract this people started adulterating fuel, burning domestic waste in situ and ex-situ burning of crop residues, etc. Air pollution plays multiple roles in urban areas, such as increasing urban heat. Heat and Air Pollution play important role on human health and environment. This varies with space and time based on several localized factors in terms of weather-climate system-general circulation patterns; coast-inland-hill conditions, etc.

Carbon Dioxide is used as the main component of greenhouse gases that cause the so-called global warming over and above the natural greenhouse effect and referred it as pollution. Carbon Dioxide is a non-toxic, odourless, invisible gas essential to plant photosynthesis. It is no more pollution than water vapour, by far the principal greenhouse gas in the atmosphere. We inhale air and use oxygen and release carbon dioxide; while plants take carbon dioxide and release oxygen. They complement each other. Any imbalance in these processes reduces the availability of oxygen in the atmosphere. New technological innovations have been introducing this imbalance through air pollution, a principal component

of technology. The air pollution also form the part of heat island effect, a component of human induced trend in temperature rise that increases the temperature at ground and in the air. This in turn consumes more power to bring down heat in indoors, a vicious circle. Though the air pollution is also attributed to cause global warming, it being short lived in the atmosphere and highly variable with seasons-years-location has no real impact as global warming is said to follow long term trend. Even the carbon dioxide is highly variable with space and time and thus not a global. Local factors have significant role in local temperature. They are climate system and general circulation patterns and superposed over it the natural variability in temperature and rainfall. All these are local and regional specific. Air Pollution has no cumulative impact as it cannot accumulate like carbon dioxide.

Bibliography

1. Reddy SJ. "Climate Change: Myths and Realities". www.scribd.com/Google Books (2008): 269.
2. Reddy SJ. "Climate Change: Myths and Realities [Annexure-I: Weather Aberrations Perspective of Dry-land Agriculture in Andhra Pradesh]". www.scribd.com/Google Books (2010): 114.
3. Raman CRV., *et al*. "A rational pollutability classification of India". Meteorological Office, Poona (1974).
4. Padmanabhamurthy B and Reddy SJ. "Pollution cycles and some environmental parameters". Meteorological Office, Poona (1974).
5. Reddy SJ and Jayanthi S. "Effect of air pollution on radiation and human comfort over six Indian stations". *Indian Journal of Meteorology and Geophysics* 25 (1974): 441-444.
6. Reddy SJ. "Climate Change and its Impacts: Ground Realities". BSPublications, Hyderabad (2016): 276.
7. Reddy SJ. "Effective pollution potential over ten Indian stations". *Indian Journal of Meteorology and Geophysics* 25.3-4:445-448.
8. Raman CRV., *et al.* "Meteorological control in pollution abatement". Meteorological Office, Poona (1974).
9. Reddy SJ. "Role of Climate Change on Recent Weather Disasters". *Acta Scientific Agriculture* 2.4 (2018): 22-29.
10. Reddy SJ. "Comments on IPCC's 24th September 2019 Report on "The Oceans and Cryosphere in a changing Climate: Summary for Policy Makers". *Acta Scientific Agriculture* 311 (2019): 16-19.
11. Reddy SJ. "Agroclimatic/Agrometeorological Techniques: As applicable to dry-land agriculture in developing countries". [2nd Edition], Brillion Publishing, New Delhi (2019): 372.

Volume 4 Issue 1 January 2020