Non-methane hydrocarbons (NMHCs)

Prelims: *Current events of national and international importance| Environment*

Why in News?

Researchers from Aryabhatta Research Institute of Observational Sciences (ARIES), spent a year (2022–2023) measuring non-methane hydrocarbons (NMHCs) in Munsyari, a high-altitude Himalayan tourist destination.

- **NMHC** – They are a highly reactive group of volatile organic compounds (VOCs) that contain only carbon and hydrogen, with methane explicitly excluded.
- **Primary sources** – They are primarily emitted by fossil fuel combustion, vehicular exhaust, industrial processes, and biomass burning.
- **Gases included** – Common atmospheric gases like *ethane, ethene, propane, and benzene.*
- **Concentration variability** – Parts per billion in remote areas to much higher levels in dense, industrialized, or urban locations.

***Volatile Organic Compounds (VOCs**) are carbon-based chemicals that easily vaporize into the air at room temperature.*

Impacts

- **Ozone Precursors –** In the presence of sunlight and nitrogen oxides, NMHCs undergo complex photochemical reactions that form ground-level (tropospheric) ozone and harmful secondary pollutants like photochemical smog.
- **Health Risks –** While many light alkanes act largely as irritants or ozone precursors, heavier aromatic hydrocarbons such as benzene are highly toxic and well-documented carcinogens.
- **Climate Influence –** By reacting with atmospheric radicals (like hydroxyl radicals), NMHCs directly influence the lifetime of other greenhouse gases.

Reference

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