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Comprehension Questions for RBI Asst. Pre Exam

Passage No. 179

Directions: Kindly read the passage carefully and answer the questions given beside.

Most of the rising global attention to air pollution focuses on the impacts that ozone, particulate matter and other pollutants have on human health. This is natural; the numbers in the headlines are striking. The World Health Organization (WHO) estimates that air pollution inside and outside the home is responsible for about 7 million premature deaths worldwide. The majority of these deaths—4.2 million—are associated with ambient (outdoor) pollution. It is a leading environmental risk factor affecting urban and rural populations around the world. Growing public awareness of the health consequences is encouraging, but we need to look at the bigger picture of what air pollution is doing to our planet and ourselves. The social costs of air pollution—and the social benefits of reducing it—influence a lot of sectors like health, climate, water, renewable energy and agriculture.

Breathing dirty air affects more than just lungs and causes more than premature death. Air pollution affects almost every organ in the body. A recent study by the Forum of International Respiratory Societies shows that air pollution contributes to everything from diabetes and dementia to fertility problems and childhood leukemia. "Dirty air" can also be invisible. Inhaling soot or smoke with particulate matter—often referred by size in micrometers, PM10, PM2.5 and PM1—blackens lungs and leads to respiratory and cardiac distress, and diseases such as asthma and cancer. Some PM10 is visible as a cloud, and both it and PM2.5 affect visibility by scattering and absorbing light, but it takes a microscope to see PM2.5 and an electron microscope to spot "ultrafine." The smaller the particle, the deeper in your lungs it can go, along with the chemicals it's composed of.

Often called short-lived climate pollutants (SLCPs), black carbon (a component of PM), tropospheric ozone and methane contribute to both the warming of the climate as well as air pollution. According to the Climate and Clean Air Coalition, these three highly potent pollutants are responsible for 30-40 per cent of the global warming to date. They must be

curbed alongside carbon dioxide (CO_2) to limit global temperature rise to 1.5 degrees C (2.7 degrees F) and prevent catastrophic climate impacts like sea level rise and water insecurity. Black carbon and ozone persist in the atmosphere for just a few days and methane for up to few decades; it takes more than 100 years to eliminate CO_2 . That means actions that reduce SLCPs can yield almost immediate reductions in their concentrations, with benefits to the climate and human health. Importantly, some particulate matter can also have a cooling effect by blocking solar radiation, but there will always be a health benefit from reducing particular matter. Decision makers should consider this interplay when designing strategies to reduce SLCPs.

From rainfall patterns to monsoon intensities, air pollution can significantly affect the water cycle. Particulate matter can reduce the amount of solar radiation that reaches the earth's surface, affecting the rate at which water evaporates and moves into the atmosphere. They also affect clouds' formation and water-carrying capacity.

Solar energy yields also drop in areas with significant particulate matter pollution. Wiping away dust on solar panels can solve part of the problem, but the rest is more complicated: Sunlight cannot fully penetrate through smog, reducing solar panels' energy output. Studies in India and China find losses of up to 25 per cent of potential yield in the most affected areas.

This can cut into solar manufacturers' bottom lines and has major implications for cities and countries that want to promote a quick and cost-effective transition to renewables. Overall, pollution appears to cost China about 11 GW of power annually, for example.

Ozone can damage plant cells and negatively affect photosynthesis, while particulate matter can reduce the amount of sunlight that reaches plants and food crops. In 2000, global yield losses due to ozone amounted to 79-121 million tones, or $16-26 billion dollars' worth in today's prices. This included yield losses of up to 15 per cent for soy and wheat, and 5 per cent for maize. As ozone increases, losses do as well. This type of pollution has caused massive damage to food crops in India: From 2000-2010, the amount of wheat, rice and soy crops lost annually could have fed close to 94 million people. That's almost the entire population of Germany. Similar findings in Mexico showed estimated yield losses of 3 per cent for maize, 26 per cent for oats, 14 per cent for beans and 15 per cent for sorghum. Ozone along with acid rain (which is created by sulfate and NO_2 pollution, largely from fossil fuel burning), also affects other kinds of vegetation, forests and even pollination.

While its many and varied impacts may be daunting, we know how to reduce air pollution and significantly improve air quality. The benefits of reducing air pollution often far outweigh the costs, and air can improve much faster than most people realize if we put our minds and resources into it. These under recognized but well documented costs only add to the tally of reasons we should act quickly and decisively to clean up the air.

1. As per the passage, what the major outcomes of inhaling soot or smoke with particulate matter?
I. Leads to respiratory and cardiac distress.
II. Results in skin diseases.
III. Asthma and cancer can be caused.

A. Only II
B. Only I and III
C. Only III
D. All I, II and III
E. None of I, II and III

2. According to the passage, which of the following sectors get affected due to the social costs and reduction of air pollution?
I. Water
II. Agriculture
III. Politics

A. Only III
B. Only II and III
C. Only I and II
D. All of I, II and III
E. Not mentioned in the passage

3. Which of the following can be inferred from the passage?
I. The size of the particulate matter has no influence on body.
II. Blockage of solar radiation is the cause by which cooling effect is done by some particulate matter.
III. Wiping dust on solar panels will completely eliminate the problem of solar energy yields drop due to particulate matter pollution.

A. Only II
B. Only I
C. Only I and II
D. Only I and III
E. All I, II and III

4. Ozone along with acid rain affects which of the following?

A. Vegetation B. Forests C. Pollination

D. Both options B and C E. All of the above

5. Which of the following size of the particulate matters has not been mentioned in the passage?

A. PM10 B. PM1.5 C. PM1

D. PM2.5 E. All of the above are mentioned as air pollutants

6. Which of the following statements is true with respect to the passage?

A. The global yield losses due to ozone in 2000 was 80-130 million tones.

B. Japan bear losses up to 25 percent of potential yield in the most affected areas according to a study.

C. Particulate matter can never impact the amount of solar radiation reaching the earth's surface.

D. WHO estimates that major pre mature deaths were due to air pollution.

E. All of the above statements are true.

7. Which of the following are the short lived climate pollutants contributing to air pollution and warming of climate?

I. Ethane
II. Tropospheric ozone
III. Black carbon

A. Only I B. I and III C. I and II

D. All I, II and III E. II and III

Correct Answers:

1	2	3	4	5	6	7
B	C	A	E	B	D	E

Explanation:

1. Inhaling soot or smoke with particulate matter—often referred by size in micrometers, PM10, PM2.5 and PM1— **blackens lungs and leads to respiratory and cardiac distress, and diseases such as asthma and cancer.**

The highlighted part above validates what's been stated in statement I and III.

Nothing has been mentioned regarding skin diseases.

Clearly, option B is the correct answer.

2. **The social costs of air pollution—and the social benefits of reducing it—influence a lot of sectors like health, climate, water, renewable energy and agriculture.**

Though it is easily inferred from the above segment that options I and II are mentioned in the passage as the sectors that get affected due to social costs and reduction, while III is not mentioned in the passage.

Evidently, option C is the correct answer.

3. **Statement I.** The size of the particulate matter has no influence on body.

Refer to:

The smaller the particle, the deeper in your lungs it can go, along with the chemicals it's composed of.

If you observe, you can find that the writer has clearly indicated the various sizes of the particulate matter and how they vary in intensely affecting the body.

Thus, statement I cannot be inferred.

Statement II. Blockage of solar radiation is the cause by which cooling effect is done by some particulate matter.

Refer to:

Importantly, **some particulate matter can also have a cooling effect by blocking solar radiation**, but there will always be a health benefit from reducing particular matter.

The highlighted part above implies that statement II can be inferred.

Statement III. Wiping dust on solar panels will completely eliminate the problem of solar energy yields drop due to particulate matter pollution.

Refer to:

Solar energy yields also drop in areas with significant particulate matter pollution. **Wiping away dust on solar panels can solve part of the problem**, but the rest is more complicated: Sunlight cannot fully penetrate through smog, reducing solar panels' energy output. Studies in India and China find losses of up to 25 per cent of potential yield in the most affected areas .

After reading the highlighted part, it can be clearly concluded that not the complete problem but only a part of it can be solved by wiping dust on solar panels.

Thus, this statement cannot be inferred.

Evidently, option A is the correct answer.

4. Ozone along with **acid rain (which is created by sulfate and NO2 pollution, largely from fossil fuel burning), also affects other kinds of vegetation, forests and even pollination.**

More than Clearly, option E is the correct answer.

5. **Refer to:**

Inhaling soot or smoke with particulate matter—often referred by size in micrometers, **PM10, PM2.5 and PM1.**

Going with the highlighted part, we can observe that 'PM1.5' size of particulate matter has not been mentioned.

Option B is hence the correct answer.

6. Refer to:

In 2000, global yield losses due to ozone amounted to **79-121 million tones,**

The highlighted part confirms that the statement given in option A is false.

Refer to:

Studies in India and China find losses of up to 25 per cent of potential yield in the most affected areas.

This confirms that the statement given in option B is also false.

Refer to:

Particulate matter can reduce the amount of solar radiation that reaches the earth's surface, affecting the rate at which water evaporates and moves into the atmosphere.

Clearly, option C is false as well.

Refer to:

The World Health Organization (WHO) estimates that air pollution inside and outside the home is responsible for about 7 million premature deaths worldwide. **The majority of these deaths—4.2 million—are associated with ambient (outdoor) pollution.**

Thus, WHO estimated that major deaths were due to air pollution. This makes the sentence given in option D a true statement.

Option D is hence the correct answer.

7. Often called short-lived climate pollutants (SLCPs), **black carbon (a component of PM), tropospheric ozone and methane contribute to both the warming of the climate as well as air pollution.** According to the Climate and Clean Air Coalition, these three highly potent pollutants are responsible for 30-40 per cent of the global warming to date

The highlighted part above validates that only black carbon and tropospheric ozone contribute to air pollution and climate warming while ethane does not.

Option E is hence the correct answer.


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