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Assignment:
Q. What is Environmental Pollution? How pollution contributes to global warming? Impacts of global warming on health sector of Pakistan?

Introduction:-

Introduction of contaminants into the environment by natural and anthropogenic sources cause unfavourable alteration of our surroundings. Pollutants are major contributors of global warming. Mining of coal and oil release methane in the atmosphere, nitrous oxide from fertilizers, emissions of Chlorofluorocarbons are the major causes of global warming. Because of global warming's impact, Pakistan is suffering a high prevalence of poor health outcomes caused by heavy rains and floods. Children, the elderly, women, and homeless individuals, especially those living with poverty and diseases, are at high risk of morbidity and mortality.

Environmental Pollution:-

The royal commission on Environmental Pollution in U.K in its third report gave the following definition to the term "Environmental Pollution," namely

“The introduction by man into the

environment of substances or energy liable to cause hazards to human health, harm to living resources and ecological systems, damage to structure or amenity or interference with legitimate uses of Environment.

According to the Section 1(3) of the UK Environment Protection Act, 1990, the term Environmental Pollution means:

"The release (into any environmental medium) from any process of substances which are capable of causing harm to man or any other living organism supported by the environment."

Causes of Environmental Pollution:

The problem of environmental pollution, we face today, is a complex consequence of forces connected with various interrelating factors. There are clearly a number of divergent and conflicting views of what could be the basic factors underlying the environmental crisis. No single cause can be considered as the root cause of environmental impairment. However, the following causes could be pointed as the generally underlying factors through each of these too could be operating simultaneously and their balance may vary from place to place through time.

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- 1) Population Growth
 - 2) Increased General Affluence and Economic Growth
 - 3) Nature of Modern Technology
 - 4) Deforestation
 - 5) Agricultural Development
 - 6) Industrial Development
 - 7) Urbanization
 - 8) Unplanned Urbanization
 - 9) Coal burnt Thermal Power Plants
 - 10) Poverty.

Contribution of pollution towards: Global

warming:-

Scientific evidence indicates that since 1950, the world's climate has been warming, primarily as a result of emissions from non-stop burning of fossil fuels and razing of tropical forests. Since the Industrial revolution till this day, there is a constant emission of the carbon into the atmosphere. It is a man-made cause of the global warming. Global warming is mainly the result of greenhouse effect. The greenhouse effect is a process by which the greenhouse gases absorb thermal radiation; these are then reradiated in all directions. But when these radiations come back to

the surface and the lower atmosphere, it causes increase in the average surface temperature leading to Global warming. Greenhouse effect may also be equated with "Hot Car Effect". Without the greenhouse effect, earth's average temperature would be $-0.4^{\circ}\text{F} (-18^{\circ}\text{C})$, rather than the present $59^{\circ}\text{F} (15^{\circ}\text{C})$.

Global Warming Causes:-

The causes are many of which the main culprits are:-

1. Deforestation:- It is responsible for 25% of all the carbon emissions entering the atmosphere, by the burning and cutting of 34 million acres of trees each year. Everyday, over 5500 acres of rainforest are destroyed. As a consequence of massive loss of forests, global carbon level rises $\approx 0.4\%$ each year.
- 2) Population Growth:- There is a close relation between global warming and population growth. Today the large population on earth is using the technologies which are destructive for the earth. 80% of atmospheric CO_2 increases are due to man's use of fossil fuels in the form of coal, gas or oil.
- 3) Aerosols:- Aerosol particles of human origin can have a net effect of diminishing

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the energy that arrives at the Earth's surface. Scientists estimate that particles produced by human activities have led to a net loss of solar energy (heat) at the ground by as much as 8 percent in densely populated areas over the past few decades. This effect, sometimes referred to as Solar dimming, may have masked some of the late 20th century global warming due to heat trapping gases.

4. Ice-caps and Glaciers: Ice-caps and glaciers reflect sunlight, bouncing high temperature sunrays back into space away from the earth. When these ice-caps are removed, the earth gets warmer as the dark oceans absorb much thermal radiation from the sun.

5. CFCs: There is a strong evidence that emissions of Chlorofluorocarbons were the major cause of the recent abnormal warming. Like carbon, CFCs do not trap heat but in presence of UV rays the chlorine gets detached from CFCs, drift up into the stratosphere and these unattached chlorines catalytically convert ozone molecules into oxygen molecules depleting the ozone layer.

6. Mining: Mining for coal and oil release methane in the atmosphere. Moreover the leakage from natural gas fields and landfills are additional source of methane.

Impacts of Global warming on health Sector of Pakistan:-

As the world grapples with the difficulties posed by climate change, it is crucial to understand how natural disasters and extreme weather events affect the delivery of health care services, particularly in low-income and middle-income countries (LMICs). Climate change in Pakistan is causing around 3,00,000 deaths every year in present scenario which is expected to escalate to 5,00,000 deaths by 2030. It will lead to changes in composition of atmospheric gases, change in hydrological cycle as well. Climate change is seriously affecting human health in Pakistan. Stress, trauma, and diseases result from changing climate and lead to mental disorders, decreased working capacity and even death. These effects can be divided into direct effects and indirect effects.

1) Direct Effects:-

Intense and frequent changes in temperature and precipitation in the form of cold and heatwaves, droughts, storms, floods, land sliding and natural fires can cause injury, illness and death.

2) Indirect Effects:-

✓ Due to changes in the environment and ecological conditions, there could be a decrease in the quality and yield of crops and the availability of food items. There can be decreased availability of clean drinking water, the spread of waterborne and vector borne diseases.

○ Impact of heat waves and Natural Fires.

Due to climate change, heat waves are more common in the cities of the country. The extremely hot weather conditions, especially in Sindh and Punjab can cause dehydration, kidney stones, and stroke. In Karachi, in 2015, there were more than 1200 deaths due to heatstroke.

○ Impact on Development of Chronic Diseases:-

Pakistan is among those countries which have the highest known rate of cardiovascular disease and diabetes mellitus. There are several lines of evidence in the literature which show the association of climate change with risk of cardiovascular disease.

It has been estimated that 52% of 68,200 deaths of children in Pakistan are due to acute lower respiratory infections because of household pollution. International Diabetes Federation in its 2012 report has indicated that food insecurity and malnutrition

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higher temperature, heatwaves and pollution and weakens health system due to the climate change are directly related to the global diabetes epidemics.

o Impact on Risk of Development of Cancer:

Due to climate change, toxic chemicals are abundant in the atmosphere as well as in water. Increased exposure of humans to these toxic chemicals can lead to various types of cancer such as liver cancer, breast cancer, and lung cancer.

Pakistani population is quite diverse in terms of ethnicity and geographical location. The prevalence of certain types of cancer could be as high as 31% (breast cancer), 19% (oral cancer), 18% (gastric cancer) and 8.8% (prostate cancer) in certain region and ethnic groups. These high prevalence values of various cancers, also genetic factors, have been attributed to undesirable changes in the environments.

o Impact on Mental Health:-

The most common mental health impact of severe climate events include depression, anxiety, stress, sleep disorders. A couple of studies by LEAD, Pakistan highlights the changes in attitude and behavior of people affecting in

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Rajapur, Punjab following the increased frequency of flooding since 2010. In another case study by LEADS, Pakistan, it was shown on Tharparkar (district of Sindh) which had three back to back droughts since 2012, the suicide increased by 75% (24 cases in 2011 vs 42 cases in 2014). The survey also revealed that 57 respondents (31% of the sample) from Tharparkar claimed to suffer from extreme depression while 11 (6% of the sample) said that they feel complete helplessness. Thus depression and a sense of helplessness are part of the residual impact of climate change on the health of Pakistani people.

Conclusion:-

The causes of environmental problems are many. The multiplicity of causes makes it difficult to clearly ^{delineate} the causes and consequences of environmental degradation in terms of simple one to one relationship. The causes and effects are often interwoven in complex webs of social, technological, environmental and political factors.

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