Study on Effects of Particulate Matter 1

Prelims: *Current events of national and international importance*

Why in News?

A recent study states that PM1 poses greater health risks than PM2.5 but remains unmonitored in India, and it links to cardiovascular disease, hypertension (also in children), cancer, and respiratory illness.

- PM1, particulate matter ***smaller than 1 micron.***
- It is a lethal but least understood air pollutant in India's toxic airscape.
- Ultrafine PM1 is especially hazardous because of its ability to move past the body's natural defences in a way larger particles cannot.
- PM10 is largely filtered out by nasal hair and mucous, while PM2.5 travels deep into the lungs and is already linked to millions of global deaths.
- PM1, however, is small enough to penetrate the alveoli, cross into the bloodstream, and, in some cases, infiltrate through the skin.
- PM1 particles carry hazardous chemicals and heavy metals, including lead, cadmium, chromium, and nickel, all of which are strongly associated with heart disease and cancer.
- This toxic load moves through the bloodstream, heightening long-term risks even at low-level exposure.
- PM1 forms nearly 50% of the PM2.5 concentration.
- **No Regulatory Framework -** Globally, scientists have warned that this ultra-fine fraction may be causing damage far more severe than PM2.5 and PM10.
- Neither the World Health Organization nor India's Central Pollution Control Board has set standards for PM1, and the pollutant does not appear in any national regulatory framework.
- India's continuous ambient air quality monitoring stations (CAAQMS) currently measure PM10 and PM2.5, but PM1 is not included in the CPCB or state-level regulatory monitoring frameworks.

Reference

[Down to Earth | PM1 deadlier than PM2.5]