

07-10-2022

## Air Pollution Status

### Why in Newspapers?

Recently, according to the World Health Organization, air pollution is a condition in which substances harmful to humans and the environment accumulate in large quantities in the atmosphere. Air pollution is one of the biggest health hazards in the world. Due to this, about 70 lakh people die every year, including 6 lakh children.

### Quick Issue?

- In India, the increasing level of PM 2.5 i.e. particulate matter is the most serious problem in terms of air pollution. According to the World Health Organization, the safe limit of PM 2.5 was previously set at 40 micrograms per cubic meter, but last year it changed its guidelines to recommend that the average annual reading of PM 2.5 particles is less than 5 micrograms per cubic meter.
- The condition is that in the country's capital Delhi, this level often remains close to 100 micrograms per meter cube. The situation is more or less the same in other polluted cities as well.

### Historical Background?

- Particulate matter is known as particulate matter. These are very small particles present in our atmosphere, which can be present in solid or liquid state.
- Particulate matter is in a dormant state in the atmosphere, which, being very minute, enters our body through inhalation and causes many life-threatening diseases. These particles cause the most damage to the heart and lungs and there is also a risk of severe asthma attack.
- The major sources of air pollution in India are transportation, use of biomass for cooking food, power generation, industry construction, combustion of waste etc.

### Other Key Facts?

#### Ministry of Environment, Forest and Climate

#### Change announced

- Recently, the Ministry of Environment, Forest and Climate Change has announced that it is launching the Clean Air Survey. This is being launched keeping in mind the target of reducing air pollution by 40 percent by 2025-26. For this survey, 131 cities have been divided into three groups on the basis of population. The first group consists of 47 cities with a population of more than one million. The second group consists of 44 cities with populations ranging from three to one million. The third group includes 40 cities with a population of less than three lakhs. The cities will have to do self-assessment on the online portal of the ministry. Cities must report activities and measures such as solid waste management, construction material and debris management, and pollution reduction. This assessment will be done every year.



- The major source of PM 2.5 emissions is transportation, which is responsible for emitting pollutants and resuspending road dust.
- Several efforts are being made by the government to prevent air pollution, including setting up of monitoring network for assessment of ambient air quality, promotion of clean gaseous fuels like CNG and LPG, increasing the amount of ethanol in petrol and National Air Quality Index. That is, introducing AQI etc. is included.
- Other decisions like implementation of BS-VI standards, ban on burning of biomass, promotion of public transport and mandatory pollution control certificate for all engine-driven vehicles have also been taken.
- In June 1972, a law was enacted by the Government of India to implement the decisions of the United Nations Conference on the Human Environment held in Stockholm. The name of this law made to deal with pollution was the Air (Prevention and Control of Pollution) Act, 1981.
- An air quality monitoring system SAFAR is being operated by the Union Ministry of Earth Sciences to measure the air quality in India. The full name of the journey is System of Air Quality Weather Forecasting and Research.
- India's pollution problem is much bigger than what we are seeing. To deal with this, it is necessary to have proper political will, awareness among the people and maximum transparency.
- Breathing in clean air is a fundamental right of every Indian citizen, but it is also the moral duty of every citizen to make the air and environment clean and as a citizen we have to realize our responsibility.

### Likely Question Asked In Preliminary Exam

**Que. Where is the world's first CNG terminal being built?**

- (a) Kolkata in West Bengal                      (b) Chennai in Tamil Nadu  
(c) Bhavnagar in Gujarat                      (d) Puducherry

**Answer - (c) Bhavnagar in Gujarat**

**Que. Started in 2014 in India, it is an effective propaganda tool to make people aware about air quality.**

- (a) Air Quality Management Mechanism                      (b) National Air Quality Index  
(c) National Ambient Air Quality Standard                      (d) Air Pollution Management and Modeling

**Answer - (b) National Air Quality Index**



## Nobel Prize 2022 in Medicine

### Why in Newspapers?

Swedish scientist Svante Paabo has been awarded the Nobel Prize for Physiology/ Medicine for the year 2022. He has been awarded "for his discoveries relating to the genome of the extinct hominin and human evolution".

### Quick Issue?

- Pabo, son of Nobel Prize-winning biochemist Sune Bergstrom, has been credited with transforming the study of human origins after developing approaches to allow the investigation of DNA sequences from archaeological and fossil remains.

### Historical Background?

- Through his pioneering research, Svante Pabo made the impossible task possible.
- They sequenced the genome of early human Neanderthals, extinct relatives of present-day humans. They also brought to light the existence of a previously unknown human species called Denisovans from a 40,000-year-old fragment of finger bone discovered in Siberia.
- Through his ground-breaking research, Svante Pabo established an entirely new scientific field 'paleogenomics'.
- Analysis of Genome Sequence.
- After the initial discoveries, his group has completed the analysis of several additional genome sequences from extinct hominins.
- Pabo's discoveries have established a unique resource, used extensively by the scientific community to better understand human evolution and migration.
- Powerful new methods for sequence analysis indicate that archaic hominins may have mixed with Homo sapiens in Africa.
- However, no genome has yet been sequenced from an extinct hominin in Africa due to accelerated degradation of archaic DNA in tropical climates.
- Thanks to the discoveries of Svante Pabo, the world now understands that archaic gene sequences from our extinct relatives influence the physiology of present-day humans.
- One such example is the Denisovan version of the EPAS1 gene, which helps with survival at higher altitudes and is a common gene found in present-day Tibetans.
- Another example is Neanderthal genes that affect our immune response to a variety of infections.
- The Nobel Prize for Medicine is arguably one of the most prestigious awards in the world of medicine. It is awarded by the Nobel Assembly of the Karolinska Institutet, Sweden.

### Other Key Facts?

#### Achievements

- **Paleogenomics:** Through his ground-breaking research, Svante Pabo established an entirely new scientific discipline, 'Paleogenomics'.
- They sequenced the genome of Neanderthals, which tells about the close relationship between extinct Neanderthals and present-day humans.
- New methods for sequence analysis indicate that 'archaic hominins' may have mixed with 'Homo sapiens' in Africa.



- The Nobel Prize provides an amount of 10 million Swedish Crowns (\$900,357).
- Swedish scientist Svante Pabo has been given this award for his discoveries related to the genome of extinct hominin and human evolution.
- Svante Pabo leads researchers in developing a new technique to compare the 'genomes' of Neanderthals and Denisovans, an extinct species very similar to modern humans.
- Neanderthal bones were first discovered in the mid-19th century. This breakthrough was achieved by tracing the structure of his DNA. This achievement is often referred to as the 'code of life'. In this way, scientists were able to fully understand the relationship between species.

### Likely Question Asked In Preliminary Exam

**Que. Who among the following won the 2022 Nobel Prize in Physiology or Medicine for discoveries that provide our understanding of how modern-day humans evolved from extinct ancestors?**

- (a) Roy York Kaln
- (c) Svante Pabo

- (b) Christer Fuglsang
- (d) Tomas Lindahl

**Answer - (c) Svante Pabo**

