

Short-Review Article

The Effect of Air Pollution on Myocardial Infarction

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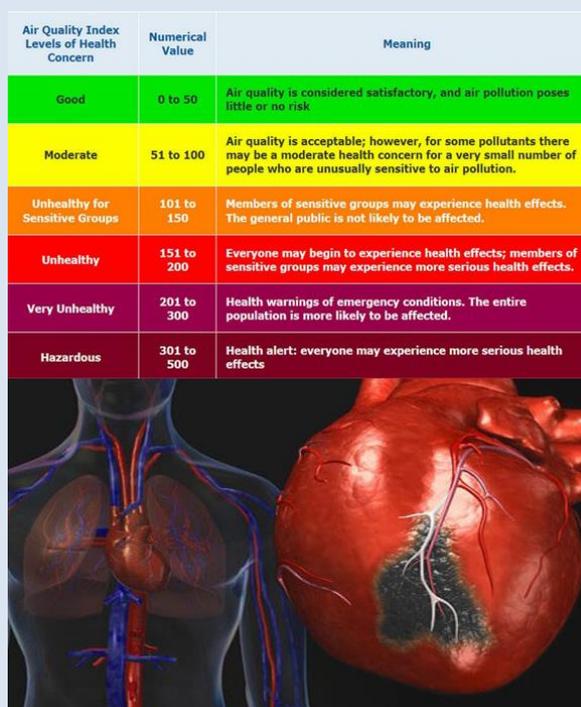
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Abstract: Myocardial infarction is a common phenomenon among people and kills many people every year. However, for many people, the question is whether the origin of this disease was nutrition or many factors played a role in it. The phenomenon of myocardial infarction should be studied with its marginal factors, so with this in mind, it is necessary to conduct research in this field to investigate the factors involved in the development of myocardial infarction. Therefore, the present study is important because it discusses the role of air pollution in myocardial infarction. Myocardial infarction (in the medical term of MRI) or myocardial infarction. Permanent and irreversible cell death and death in a part of the heart muscle (myocardium) that occurs due to loss of blood flow and the occurrence of a severe ischemia in that part of the heart. This cessation of blood circulation can occur suddenly without any previous symptoms or after a number of angina attacks (chest pain). The main cause of stroke is the closure of the arteries that supply the heart. To remove obstruction other than medication, open balloons and open-heart surgery replacement of blocked arteries) are used. Myocardial infarction is a pervasive complication that causes thousands of deaths each year. Factors contributing to diabetes include high blood pressure, high blood cholesterol, excessive smoking and alcohol use, physical inactivity, stress, family history, and age.

Keywords: Air pollution; Heart attack; Death; Disease; Nutrition

Graphical Abstract:



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Introduction

Climate has had a tremendous impact on human life. Throughout history, human beings have made constant efforts to recognize, control and adapt to it, improving the life and making better use of climatic conditions [1-3]. Various factors can be involved in myocardial infarction, including environmental factors and air and climate pollution in the region [4]. Climate pollution is a problem that is prevalent in most countries, including industrialized countries. This problem causes respiratory diseases such as heart attack. This problem should be considered and scientific research should be done in this field to investigate the causes of this disease, which is climate and air pollution. As a result, pathogenic factors and factors should be identified to solve the problem. . The heart of an ordinary human is a muscular, strong pump, slightly larger than a fist. The average heart rate is 100,000 beats per day and about 2,000 gallons of blood are pumped at age 70, the average human heart rate has exceeded 2.5 billion beats. The heart pumps blood continuously through the circulatory system. The circulatory system is a network of

flexible tubes that carry blood throughout the body including, the heart, lungs, arteries, coronary arteries, and capillaries. These blood vessels include circulating oxygenated blood[6-8]. These blood vessels return dark, oxygen-free blood and nutrients to the heart and lungs. If all of these vessels are placed next to each other, it will be nearly 60,000 miles long, which is enough to orbit the earth more than twice.[9-11].

The heart has four chambers. The two upper chambers are the left and right atria, and the lower two chambers are the left and right ventricles. The four valves open and close so that when the heart beats, blood flows in only one direction [12-14].

- 1- Tricuspid valve between right atrium and right ventricle
 - 2-Pulmonary valve between the right ventricle and the pulmonary artery
 - 3- Mitral valve between left atrium and left ventricle
 - 4- Aortic valve between left ventricle and aorta
- Each valve is a set of tabs, also called leaflets. The mitral valve is bilingual and the rest of the valves are

trilingual. Under normal health conditions, the valves allow their flow to move in only one direction. Blood flow occurs only when a difference in blood pressure between the two sides of the valve causes the valves to open. Initiate, confirm or reject the examination in the intensive care unit. Blood tests are often done with Creatine kinase to confirm heart muscle damage. Often a small portion of the CK and CK-MB enzymes are also measured. An abnormal increase in CK-MB is seen in the blood test of a person who has had a heart attack for about six hours [15-18]. Reaching the peak level of CK-MB is about 18 hours and returning to normal is 24 to 36 hours later. If not, it will be replaced. Blood tests are also done to measure the levels of other heart muscle proteins such as troponin, especially troponin (CTnT) T and troponin (CTnL) L. These proteins control the interaction between actin and myosin, which causes the heart muscle to contract and contract [19].

A special troponin has been found in the heart that can be improved if blood tests are performed

It can be used to diagnose myocardial infarction with high sensitivity and accuracy. Basically, the level of CTnL, CTnT of the blood is very low and increases on average within 4 h to 6 h of myocardial infarction. Its peak is 10 h to 24 h and can be detected for a week or more. Various studies have shown an association between troponin levels and the long-term outcome of chest pain. In other words, the troponin test will make it possible to understand whether people have a greater or lesser chance of developing heart disease in the coming years, or the severity of possible injuries. The only thing left to do is to determine which treatment is more effective and likely to have better results with a routine troponin test [20-23].

How to Treat a Heart Attack

What is important in the event of a heart attack is the rapid detection of symptoms and immediate response. Time is of the essence. When the coronary artery is blocked, the heart muscle does not disappear immediately, but the damage increases as the obstruction gets longer. Delay and procrastination may increase heart damage and reduce the chances of survival. It also reduces the chances of saving the heart muscle and increases the risk of disability. Anyone with warning signs of a heart attack should be rushed to the nearest hospital with a cardiovascular emergency. People with a heart attack may receive CPR-respiratory resuscitation before reaching the emergency room. Most areas have a cardiovascular emergency department for rapid response. This urgent care significantly reduces heart damage. In fact, 88% of survivors under the age of 65 have a heart attack.



Figure 1. Heart disease symptoms, early signs, treatment and causes.

They can return to their normal lives. Urgent care is not only a reason for a quick return to normal life, but also a very important and vital matter. If the victim is rushed to the emergency room, blood transfusions may be provided and the blood needed by the heart muscle may be provided [24-26].

Each of these methods is faster for the patient to perform faster. Coagulation breakers involve injecting a solvent into the clot, such as streptokinase, a tissue plasminogen activator that dissolves blood clots in the coronary artery and restores blood flow. For best results, these drugs should be taken at least 3 h after a heart attack. If treatment is not performed immediately after PTCA heart attack or CABG coronary artery bypass graft surgery. Improving myocardial blood flow is delayed and part of the heart muscle may be destroyed and its function may never be restored. However, even with reduced circulatory circulation, heart muscle function can continue to some extent [27-29]. What is sudden cardiac death?

Sudden cardiac death is also called sudden death. SCD occurs when the heart stops suddenly. Heart disease may or may not be diagnosed in the victim. The time and manner of death is unpredictable. It may be a few minutes after the onset of symptoms but has no pre-shock symptoms. The cause of most deaths due to cardiac arrest is coronary heart disease [30-32].

What are the causes of sudden cardiac death?

Cardiac arrest most often leads to SCD when the heart's electrical impulses are rapid and then agitated. This irregular heart rhythm causes the heart to stop pumping suddenly. A small number of cardiac arrests occur due to bradycardia. Other causes of cardiac arrest include respiratory arrest, electrocution,

drowning, shock, and trauma. Cardiac arrest can occur for no known cause. The term "widespread heart attack" is mistakenly used in the media to describe sudden cardiac death. It is not due to cardiac arrest or the death of the victim due to a heart attack. A heart attack may cause cardiac arrest and sudden cardiac death, but these terms are not synonymous [33].

How cardiac arrest can cause SCD to return: If the victim's cardiac arrest is not treated, the brain will be damaged only 4 to 6 min after the pumping of blood by the brain. Until definitive treatment is provided, CPR includes mouth-to-mouth resuscitation and cardiac massage. Cardiac arrest due to VA can be reversed if treated with electroconvulsive therapy within minutes [34-36].

Electric shock can prevent an abnormal heart rhythm and cause the normal rhythm to resume. This process is called defibrillation and is done by defibrillators.

The victim loses 7 to 10 % of his or her chances of surviving a cardiac arrest following VA or every minute that passes without treatment. After 10 minutes, the chances of success are very small.

In the hospital, the chances of surviving a cardiac arrest following a heart attack have improved dramatically with the help of DC defibrillators and clinical monitors [37].

After the patient's cardiac arrest was treated, the CPR rescue and defibrillation teams were trained from the hospital discharged out of the emergency hospital.

Therefore, there will be no problem with the rapid treatment of cardiac arrest. The American Heart Association strongly supports the implementation of the "survival chain" to save people suffering from sudden cardiac arrest. To strengthen the survival chain, committees must follow four factors:

- 1- Strengthening and expanding the system 115

- 2- CPR training programs, which are available to citizens.
- 3- Automated external defibrillator training program to give CPR and initial defibrillators in minutes after cardiac arrest
- 4- Rescue teams equipped with advanced and portable medical equipment (paramedic) that are available 24 hours a day.

Air Pollution

Air pollution is a sign of instability of polluting systems. In fact, due to the lack of attention to sustainable development, environmental problems occur, one of which is air pollution. Sustainable development pays less attention to environmental aspects and their effects on the environment.

Therefore, this type of development can have many environmental problems, depending on the choice of fuel type, energy source or production process. Lack of proper location, land use change, water pollution, soil and air are the most important effects. Basically, environmental pollution means changing the quality of the environment in a way that makes its previous use difficult. Nowadays, there are different types of environmental pollution, such as air pollution, water pollution, soil pollution, sound pollution, magnetic pollution, atomic pollution, and visual pollution.

In a more specialized definition, air pollution can be defined as a change in air quality that has adverse effects on the environment. There are many definitions of pollution, including the environment. It has been suggested that the product of these definitions is contaminated below. However, the author believes that providing different definitions does not solve any problem and only confuses the reader's mind and introduces.

Figure 2. Respiratory Health Association

Air Quality Index Levels of Health Concern	Numerical Value	Meaning
Good	0 to 50	Air quality is considered satisfactory, and air pollution poses little or no risk
Moderate	51 to 100	Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.
Unhealthy for Sensitive Groups	101 to 150	Members of sensitive groups may experience health effects. The general public is not likely to be affected.
Unhealthy	151 to 200	Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.
Very Unhealthy	201 to 300	Health warnings of emergency conditions. The entire population is more likely to be affected.
Hazardous	301 to 500	Health alert: everyone may experience more serious health effects

Air pollution means the presence of undesirable substances in the air to the extent that it has harmful effects. These undesirable substances may endanger human, plant and animal health. Air pollution mainly damages human belongings and the environment.

It also destroys the beauty and appearance of the air in the form of turbid air or unpleasant odors. As can be deduced from the above definition, it basically covers the range of effects of air pollution on humans, plants and objects, or the environment in general. The point to be noted is that different pollutants have different effects and the amplitude of their pollution effect varies for different components of the environment, for example, for every 5 micrograms of PM_{2.5} per cubic meter, the mortality rate is 2 It increases by up to 4%, or if the concentration of carbon monoxide is around 50, its effects on the cardiovascular system become apparent [38].

Therefore, determining the extent and extent of pollutants, sometimes called the threshold of pollutants, is a broad and changing discussion that must be considered. Air pollutants come from a variety of sources, the most important of which are motor vehicles, factories, power plants, and residential homes. In fact, air pollution depends on the consumption and type of fuel of these sources. Fossil

fuels are still the dominant fuel for industry, transportation, and home heating.

Therefore, for the basic treatment of air-related problems, it is necessary to go to new energy sources and pay special attention to sustainable development. In order for air pollution sources to be sustainable, several basic solutions must be considered.

The most important of these solutions are ecological design of industries, protection and optimal energy consumption, as well as the use of alternative fuels that have the least amount of pollution. By following these guidelines, it can be hoped that the climate and other natural systems will be less threatened. Locating the construction site of the industries according to the environmental criteria, expanding the sources of air pollution absorbers such as green space and building engines with the highest efficiency and less pollution are among the items related to ecological design.

Preventing inappropriate fuel consumption and trying to study and apply ways to reduce its consumption, for example, double glazing windows of houses and buildings, fuel prices are among the methods of protection and optimal energy consumption. Another useful solution is to change the type of fuel from fossil fuels to cleaner or less polluting fuels. For example, if we go for gas or electric batteries instead of gasoline, we can reduce some of the air pollution.

Air pollutants are generally in the form of gases and particles that can be separated through a filter. The most important pollutants are carbon monoxide, nitrogen oxide, sulfur dioxide, carbon dioxide, and particulate matter. Each of these pollutants has its own history, especially in terms of quantitative trends. But many studies have shown that the first three pollutants have a downward trend. This means that their amount has increased after a while and has decreased again.

This reduction is due to the toxic and dangerous effects of this type of pollutant that has been done by different countries.

Unlike this type of other pollutant, it has been proven. Carbon dioxide is also on a global scale and is involved in important processes such as climate change. But the four primary pollutants are those that are present on a local scale. Concentrations of pollutants are expressed either in micrograms per cubic meter of air or in terms of volume in parts per million and parts per billion. Fossil fuels are compounds of carbon and hydrogen atoms that are bonded together by chemical bonds.

When they burn, some of their chemical bonds break and release energy in the form of light and heat. The heat causes most of the bands to break, to the point that it ends up burning fuel. During combustion, air oxygen reacts with carbon and hydrogen atoms in fossil fuels to produce carbon dioxide and water. The important point is that complete combustion does not occur 100%. Incomplete combustion produces carbon monoxide and unburned hydrocarbons. Most fuels contain metal impurities such as mercury and lead, which may remain in the air as particulate matter after combustion. One of these compounds is sulfur, which is a substance in wood charcoal. Sulfur forms sulfur oxides at high combustion temperatures. Another point is that combustion must take place in the presence of air, and air also contains nitrogen, and therefore, after reacting with oxygen, it produces nitrogen monoxide. And nitrogen monoxide is immediately converted to nitrogen dioxide.

Classification of Air Pollutants

Pollutants can be classified in several ways. This classification can be classified based on differences in physical or chemical properties, origin, type of

reaction, and legal properties. In terms of source, pollutants originate from either mobile or fixed sources. Mobile sources such as vehicles, trains, airplanes that have a direct effect on air pollution, but in urban environments there are indirect sources that are absorbent. Transportation is needed to reach markets and sports stadiums.

Power plants, chemical industries, chimneys are examples of constant sources of air pollution. Pollutants may have a point source (factories), a linear source (roads) and a surface source (dry cleaners). Pollutants are divided into primary and secondary pollutants based on how they reach the atmosphere. Primary pollutants are pollutants that originate directly from a source, but secondary pollutants are caused by chemical reactions in the atmosphere.

A major component of urban smog is ozone (a secondary pollutant) that occurs in photochemical reactions between nitrogen oxides and volatile organic carbon compounds in the atmosphere. About 3,000 air pollutants have been identified so far.

Sulfur is also the 16th most abundant element (concentration 260 ppm) in the earth's crust and a large amount of sulfur in the form of sulfate and mostly in the form of gypsum. Gypsum is a neutral, non-toxic, water-soluble mineral that is found in abundance in the world. All organic fuels used by humans. They contain some sulfur. The amount of sulfur in wood is very low (0.1% or less) while most coals contain 0.5 to 3% sulfur. In general, petroleum products have more sulfur than wood but less than coal. As a result of burning fuels, their sulfur turns into sulfur dioxide, and if sulfur dioxide enters the atmosphere, it eventually returns to the oceans during rainfall, and due to the passage of time, due to geological processes, it becomes part of the earth's mass. Over time, it re-enters the fossil fuels and

minerals that humans extract and consume. The main source of sulfur dioxide is the combustion of sulfur-containing fossil fuels.

Nitrogen Oxides

Most of the world's nitrogen is in the atmosphere as a neutral gas. It is the 34th most abundant element in the earth's crust with a concentration of 20 pm. Although nitrogen is involved in the formation of 8 nitrogen oxides, its main pollutants are nitrogen oxide and nitrogen dioxide. Nitrogen oxide is a colorless gas, which has harmful effects on human health, but its effects are less than the effects of nitrogen dioxide. Nitric oxide is produced after reaction with oxygen.

It makes nitrogen dioxide. Although nitrogen dioxide is not a conventional pollutant, it is important because of its role in global warming and ozone depletion. There are similarities and differences between nitrogen oxides and sulfur oxides. The most important similarities are: Sulfur and nitrogen oxides react with water and oxygen in the atmosphere, which leads to the formation of nitric and sulfuric acids, and these two acids are the most important factors involved in acid rain. Atmospheric PM10 and PM2.5 transmissions are involved in urban areas. Both are widely distributed in the atmosphere and have respiratory distressing effects.

Both enter the atmosphere in large quantities by combustion sources, especially coal combustion sources. While there are similarities between nitrogen oxides and sulfur, there are fundamental differences. Vehicles are the most important source of nitrogen oxides, while they are a minor source of sulfur oxides. Sulfur oxides are formed from sulfur impurities in fuels or unwanted sulfur in minerals, but nitrogen oxides occur mainly through the reaction between atmospheric nitrogen and oxygen at high

temperatures. In other words, sulfur oxides are mainly of terrestrial origin, while nitrogen oxides are of air origin. The formation of nitrogen oxides decreases sharply with time, temperature, and oxygen in the reactions involved, whereas this is not the case for sulfur oxides.

Air Pollutant Particles

Air pollutant particles are solid and liquid in gaseous environments. Pollutant particles are not chemically uniform and appear in relatively different shapes in terms of size, shape, and chemical composition. An ordinary human hair is 50 μ in diameter and the pages of this book are 100 μ in diameter. Pollutant particles that cause a large amount of air pollution have a diameter of 2-10 to 10 μ , which is much smaller than the diameter of a human hair. It is usually inferred that sand and gravel are formed by breaking larger rocks in the channels.

Carbon Monoxide

Carbon monoxide is a pollutant from gasoline vehicles. In urban environments, motor vehicles account for 98% of carbon monoxide. In the United Kingdom, for example, in 1998, 73% of all carbon monoxide emissions were emitted from road transport. Carbon monoxide can reach concentrations of 50 ppm in urban areas with heavy traffic, especially on valley-like streets.

Volatile Organic Compounds

These compounds, which mainly contain organic carbon, are liquid or solid materials that have high evaporation power. These substances are the second group of pollutants after polluting particles that have a wide distribution. These materials include a large

family of different compounds. Some, such as benzene, are toxic and carcinogenic and are classified as toxic pollutants. But most of these compounds are believed to be non-toxic. The most important concern about these compounds is that they are involved in the formation of smog as well as in the formation of secondary pollutants in the atmosphere. Some of these compounds have a high absorption power of infrared waves and so, they are important in the problem of global warming [50].

Ozone

Ozone is one of the secondary pollutants and is produced by the reaction of nitrogen oxides and hydrocarbons. In severe photochemical fog conditions such as those in southern California, ozone concentrations exceed the 400-ppb mark.

Peroxy Acetate Nitrate

This secondary pollutant is the result of photochemical reactions in the atmosphere, a special product of photochemical smog. These pollutants have different concentrations in different parts of the world. For example, in southern California on foggy days it has a concentration between 5-50 ppb and in Europe it has a concentration less than 10 ppb.

Measurement of Air Pollutants

At present, there are tools and technologies needed to measure all indicator pollutants as well as volatile organic compounds. However, due to the high cost of these tools, they cannot easily be used anywhere. There is also the measurement of pollutants using cheaper methods, in which samples are first collected from the site and then the samples are analyzed in the laboratory [51].

In general, there are sampling methods for measuring pollutants, which are active and passive sampling. Active sampling requires peripherals such as pumps that require power flow and special installation.

Absorption Path

In this method, the gaseous pollutant is adsorbed with a reagent solution placed in a sample container. In this method, the particles in the air are first taken through special filters and then directed to the reagent solution. In the next step, air moisture is absorbed through special insulators (calcium chloride, silica gel, or fiberglass). The amount of air flow is regulated by the flow meter considered in this method. The important point about this method is that the reagent should be specific for the pollutant gas and the amount of pollutant adsorption should be measurable.

The most important drawback of this method is that in this method, the sampling time is relatively long, so that sometimes it is necessary to wait 24 h to collect the necessary and sufficient sample. In this method, the best place to place the samplers is balconies, offices and laboratories. Also, in this method, to operate the system pump, electricity is needed. In order to sample the air of urban areas, these samplers can be placed at a height of 2 m above the ground and sampled.

Absorbent Impregnated Filters

In this method, a filter is impregnated with a reagent solution for a specific gas. First, air is sucked into the filter to remove suspended particles and then directed into the filter impregnated with the reagent solution. After sampling, the impregnated filter is transferred to the laboratory and analyzed. This method is used to

measure sulfur dioxide, nitrogen dioxide, ammonia, hydrogen sulfide, rick chloride oxide and nitric acid.

Molecular Diffusion Tubes

The most common form of molecular diffusion tubes is given below. In this method, a special gas reagent is placed on a stainless-steel mesh at the end of the tube. The other side of the sampling tube remains open. In order to prevent the infiltration of rain and dust, the pipe should be reversed and usually the samplers are placed in the sampling place between two weeks to one month. After sampling, the samplers are transferred to the laboratory and analyzed using spectrophotometry or other methods. The reason for naming this method is because this method is based on the molecular transfer of gas to its reagent. In this method, since the emission rate of the measured gas is proportional to its concentration. Therefore, gas in the environment can be calculated using a formula that takes into account the molecular diffusion factor of that gas. This method is used to measure pollutants such as sulfur dioxide, nitrogen dioxide, ammonia, hydrogen sulfide, ozone, benzene, xylene and toluene. This method is very inexpensive and can be very useful for investigating the spatial distribution of contamination.

Indoor Air Pollution

Indoor air pollution is a primary concern for people living in non-industrial buildings such as offices and schools in residential areas. Residents of residential areas can potentially be exposed to toxins, allergens or infectious contaminants [52].

Focus of Indoor Air Pollution

Air pollution usually means more air pollution of open environments outside man-made environments, and

the main laws of air pollution are related to that type of air pollution. Regular measurements show that the concentration of indoor air pollutants can be higher than the outside air.

The concentration of PM 2.5 and its concentration in these media was similar to that of nitrogen dioxide, but in the case of ozone the situation was different because ozone is so chemically active that it reacts with almost any solid surface.

Therefore, the ozone in the indoor air is absorbed by different levels inside. Also, from internal sources of closed areas that cause ozone production, such as copiers and electrostatic vacuum cleaners can be mentioned. The important thing about indoor air pollution is that sometimes the amount of pollutants in closed environments is several times more than the ambient air.

Other studies in the United States and Denmark have found links between indoor air pollutants with headache, dizziness, cough, sneezing, nausea, eye irritation, and extreme tiredness. Building syndrome is sick when 20% of the occupants of a building suffer from symptoms that they do not feel when they leave.

This is called sick building syndrome. New buildings are much sicker than old ones. The reasons for this are low air exchange (to store energy) and chemicals from carpeting and furniture. Cigarette smoke, formaldehyde, asbestos and radioactive radon gas 222 are four dangerous gases inside the air.

In developing countries, burning wood in fires or unfavorable cooking conditions introduces large amounts of particulate matter into the respiratory tract of people, especially children and women.

Effect of air pollutants on agricultural products, trees and ecosystems

Preliminary experiments were performed on the effects of air on trees in Leeds, England. In this study, three to four times better growth of trees outside the city than in urban areas was found.

Sulfur Dioxide

Sulfur dioxide is one of the most essential minerals in plants and is usually absorbed in the form of sulfur by the roots from the soil and then transferred to the leaves. The leaves of trees have enzymes that reduce the concentration of sulfur and they also have Gas exchanges are with the atmosphere. These transmissions take place through tiny pores, so contaminants such as sulfur dioxide can also enter the plant's leaves. When sulfur dioxide enters the leaf, it dissolves in water and produces sulfur ions. One of the disadvantages of sulfur dioxide on the leaf is the destruction of the leaf membrane of the leaf. The important thing about sulfur dioxide is that plants may tolerate different amounts in different climatic environments and therefore there is no definite amount of this pollutant as tolerable by plants [53].

Nitrogen oxides

There is no doubt that plants need nitrogen. Most plants meet this need through the roots in the form of ammonium ions and nitrates from the soil solution.

However, human activities have disrupted the natural cycle of nitrogen. For example, the diffusion of nitrogen-containing compounds has increased nitrogen by 20 times its normal amount, and therefore these changes in nitrogen concentration have upset the nitrogen transfer balance. It grows between the soil and the roots of the plant.

Effect of air pollutants on humans and animals

Concerns about the effects of air pollution have been raised by the publication of the results of a number of studies on the relationship between polluted air and some diseases. This section deals with the unhealthy effects of air pollution, especially on humans.

The most sensitive and vulnerable parts of animals when they are exposed to air pollution are their respiratory system. However, this device has the power to filter some of the impurities and only small particles such as (PM 10) can reach the lower parts of the lungs.

However, the amount of pollutant must reach a certain concentration in order to be able to destroy and damage a tissue of the animal body. The effective concentration of an air pollutant may be increased in several ways, which can be exposed to high concentrations for a long time. Placement, or by behavioral factors such as the amount of exercise and the amount of time spent in different environments.

For example, people who work outdoors or children who play outdoors may be exposed to pollutants in the air. Some pollutants have immediate effects. For example, sulfur oxide leads to narrowing of the airways in sensitive individuals within minutes. But some pollutants may only affect people who are exposed to them for a long time, often for years. This includes asbestos and lung cancer, which occurs 20 to 30 years after a person is exposed to the contaminant. Pollutants may also interact with or interact with other environmental factors, such as temperature, air allergies, or even cigarette smoke, to produce an effective effect.

It should also be noted that sometimes it is difficult to find a clear relationship between the mirror and the disease because there may be other influencing factors that have similar effects to the effects of a particular

contaminant. Influencing factors may affect the disease or exposure.

For example, in a short period of time, exposure to high levels of pollutants in winter is associated with cold and calm anticyclone air conditions. Thus, an observed relationship between particulate matter and increased mortality may be due to the effects of the temperature factor, unless the effect of temperature is taken into account. Another example is that we may find a link between the prevalence of respiratory and respiratory diseases in a residential area near an industrial station. However, the population living in this area may live in conditions of social poverty and have high conditions of job exposure, cigarette smoke, etc. Therefore, when studying the effects of air pollutants on humans, all factors that may be involved in the severity of their effects or their type should be considered and included in the study.

Table 1. Effects of pollutants in the short, medium and long term.

Short-term health effects (minutes to months)
Lung cell swelling, stenosis of the nostrils, altered function and nipples, mild respiratory failure (cough, shortness of breath, swelling of the throat, eye pain)
Hospitalization due to respiratory and vascular diseases
Mortality from respiratory and vascular diseases
Medium-term health effects (several months to 10 years)
Increased prevalence of cough, shortness of breath, asthma and bronchial infections
Increased susceptibility to infection, decreased lung function, decreased lung growth in children
Changes in the walls of the bronchi (especially when exposed to smoke and sulfur dioxide)

Long-term health effects (10 years or more)
Increased lung cancer
Increased mortality from heart and respiratory diseases

Effect of Air Pollutants on Objects

Nowadays, the issue of the effects of pollutants on antiquities is an important cultural and economic issue. Many ancient monuments that are the cultural sources of civilizations have been destroyed or are being destroyed due to pollutants. The materials of tall buildings that are exposed to various pollutants have been destroyed, which is significant. Therefore, by recognizing pollutants and their effects and ways to reduce their effects, the amount of economic losses can be reduced. Below are the most important effects of air pollution on man-made buildings and structures.

Conclusion

Myocardial infarction has various causes and factors that we tried in this project to use components that are new to the reader. Nutritional issues for people can be very important. Unfortunately, in Asian countries, the issue of nutrition is not very important and perhaps the cause of this problem is the negligence of individuals, poverty, financial issues, worries in life and many issues in life that even take the idea of nutrition out of the public mind. Healthy eating and exercise are primarily important to prevent stroke. Avoiding any environmental pollutants and toxic substances is secondarily importance for people. Living in air-conditioned climates such as places empty of any factories and industrial places can be helpful in preventing heart attacks.

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