

A Review on Motor Vehicle Pollution And Its Impact on Environment

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Abstract- *The air we breathe is a mixture of gases and particulate solid and liquid matter. Some of these substances come from natural sources while others are caused by human activities such as our use of motor vehicles, domestic activities, industries and businesses. Air pollution occurs when the air contains substances in quantities that could harm the comfort or health of humans and animals, damage plants and materials. The study investigates the concentrations of CO, NO and HC arising mainly from the activities of motor vehicles on the ambient air. The present article is neither a systematic review nor a descriptive, educational study. It is a problem-based descriptive review in which the authors try to explain a problem which is the major health and ecological problem in developing countries. In this review, we have tried to summarize the toxicology of air pollutants caused by motor vehicles and related diseases with a possible mechanism of action and appropriate management of the patients. Therefore, it shall be useful for the environmental and health professionals particularly policy makers, emergency physicians, and other clinicians who may be involved in air pollution and related diseases.*

Keywords- Environment, Pollution, Sources, Impacts, Controlling of Pollution and Moto Act.

I. POLLUTION ON ENVIRONMENT

Pollution needs to be dramatically reduced because it is destroying the environment we live in, contaminating our food and water, causing diseases and cancers in humans and wildlife, and destroying the air we breathe and the atmosphere that protects us from harmful ultra-violet radiation. Environmental pollution is currently the biggest challenge facing the world today. In the United States 40% of rivers and 46% of lakes are too polluted for fishing, swimming, and aquatic life. Not surprising though when 1.2 trillion gallons of untreated storm water, industrial waste, and untreated sewage are being discharge annually into American waters. One-third of the topsoil in the world is already degraded, and with the current rate of soil degradation caused by improper agricultural and industrial practices, and deforestation, most of the world's topsoil could be gone within the next 60 years.

The Great Smog in 1952 killed 8000 people in London. This event was caused by a period of cold weather combined with windless conditions that formed a dense layer of airborne pollutants, mostly from coal plants, over the city. There are many sources of pollution and each one has its own effect on the environment and living organisms. This article will discuss the causes and effects of the different kind of pollution. Car pollution is one of the major causes of global warming. Cars and trucks emit carbon dioxide and other greenhouse gases, which contribute one-fifth of the United States' total global warming pollution. Greenhouse gases trap heat in the atmosphere, which causes worldwide temperatures to rise.

II. SOURCES OF MOTOR VEHICLE POLLUTION

Our personal transportation choices have a huge impact on air quality. What we drive and how we drive impacts the environment. Motor vehicles give off more than half of all carbon monoxide and hydrocarbon emissions in Minnesota. These emissions, including microscopic particles, can contribute to breathing and heart problems along with an elevated risk of cancer. The following are the major pollutants from motor vehicles, Particulate matter (PM). One type of particulate matter is the soot seen in vehicle exhaust, Volatile Organic Compounds (VOCs), Nitrogen oxides, Carbon monoxide (CO) and Sulphur dioxide (SO₂). The large majority of today's cars and trucks travel by using internal combustion engines that burn gasoline or other fossil fuels. The process of burning gasoline to power cars and trucks contributes to air pollution by releasing a variety of emissions into the atmosphere. Emissions that are released directly into the atmosphere from the tailpipes of cars and trucks are the primary source of vehicular pollution. But motor vehicles also pollute the air during the processes of manufacturing, refueling, and from the emissions associated with oil refining and distribution of the fuel they burn. While new cars and light trucks emit about 90 percent fewer pollutants than they did three decades ago, total annual vehicle-miles driven have increased by more than 140 percent since 1970 and are expected to increase another 25 percent by 2010. Carbon monoxide (CO) This odorless, colorless gas is

formed by the combustion of fossil fuels such as gasoline. Cars and trucks are the source of nearly two-thirds of this pollutant. When inhaled, CO blocks the transport of oxygen to the brain, heart, and other vital organs in the human body. Newborn children and people with chronic illnesses are especially susceptible to the effects of CO. Sulfur dioxide Motor vehicles create this pollutant by burning sulfur-containing fuels, especially diesel. It can react in the atmosphere to form fine particles and can pose a health risk to young children and asthmatics.



Cars, trucks and buses produce air pollution throughout their life cycle, including pollution emitted during vehicle operation and fuel production. Additional emissions are associated with refining and distribution of fuels and to a lesser extent, manufacturing and disposal of the vehicle.

III. CLASSIFICATION OF MOTOR VEHICLES AND ITS POLLUTION LEVELS

Light vehicles: Light vehicles are motor vehicles, other than heavy vehicles as defined below, with or without a trailer, and include motorcycles, motor tricycles and motor cars. **Medium heavy vehicles:** Medium heavy vehicles are heavy vehicles, as defined below, with two axles. **Large heavy vehicles:** Large heavy vehicles are heavy vehicles, as defined below, with three or four axles. **Extra large heavy vehicles:** Extra large heavy vehicles are heavy vehicles, as defined below, with five or more axles. **Axel** means a device or set of devices, whether continuous across the width of the vehicle or not, around which the wheels of the vehicle rotate and which is so placed that, when the vehicle is travelling straight ahead, the vertical centre-lines of such wheels are in one vertical plane at right angles to the longitudinal centre-line of such vehicle. **Axel** shall also include an axle that is lifted and of which the wheels are not in contact with the road surface. **Axel** means an axle the wheels of which are fitted with of a size (bead seat diameter) greater than 406,6mm or an

axle with more than two (2) wheels irrespective of size, but excluding any axle of a motorcycle, a motor tricycle or a motor car. **Heavy vehicle** means a motor vehicle with at least one heavy axle and/or any vehicle which is principally designed or adapted for the conveyance of persons exceeding sixteen in number. **Light delivery vehicle** means a motor vehicle designed or adapted for the conveyance of persons and freight with no heavy axle. **Light vehicle** means a motor vehicle, other than a heavy vehicle. **Motor car** means a motor vehicle, other than a motorcycle or a motor tricycle, designed or adapted solely or principally for the conveyance of persons not exceeding sixteen in number, but excluding any vehicle with an axle with more than two wheels irrespective of size. **Motor cycle** means a motor vehicle that has two wheels and includes any such vehicle having a side-car attached thereto. **Motor cycle** means a motor vehicle, other than a motorcycle with a side-car, which has three wheels and which is designed to be driven by means of the type of controls usually fitted to a motorcycle.

IV. IMPACTS OF MOTOR VEHICLE POLLUTION ON HUMANS

The health risks of air pollution are extremely serious. Poor air quality increases respiratory ailments like asthma and bronchitis, heightens the risk of life-threatening conditions like cancer, and burdens our health care system with substantial medical costs. Particulate matter is singlehandedly responsible for up to 30,000 premature deaths each year. Passenger vehicles are a major pollution contributor, producing significant amounts of nitrogen oxides, carbon monoxide, and other pollution. In 2013, transportation contributed more than half of the carbon monoxide and nitrogen oxides, and almost a quarter of the hydrocarbons emitted into our air. Motor vehicle pollution is considered as the major environmental risk factor in the incidence and progression of some diseases such as asthma, lung cancer, ventricular hypertrophy, Alzheimer's and Parkinson's diseases, psychological complications, autism, retinopathy, fetal growth, and low birth weight. Motor vehicle pollution is a major problem of recent decades, which has a serious toxicological impact on human health and the environment. The sources of pollution vary from small unit of cigarettes and natural sources such as volcanic activities to large volume of emission from motor engines of automobiles and industrial activities. Long-term effects of air pollution on the onset of diseases such as respiratory infections and inflammations, cardiovascular dysfunctions, and cancer is widely accept hence, air pollution is linked with millions of death globally each year.

V. IMPACT OF MOTOR VEHICLES ON THE ENVIRONMENT

We see them, we hear them, we ride in them, we drive them. Motor vehicles are one of the greatest contributors to greenhouse gas emissions and air pollution. The Environmental Defense Fund (EDF) estimates that on-road vehicles cause one-third of the air pollution that produces smog in the U.S., and transportation causes 27 percent of greenhouse gas emissions. The U.S. has 30 percent of the world's automobiles, yet it contributes about half of the world's emissions from cars. Cars contribute to air pollution in major, Most people get in their cars and drive to their destination without thinking of the consequences that driving has on the environment. But what harmful emissions come from cars exactly? Let's find out. Carbon dioxide. It is the greenhouse gas most responsible for global warming. The main human activity that emits CO₂ is the combustion of fossil fuels (coal, natural gas, and oil) for energy and transportation. However, electricity and industrial processes also contribute to CO₂ Atmospheric CO₂ concentrations have increased by more than 40% since pre-industrial times, and emissions from motor vehicles play a part in this increase. Nitrogen Oxide It reacts with compounds in the air to cause acid rain and ozone, which is the main reason for smog. Particulate matter, consisting of tiny particles of smoke, soot and dust—primarily from engines, car parts, tires, and diesel exhaust—are an established cause of lung problems. These four emissions are just a few emitted by motor vehicles, but their effects are devastating on both the environment and human health. Compared to 1970 vehicle models, new cars, SUVs and pickup trucks are roughly 99 percent cleaner for common pollutants (hydrocarbons, carbon monoxide, nitrogen oxides and particle emissions). New heavy-duty trucks and buses are roughly 99 percent cleaner than 1970 models. Over forty years of clean air policies have improved air quality and improved the health of Americans, and the environment. Since 1970, EPA has set and implemented emissions standards to control pollution from everything from passenger vehicles, heavy duty trucks and buses, construction and farm equipment, locomotive and marine engine and even lawn and garden equipment. These standards are a critical part of the progress and improved air quality we have achieved despite increased economic activity and more miles traveled on average per person.

VI. ANALYSIS OF MOTOR VEHICLE POLLUTION

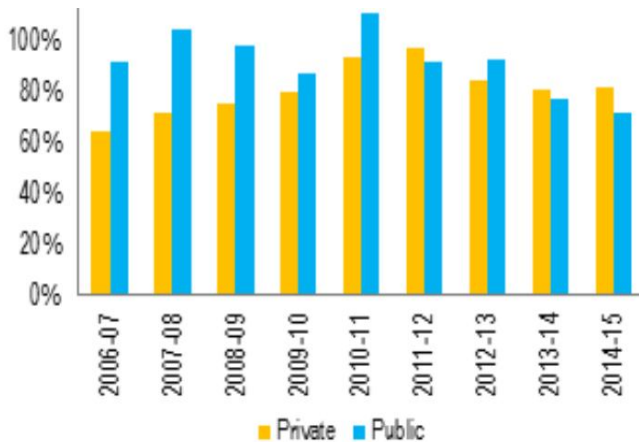
Motor Vehicles play an important role in air pollution. The change of living standards and economic developments with the increase in Istanbul population cause increasing number of vehicles participating in traffic every year. Motor vehicles used in transport are the sources of air

pollutants. Consequently this increase, it is normal to expect that emissions produced by motorway vehicles will rise. Bridges over Istanbul are traffic. Bridges connect Asia and Europe Continents. Therefore, hundreds of thousands of vehicles use these bridges. A major part of the air pollution is caused by motor vehicles. These gases directly affect human health. According to figures released by the World Health Organization in September, 9 out of every 10 people in the world live in places where air pollution reaches dangerous dimensions. This study that it is has been investigated the air pollution from bridges over Istanbul that is resulted by transportation. First, air pollutant sources, formation and properties are explained. It is mentioned that these emissions are related to the weather conditions, operating conditions of the engine and fuel types. Numbers of vehicles were taken from the T.C. 1st Regional Directorate of Highways. The CO, HC, S and PM pollutants emitted from vehicles are released to the atmosphere at different emission values. The emission value for each pollutant is calculated on an annual basis and according to the classes of vehicles. The increase in pollution level not only affecting human health but also affecting to nature Global warming is the biggest challenge in front of world. CO₂ increases day by day which causes green house effect. Diseases like asthma, heart disease, chronic obstructive pulmonary disease, diabetes increasing rapidly in peoples live in metro cities. The main sources of pollution in cities are vehicles. Now new rules are implemented by governments of various countries.

VII. STATISTICAL DATA RELATED TO MOTOR VEHICLE POLLUTION

Motor vehicle pollution concentrations have increased globally. According to the World Health Organization (WHO), this increase can be estimated at 8% from 2006 to 2015 and more than 80% of people living in urban areas, where air pollution is monitored, are exposed to levels that exceed the limits given by WHO. Urban air pollution is a serious environmental problem, and as urban air quality declines, the risk of stroke, heart diseases, lung cancer, and chronic and acute respiratory diseases, including asthma, increases. In addition, it contributes to damaging building materials and cultural objects. Harmful effects of air pollution and its causes are widely studied and, the urban quality declines are mainly related to the increase in traffic emissions, transport-related emissions being the main component of air pollution. A wide variety of air pollutants are emitted by vehicles with petrol-derivatives engines being the most important of them; nitrogen oxides, carbon monoxide, volatile organic compounds (VOCs), and particulate matter have an important impact on air quality in the urban areas. Motor vehicle pollution in big cities and close to the main roadways

is dominated by road traffic but the pollution levels are very variable because air pollution is severely influenced by multiple environmental or meteorological factors as well as traffic patterns, size, and orientation of buildings or land use. Consequently, determining population exposures is essential to study and understand the causes of these variations prior to the development of interventions and policy recommendation aiming at reduction exposures.



VIII. CONTROL OF MOTOR VEHICLE POLLUTION

The legislation and the regulations in our country relating to pollution are based on command and control policy. The Government of India formulated a comprehensive policy for abatement of pollution in 1991. The policy aims at: Prevention of pollution at source. Encourage development and application of the best available practicable technologies. Focus on the "critical" or the heavily polluted areas. In the policy statement of 1992, the Government paid specific attention to transport related pollution and the highlights were: Control of pollution from automobiles. Encourage use of the public transport system. Encourage the use of bicycles for short distances. Development of rapid mass transit system. Discourage the plying of vehicles in heavily polluted areas. Earmarking of natural gas for the transport sector. Apart from this, the Government has enacted a number of legislation for control of pollution. They include Environment (Protection) Act, 1986, Motor Vehicles Act (as amended in 1988 and 1994), Air (Prevention and control of Pollution) Act, 1981(as amended in 1987). The Government has also formulated a National Program for Control of Vehicular Pollution, which involves the following components: Vehicle manufacturers. Oil Industry. User level. Suitable legislation and regulatory mechanism. Fiscal Incentives.

IX. MOTOR VEHICLE POLLUTION CONTROLLING ACT

The Motor Vehicles Act is an Act of the Parliament of India which regulates all aspects of road transport vehicles. The Act provides in detail the legislative provisions regarding licensing of drivers/conductors, registration of motor vehicles, control of motor vehicles through permits, special provisions relating to state transport undertakings, traffic regulation, insurance, liability, offences and penalties, etc. For exercising the legislative provisions of the Act, the Government of India made the Central Motor Vehicles Rules 1989. The fast increasing number of both commercial vehicles and personal vehicles in the country. The need for encouraging adoption of higher technology in automotive sector. Concern for road safety standards, and pollution-control measures, standards for transportation of hazardous and explosive materials. Need for effective ways of tracking down traffic offenders. Rationalization of certain definitions with additions of certain new definitions of new types of vehicles. Stricter procedures relating to grant of driving licences and the period of validity thereof. Laying down of standards for the components and parts of motor vehicles. Provision for issuing fitness certificates of vehicles also by the authorised testing stations. Enabling provision for updating the system of registration marks. Liberalised schemes for grant of stage carriage permits on nonnationalised routes, all-India Tourist permits and also national permits for goods carriages. Maintenance of State registers for driving licences and vehicle registration. The Bill also seeks to provide for more deterrent punishment in the cases of certain offences.

X. CONCLUSION

It can be seen that the vehicular pollution control measures taken by the Central Government and by the State Government have been by and large command and control regulations. The following are the best practicing solutions to control the Motor vehicle pollution, Prevention of pollution at source. Encourage development and application of the best available practicable technologies. Focus on the "critical" or the heavily polluted areas. Encourage use of the public transport system. Encourage the use of bicycles for short distances. Development of rapid mass transit system. Discourage the plying of vehicles in heavily polluted areas. Earmarking of natural gas for the transport sector.

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