



Clean Air Data — 2025 Highlights

1. Global Exposure & Health Impacts

99% of the world's population lives in areas exceeding safe air pollution levels.

stateofglobalair.org

Air pollution remains the second leading risk factor for death globally, contributing to 8.1 million deaths in 2021.

Health Effects Institute

stateofglobalair.org

2. Air Quality in the U.S.

Nearly 156 million Americans ($\approx 46\%$) now breathe unhealthy air, receiving a failing grade for ozone or particle pollution.

The San Francisco Bay Area ranks 14th worst in the U.S. for ozone pollution. Vehicle emissions are responsible for over half its smog-forming precursors.



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3. India: Regional Trends

In Mumbai, most stations recorded elevated PM10 levels in 2024–2025, driven by construction dust, industry, and traffic.

Derabassi (Punjab region) saw an 11.4% increase in PM10 (from $88 \mu\text{g}/\text{m}^3$ in 2017–18 to $98 \mu\text{g}/\text{m}^3$ in 2024–25), making it one of India's most polluted towns. Still, other cities like Jalandhar and Amritsar saw large improvements.

A national study found 122 out of 239 cities exceeded India's PM2.5 standard ($40 \mu\text{g}/\text{m}^3$), and every city exceeded the stricter WHO guideline of $5 \mu\text{g}/\text{m}^3$.

4. Wildfire Impacts

Canada's 2025 wildfires caused hazardous air quality across North America, triggering health alerts. About 81 million Americans were affected by smoke.

In California and Oregon, wildfires prompted evacuations as air quality deteriorated sharply.



5. Health & Equity Concerns

In England, GP visits for asthma surged by 45% (Jan–June 2025 compared with 2024), tied directly to worsened air quality. The RCGP reports that 99% of the UK breathes “toxic air”, leading to ~500 weekly deaths and £27 bn in annual costs.

6. Monitoring & Policy Advances

The WHO Air Quality Standards database (2025) now covers 17% more countries, tracking limits for pollutants like $PM_{2.5}$, PM_{10} , NO_2 , SO_2 , O_3 , and CO.

The European Environment Agency’s “Air Quality Status Report 2025” evaluates 2023 and 2024 pollution levels across Europe against EU limits and future 2030 targets.

European Environment Agency

The American Lung Association’s “State of the Air 2025” provides a national air-quality assessment —the public-facing summary and full PDF are available.



7. Technological & Research Developments

Sentinel-4 satellite launched in July 2025 from geostationary orbit to monitor European air quality in near real-time.

A cutting-edge AI model using satellite data and graph neural networks successfully predicts NO_2 in unmonitored areas, reducing prediction errors by ~8–33%.

In Africa, the AI-powered AirQo data pipeline handles real-time air quality data from 400+ sensors despite limited resources—showcasing resilient monitoring infrastructure.

Taxis in U.S. cities are being used as mobile sensors; collecting $\text{PM}_{2.5}$ data across streets provides fine-grained pollution maps—suggesting scalable urban monitoring strategies.

Quick Reference — Research Links

Topic Resource

Global exposure & deaths WHO Air Pollution Data Portal
stateofglobalair.org

World Health Organisation

Health Effects Institute

U.S. air quality trends ALA's "State of the Air 2025"
Lung Association

San Francisco ozone data State of the Air report summary

Mumbai PM10 and Indian cities Safar/BMC data and NCAP insights

Wildfire smoke impacts Canada and U.S. alerts

UK health data & cost RCGP and Royal College findings
The Guardian

Standards and policy database WHO standards database
World Health Organization

Clean Air Fund

European air quality report EEA status report
European Environment Agency

Real-time monitoring tools Sentinel-4 satellite, AI pipelines, taxi sensors