Programs for Prevention & Control of Health Impacts

March 13, 2026

Dr. dr. Then Suyanti, MM
Director of Environmental Health
Ministry of Health of the Republic of Indonesia

Clean Air is Very Important for Health

However, facts show that almost the entire global population (99%) breathes air with pollutant concentrations that exceed the limits set by the WHO.

Air Pollution

The contamination of the air by one or more physical, chemical, or biological substances in the atmosphere in quantities that can be hazardous to health or cause damage (WHO)

Source

Here are the most common sources of air pollution:
Factories
Motor vehicles
Wildfires
Domestic activity

Indicator

Particulate matter (PM10, PM2.5)
Carbon monoxide
Ozone
Nitrogen dioxide
Sulfur dioxide

AIR POLLUTION

- Air pollution has a **transboundary** nature, posing a risk to everyone regardless of their background.
- **Impact on Vulnerable Populations** (Poor air quality disproportionately affects vulnerable groups like the **elderly** and **children**, who have more sensitive respiratory systems. One in four deaths among children under five years old is linked to environmental risks, including air pollution. In 2017 alone, this led to 1.7 million deaths annually among children globally, according to the World Health Organization)
- **Recent Study on Indoor Air Quality** (A recent indoor air quality study conducted by PPKLI UI and the Ministry of Health in the Jabodetabek region (October-November 2023) revealed high levels of indoor air pollution in urban areas. The study measured indoor air quality across 18 zones in 12 cities and regencies within Jabodetabek. It found that **not a single area met the indoor air quality standards for both PM2.5 and PM10 parameters.)**


Source : greenpace.org

HEALTH IMPACTS OF AIR POLLUTION

Both indoor and outdoor air pollution have negative health effects on people of all ages.

Indoor Air Pollution

Main Sources :
Wood-burning stoves • Cigarette smoke • Household

Outdoor Air Pollution

Main Sources:
Motor vehicles, Industrial processes, Wildfires

Negative Health Impacts

Birth

- Low Birth Weight (LBW)
- Fetal Growth Restriction
- Premature Birth
- Stillbirth
- Neural Tube Defects
- Anthropometric Growth Disorders

Early Life

- Asthma
- Acute Respiratory Infection (ISPA)
- Cardiovascular Disease
- Lung Disease
- Insulin Resistance

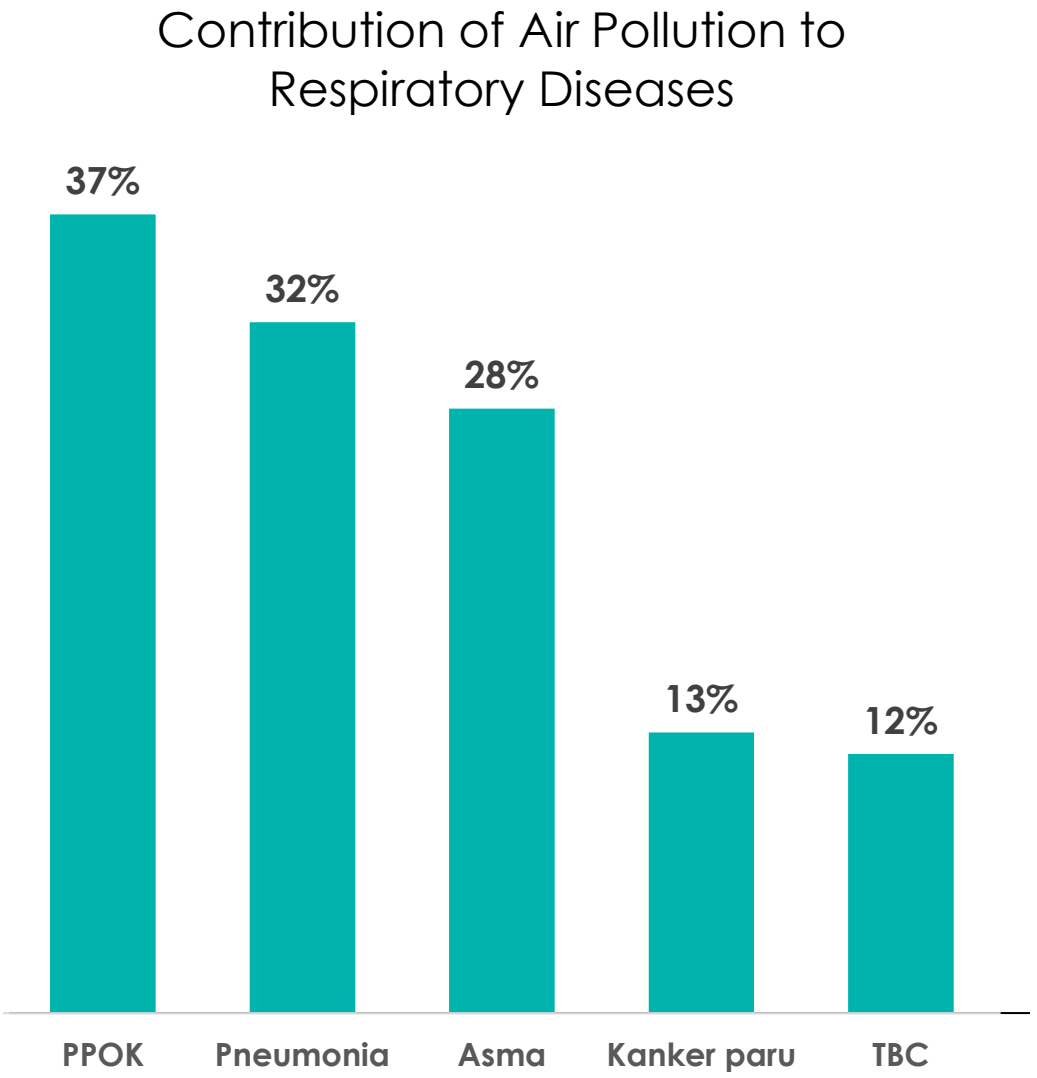
Adulthood

- Cardiovascular Disease
- DNA Damage
- Chronic Bronchitis
- Lung Disease

Kemenkes

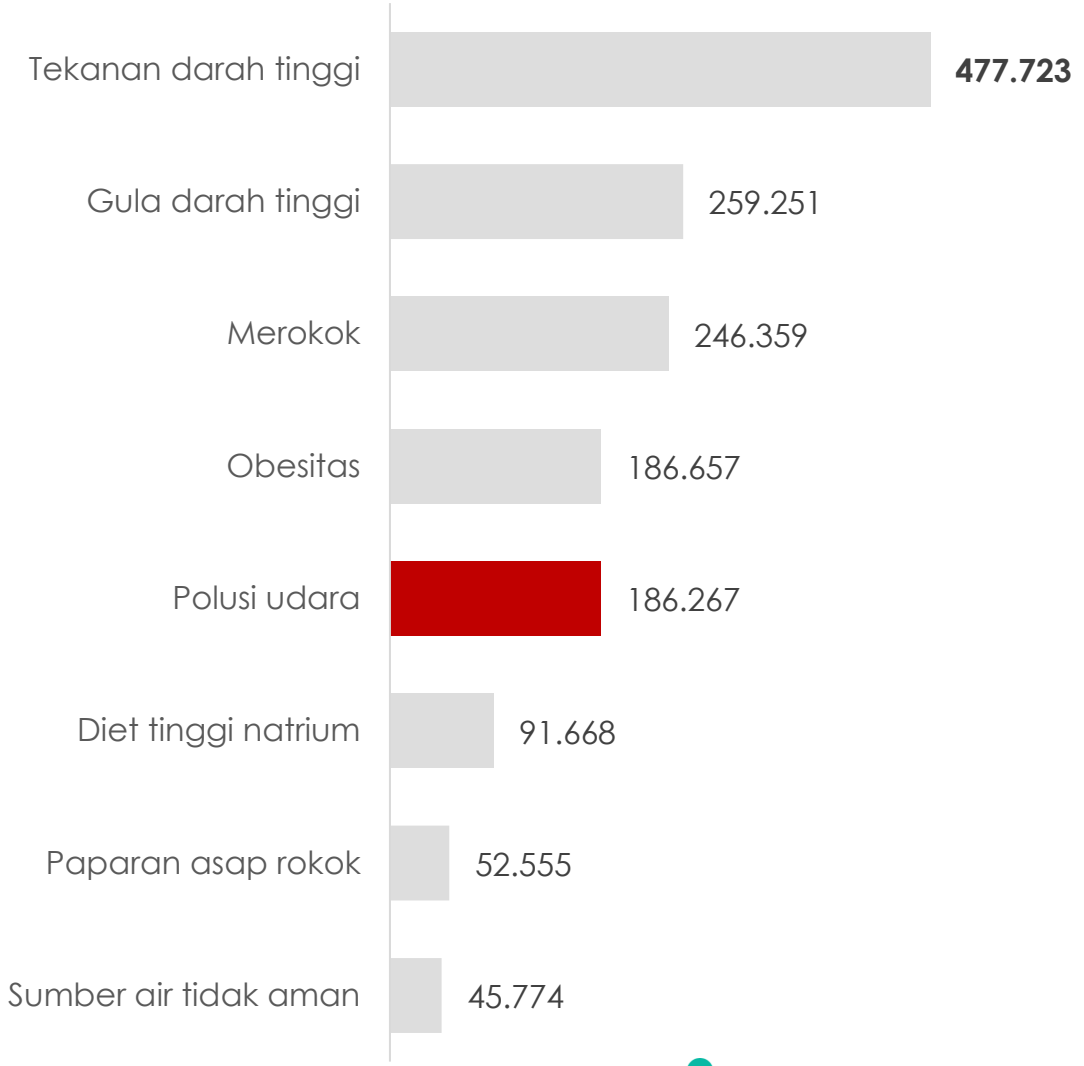
Farmer SA, Nelin TD, Falvo MJ, Wold LE. Ambient and household air pollution: complex triggers of disease. Am J Physiol Heart Circ Physiol. 2014. 307: H467–H476.

Air pollution has a serious impact on respiratory diseases.



Sumber: Pengelolaan Data dari Berbagai Riset

...and is the 5th leading risk factor for death in Indonesia.



Strategy to improve air quality & manage health impacts

1 Detection

- Daily, monthly and annual air quality monitoring through indoor and outdoor air quality sensors
- Surveillance for prevention and early detection for groups at risk of health problems due to air pollution

2 Health Risk Reduction

- *Early warning: regularly broadcast air quality monitoring results & early warnings when air pollution is bad*
- Health promotion: recommendations for prevention or restriction of outdoor activities and education on 5M* health protocols against air pollution

3 Emission & Dust Control

- Controlling emissions from industry, households and public facilities
- Vehicle emission control
- Restriction of burning waste

4 Adaptation

- Health services for diseases due to air pollution (COPD, Asthma, Pneumonia) in primary and referral health service facilities
- Research on diseases & management related to air pollution risk factors

KEMENTERIAN KESEHATAN REPUBLIK INDONESIA

Periodic Targets for Implemention of the National Air Health Roadmap 2024-2030

Period I (2024 - 2025)
"Building the commitment & readiness of the Indonesian government in managing air quality & health"

- Building commitment from multiple stakeholders
- Implementation of a multi-sector cooperation framework
- Implementation of air quality monitoring & surveillance of health impacts in priority areas
- Formation of updated baseline data related to air quality & health in Indonesia

Period II (2026 - 2027)
"Building qualified human resources & systems for air quality & health management"

- Formation of an integrated national air quality & health monitoring system from the district/city to the central level
- Creation of competent human resources
- Increased public understanding
- Increased active public participation in air quality management

Period III (2028 - 2030)
"Achieving clean & healthy air quality that is able to support prosperity & social justice"

- Even improvement in national air quality
- Decreasing number of diseases related to air pollution
- Reporting of Indonesian air quality as one of the achievements in the 2030 SDGs reporting

KEMENTERIAN KESEHATAN REPUBLIK INDONESIA

Indoor Air Quality Surveilance is not limited to measuring air quality & its impact on health, but is continued with air quality improvement interventions

Technical Intervention:

1. Use of Appropriate Technology (TTG) to improve indoor air quality (air purifier/disinfection, both physical, chemical, & microbiological means)
2. Temperature & humidity control
3. Implementation of Smoke-Free Areas (KTR) in public places & workplaces

Non-Technical Intervention:

1. Utilization of indoor plants to absorb gas pollutants
2. Ventilation system management
3. Keeping rooms clean from smoke & dust
4. Reducing sources of indoor pollutants
5. Improving PHBS (Clean and Healthy Lifestyle Behavior)
6. Use of low-emission fuels

Strategies to improve air quality and manage its health impacts

1. **Health promotion** through education on the effects of air pollution and efforts to reduce its dangers by implementing a Health Protocol. This includes:
    a. Checking air quality via an app or website;
    b. Reducing outdoor activities and closing ventilation in homes, offices, schools, and public places when air pollution is high;
    c. Using an indoor air purifier;
    d. Avoiding sources of pollution and cigarette smoke;
    e. Using a mask when air pollution is high;
    f. Practicing clean and healthy living behaviors;
    g. Immediately consulting with a health professional (online or offline) if respiratory complaints appear.
2. **Collaborating with various parties** in each region to create an early warning system for the public during high air pollution.
3. **Increasing surveillance, identification, and early intervention**, as well as conducting a Health Risk Assessment. Data on respiratory and non-respiratory diseases related to air pollution will be collected periodically.
4. **Case management** in the form of comprehensive care at health service facilities.

Preventive Measures Air Pollution

1. Educate the public through various media campaigns about the health impacts of air pollution, including both acute (short-term) and chronic (long-term) diseases
2. Encourage increased public vigilance by providing early warnings based on official, real-time air quality monitoring data from authorized sources
3. Prepare primary and advanced-level health facilities and collaborate with other relevant stakeholders to handle public health complaints and issues caused by air pollution
4. Promote increased public participation in managing the health impacts of air pollution by implementing a Health Protocol, especially for vulnerable populations such as children, pregnant women, people with comorbidities, and the elderly.
5. Ensure the availability of protective masks in every region, specifically those that can filter out air pollutants, especially PM2.5.

CONCLUSION

1. Air pollution has a serious impact on vulnerable groups like children and the elderly, and it also has the potential to affect all parts of society, especially the lower-middle class. Seasonal variations, anthropogenic activities, and urbanization patterns are also complicating factors for air quality issues in Indonesia.
2. There is a need for better cross-sectoral coordination, especially regarding the collection of accurate data and information, as well as health monitoring

Kemenkes

Jl. H. R. Rasuna Said No.Kav 4-9 Blok X-5, RT.1/RW.2, Kuningan, Kecamatan Setiabudi, Kota Jakarta Selatan, Daerah Khusus Ibukota Jakarta 12950

@KemenkesRI; @lifeatkemenkes

www.kemkes.go.id

Kementerian Kesehatan RI