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Role of Dust Suppressants in Mitigating Air Pollution

Why in News?

- **Recently, Dust suppressants have gained significant attention as a potential solution to reduce dust-related pollution especially in cities like Delhi where air pollution remains a critical concern**

What are Dust Suppressants?

- Dust suppressants are typically composed of calcium or magnesium salts, which are mixed with water and then sprayed on roads.
- This mixture effectively suppresses dust, providing longer- lasting relief from particulate matter in the air.

Efficacy of Dust Suppressants

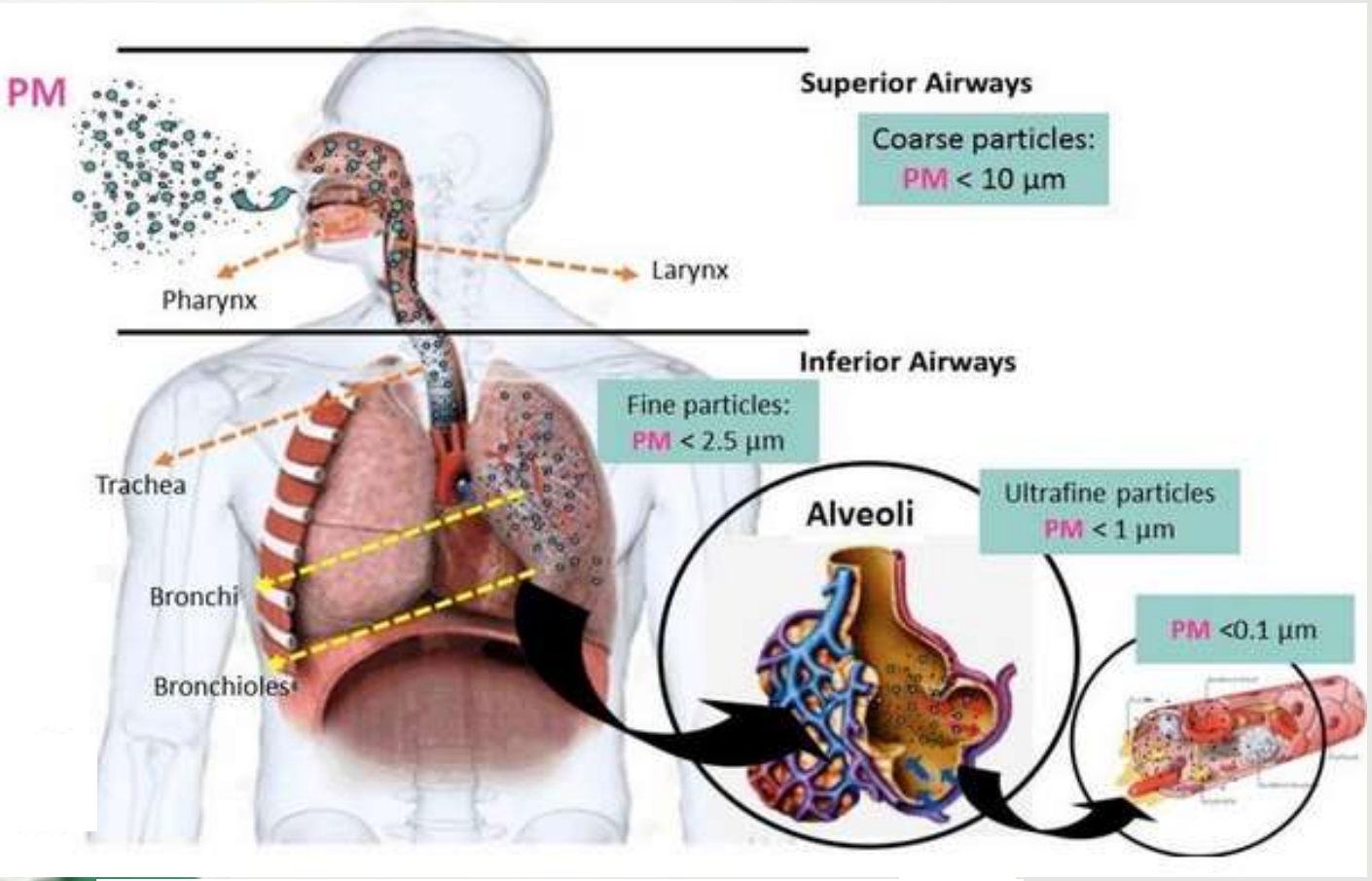
- The Central Pollution Control Board (CPCB) study indicated that the application of dust suppressants, when mixed with water, is more effective at controlling pollution than traditional methods, such as water spraying.

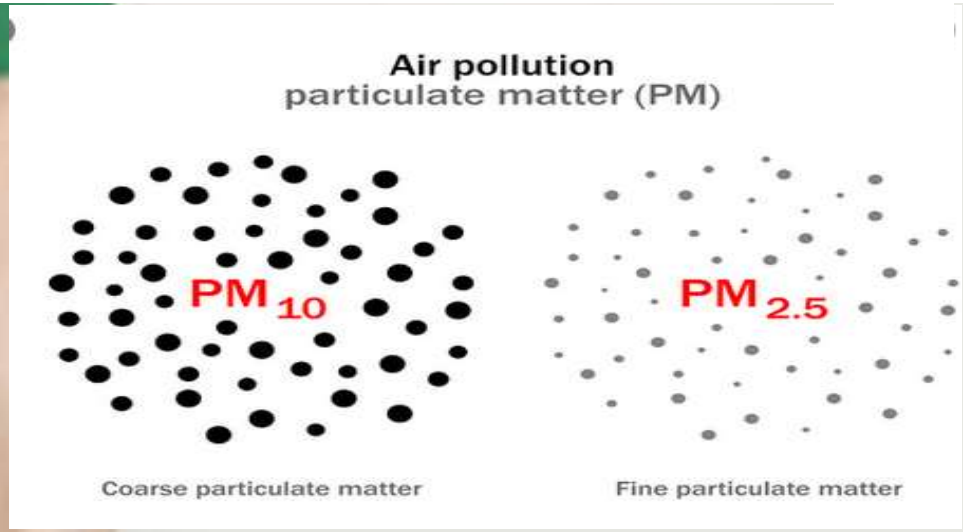
- The study observed up to a 30% reduction in dust concentration (including PM10, PM2.5, and PM1) for construction sites and roads following the use of dust suppressants.

Particulate Matter

- Particulate pollutants are matter suspended in air such as dust and soot.
- Major source of SPM (suspended particulate matter) are industries, vehicles, power plants, construction activities, oil refinery, railway yard, market place, industries, etc.
- Their size ranges from 0.001 to 500 micrometers (µm) in diameter.

Heavy Particulate Matter	Suspended Particulate Matter	Nanoparticulate Matter
• More than 10 µm	• Less than 10 µm	• Less than 0.02 µm
• Settles down after a point	• Floats and moves freely with air currents	• Very light and harmful • Form aerosols





PM 10 and PM 2.5

➢**Particles which are more than 10 µm (PM10) in diameter settle down.**

➢**Particles less than 2.5 µm (PM2.5) float and move freely with the air current.**

➢**PM 2.5 are responsible for causing the greatest harm to human health.**

➢**These fine particulates can be inhaled deep into the lungs and can cause breathing and respiratory symptoms, irritation, inflammations and pneumoconiosis (disease of the lungs caused due to inhalation of dust.**

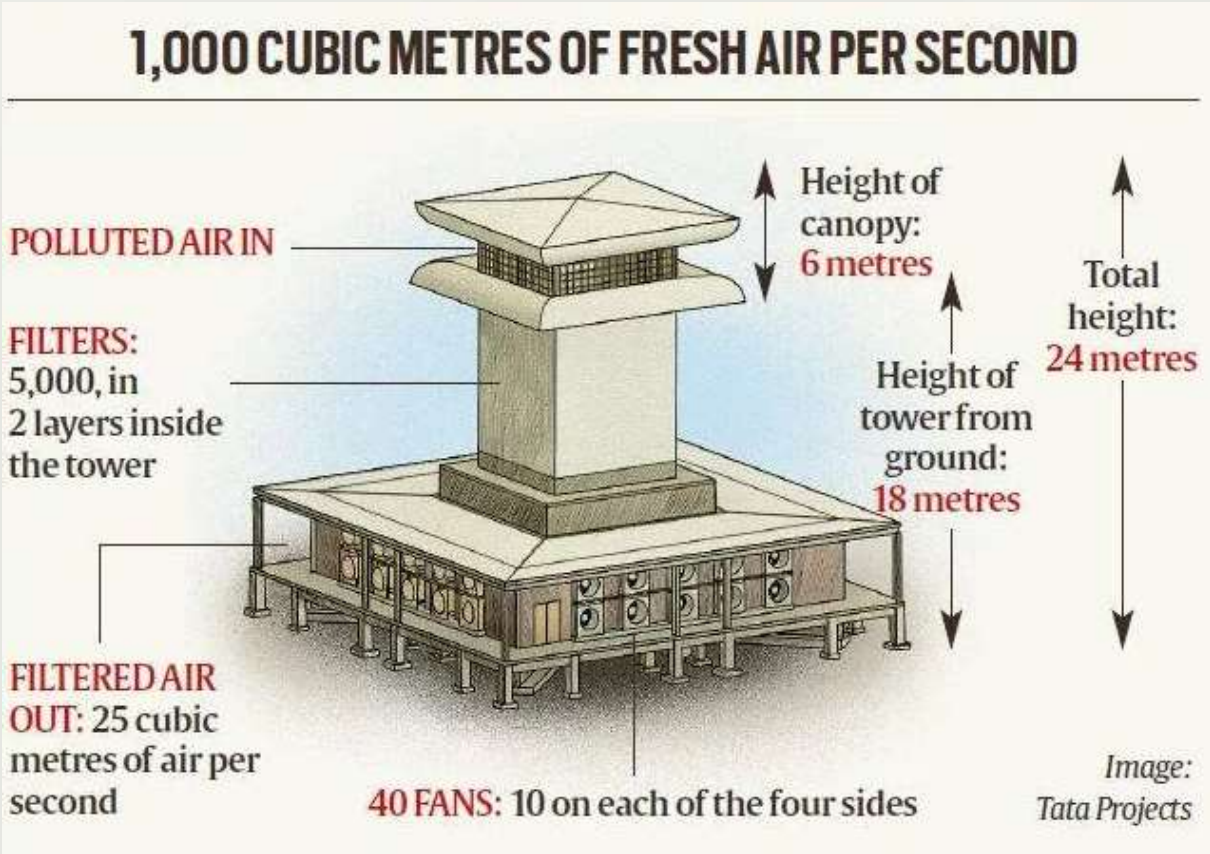
Other Interventions to Curb Air Pollution

Smog Towers: These towers are substantial air purifiers targeting the reduction of particulate matter and pollutants on a larger scale.

A smog tower is a structure designed to work as a large-scale air purifier.

How it works?

- This structure fitted with multiple layers of filters which trap fine dust particles suspended in the air as it passes through them.
- Air is drawn through fans installed at the top of the tower, passed through filters, and then released near the ground.



Government Initiatives to Combat Air Pollution?

- National Clean Air Programme (NCAP)-2019
- BS-VI vehicles
- Turbo Happy Seeder (THS)
- System of Air Quality and Weather Forecasting and Research (SAFAR)
- National Air Quality Index (AQI)
- Graded Response Action Plan (Delhi)

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