

WHO Global Air Quality Guidelines 2021

Setting ambitious goals for air quality to protect public health

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About **PAHO**

MILESTONES



Formed by 11 countries at the the First Sanitary Convention of the American Republics, PAHO is the world's oldest international public health agency.



1902



Becomes the health agency for the Inter-American System, reporting to the Organization of American States (OAS).



1950



1949



Becomes the Regional Office for the Americas of the World Health Organization (WHO), part of the UN System.

A photograph of a slum area. In the background, there are multi-story buildings made of brick and wood. Two people are visible in a window on the upper floor. In the foreground, several young boys are present. One boy in the center is holding a large, yellow fishing net. Another boy is bent over, and others are standing around. The ground is covered with trash and debris. The overall scene depicts a challenging living environment.

A critical challenge

**Environmental public health inequalities
between and within countries**

AIR POLLUTION – THE SILENT KILLER



PAHO

Every year, around **7 MILLION DEATHS** are due to exposure from both outdoor and household air pollution.

Air pollution is a major environmental risk to health.
By reducing air pollution levels, countries can reduce:

-  **Stroke**
-  **Heart disease**
-  **Lung cancer, chronic obstructive pulmonary disease, pneumonia and asthma**

REGIONAL ESTIMATES ACCORDING TO WHO REGIONAL GROUPINGS:



WHO Air Quality Guidelines set goals to protect millions of lives from air pollution.

CLEAN AIR FOR HEALTH

#AirPollution



WHO Global Air Quality Guidelines 2021

What are the AQGs and what is new in them?

What are the WHO Air Quality Guidelines?



- Based on extensive scientific evidence, the AQGs identify the levels of air quality necessary to **protect public health worldwide**.
- They provide recommendations on **air quality guidelines levels** (and interim targets) for **PM_{2.5}** and **PM₁₀**, **O₃**, **NO₂**, **SO₂** and **CO**, and qualitative good practice statements for certain types of particulate matter.
- Guideline levels can be used as an **evidence-informed reference** to help decision-makers in setting legally binding standards and goals for air quality management.
- They are an **instrument to design effective measures** to achieve reduction of air pollution, and therefore, to protect human health.

What is new in these AQGs 2021?



- Since the last 2005 global update, there has been a marked increase in the quality and quantity of evidence that shows how air pollution affects different aspects of health.
- There are also now clearer insights about sources of emissions and the contribution of air pollutants to the global burden of disease.
- For that reason, and after a systematic review of the accumulated evidence, **several of the updated AQG levels are now lower than 15 years ago.**
- New features include new AQG levels for peak-season O₃ and 24-h NO₂ and CO, as well as new interim targets.

WHO AIR QUALITY GUIDELINE LEVELS ARE LOWER THAN 15 YEARS AGO



WHO Air Quality Guidelines set goals to protect millions of lives from air pollution.

CLEAN AIR FOR HEALTH

#AirPollution



THE WHO AIR QUALITY GUIDELINES PROVIDE VARIOUS GOOD PRACTICE STATEMENTS FOR:



CLEAN AIR FOR HEALTH

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What the AQGs provide...

Summary of recommended AQG levels and interim targets

Pollutant	Averaging time	IT1	IT2	IT3	IT4	AQG level
PM _{2.5} , µg/m ³	Annual	35	25	15	10	5
PM _{2.5} , µg/m ³	24-hour ^a	75	50	37.5	25	15
PM ₁₀ , µg/m ³	Annual	70	50	30	20	15
PM ₁₀ , µg/m ³	24-hour ^a	150	100	75	50	45
O ₃ , µg/m ³	Peak season ^b	100	70	–	–	60
O ₃ , µg/m ³	8-hour ^a	160	120	–	–	100
NO ₂ , µg/m ³	Annual	40	30	20	–	10
NO ₂ , µg/m ³	24-hour ^a	120	50	–	–	25
SO ₂ , µg/m ³	24-hour ^a	125	50	–	–	40
CO, mg/m ³	24-hour ^a	7	–	–	–	4

Air quality guideline levels for both long- and short-term exposure in relation to critical health outcomes.

Interim targets to guide reduction efforts for the achievement of the air quality guideline levels.

Good practice statements in the management of certain types of particulate matter for which evidence is insufficient to derive quantitative air quality guideline levels, but points to their health relevance.

Good practice statements

For the management of certain types of particulate matter

SAND AND DUST STORM



- Maintain suitable air quality management and dust forecasting
Maintain air quality monitoring systems and reporting procedures.
- Conduct epidemiological studies and research activities aimed at better understanding toxicity.
- Implement wind erosion control through the carefully planned expansion of green spaces.

BLACK/ELEMENTAL CARBON



- Make systematic measurements.
- Undertake production of emission inventories, exposure assessments and source apportionment.
- Take measures to reduce emissions and develop standards (or targets).

ULTRAFINE PARTICLES



- Quantify ambient UFP in terms of PNC for a size range with a lower limit of ≤ 10 nm and no restriction on the upper limit.
- Expand the common air quality monitoring strategy by integration of UFP monitoring.
- Distinguish between low and high PNC to guide decisions on the priorities of UFP source emission control.
- Utilize emerging science and technology for the assessment of exposure.

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Why are the AQGs so important for health?



Air pollution and health

The importance of the AQGs for health



- Around **7 million premature deaths** are attributable to the joint effects of ambient and household air pollution and of these, more than **320 000 happen in the Americas**.
- Air pollution is now recognized as the single biggest environmental threat to human health, along with climate change.
- Air pollution affects:
 - NCDs,
 - cardiovascular and respiratory diseases,
 - lower respiratory tract infections,
 - preterm birth,
 - and other causes of death in children and infants.

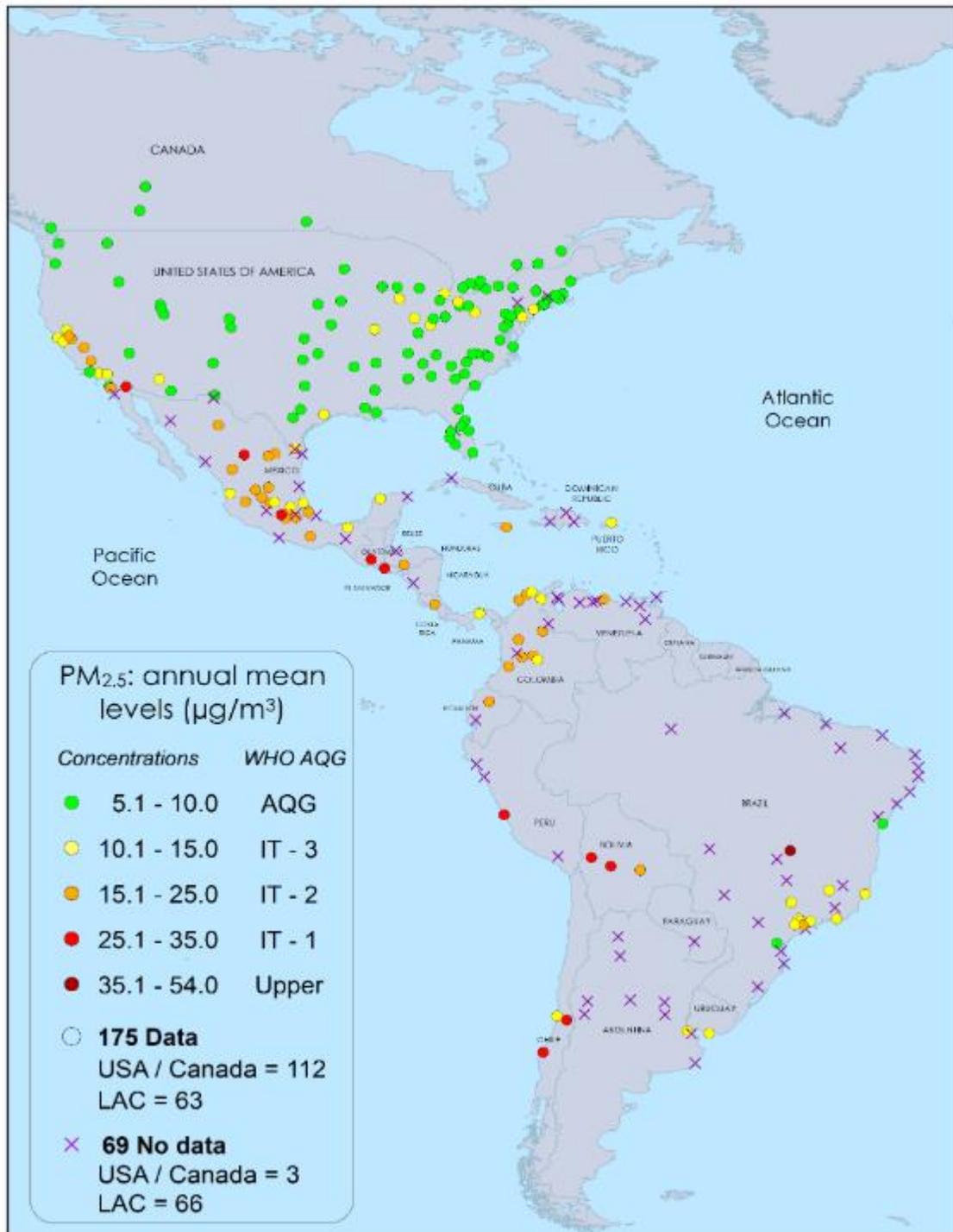


Air pollution in the world

- More than 90% of the global population in 2019 lived in areas where $PM_{2.5}$ concentrations exceeded the 2005 annual WHO AQG of $10 \mu\text{g}/\text{m}^3$.
 - *Many of the countries with the lowest national $PM_{2.5}$ exposure levels were in WHO European Region and North America.*
- The patterns of ambient NO_2 concentrations had the highest population-weighted concentrations in eastern Asia, the Middle East, North America and much of Europe, reflecting emissions from mobile sources propelled by combustion engines.
- Air pollution leads to health-related economic impacts through human health costs and lost labour productivity.

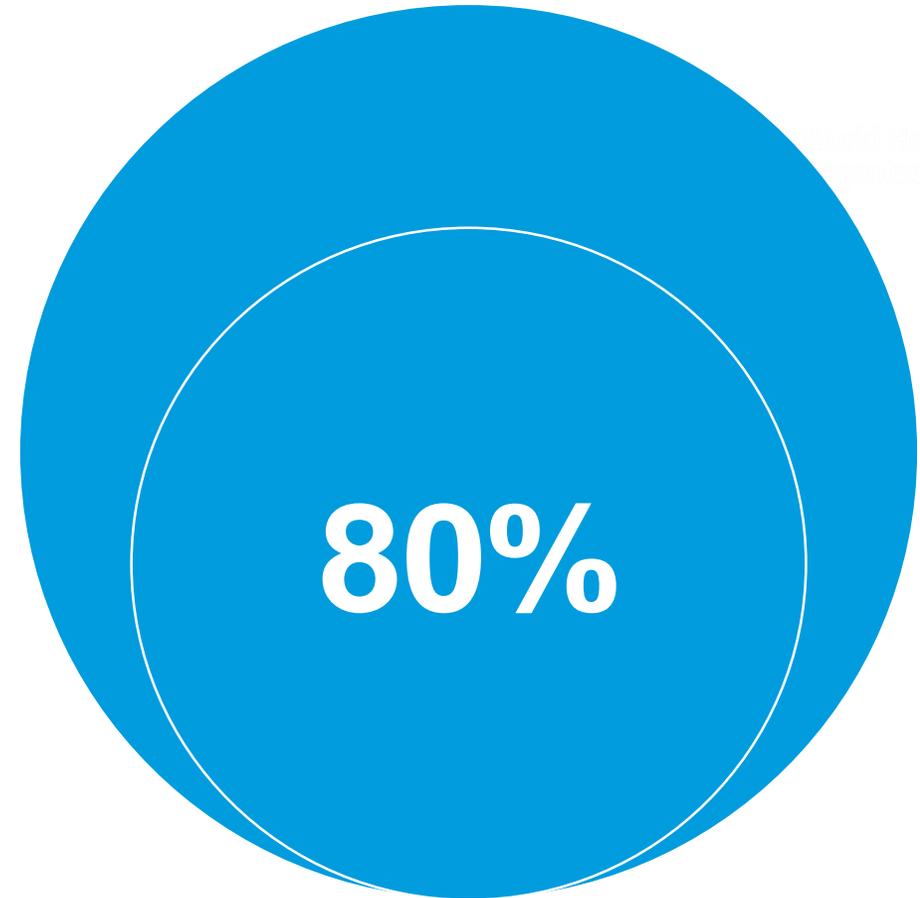
A closer look to the Americas

- **There are marked disparities in air quality governance.** Cities in Canada and the U.S, usually have wider, more reliable AQM networks while in the rest of the region AQM is still insufficient
- **Nearly 115 million people in LAC** live in cities of more than 500,000 inhabitants where there is not ground AQM information
- **More than 90 million** people still rely on polluting fuels for cooking and heating.
- **Just 2 cities in Latin America and the Caribbean** met 2005 WHO AQG for PM_{2.5}.
- There is limited application of QA/QC procedures and lack of trained officers for AQM.



How many premature deaths could be avoided?

- WHO performed a rapid scenario analysis to explore the reductions in disease burden attributed to ambient PM_{2.5} globally that would occur if the 2016 concentrations were reduced to the current AQGs (2021). **The estimated burden of disease can be reduced substantially (80%).**
- **Almost 3.3 million premature deaths attributed to ambient PM_{2.5} would have been avoided if the 2021 AQG level had been achieved worldwide in 2016.**
- **64% of premature deaths would have been avoided in the Americas (more than 160 000).**
- This burden of disease often disproportionately affects the most vulnerable and susceptible populations.
- The impact of air quality can be seen on people with greater exposure and individuals with chronic conditions (such as asthma, COPD, heart failure, diabetes), as well as children and pregnant women.



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How can the AQGs be used?



How can the AQGs be used?

AS AN EVIDENCE-INFORMED TOOL



The AQGs are an evidence-informed tool for decision-makers to guide legislation and policies, to reduce levels of air pollutants and decrease the health burden that results from air pollution exposure worldwide.

Everybody has a role to play

TO STIMULATE RESEARCH



Air pollution researchers and academics can use it to help identify critical data gaps that future research agendas could address to better protect the population from the harmful effects of air pollution.

FOR CLIMATE ACTION



Efforts to improve air quality can enhance climate change mitigation, and climate change mitigation efforts can, in turn, improve air quality. All this enhance people's health.

AQGs are a power tool for climate action

What can countries do with the AQGs?

Key points

- Countries can **use the AQGs as a tool** to guide, drive and support the selection and adoption of measures to reduce exposure to air pollution:
 - Establish or ***update their legally binding air quality standards and develop policies.***
 - ***Strengthening multisectoral cooperation*** at national, regional, and international levels, and advocating for air quality.
 - Taking effective steps to ***reduce health inequities*** related to air pollution.
- Actions to reduce air pollution require **cooperation** of various sectors and stakeholders.
- **Health sector is crucial** in raising awareness, gathering evidence, advising people on how to mitigate impacts, and joining advocacy efforts.

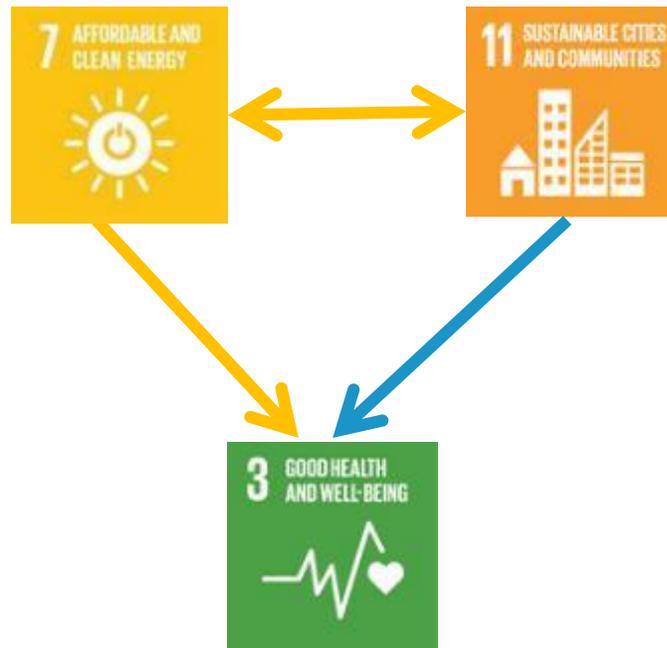
Continuous improvement of air quality



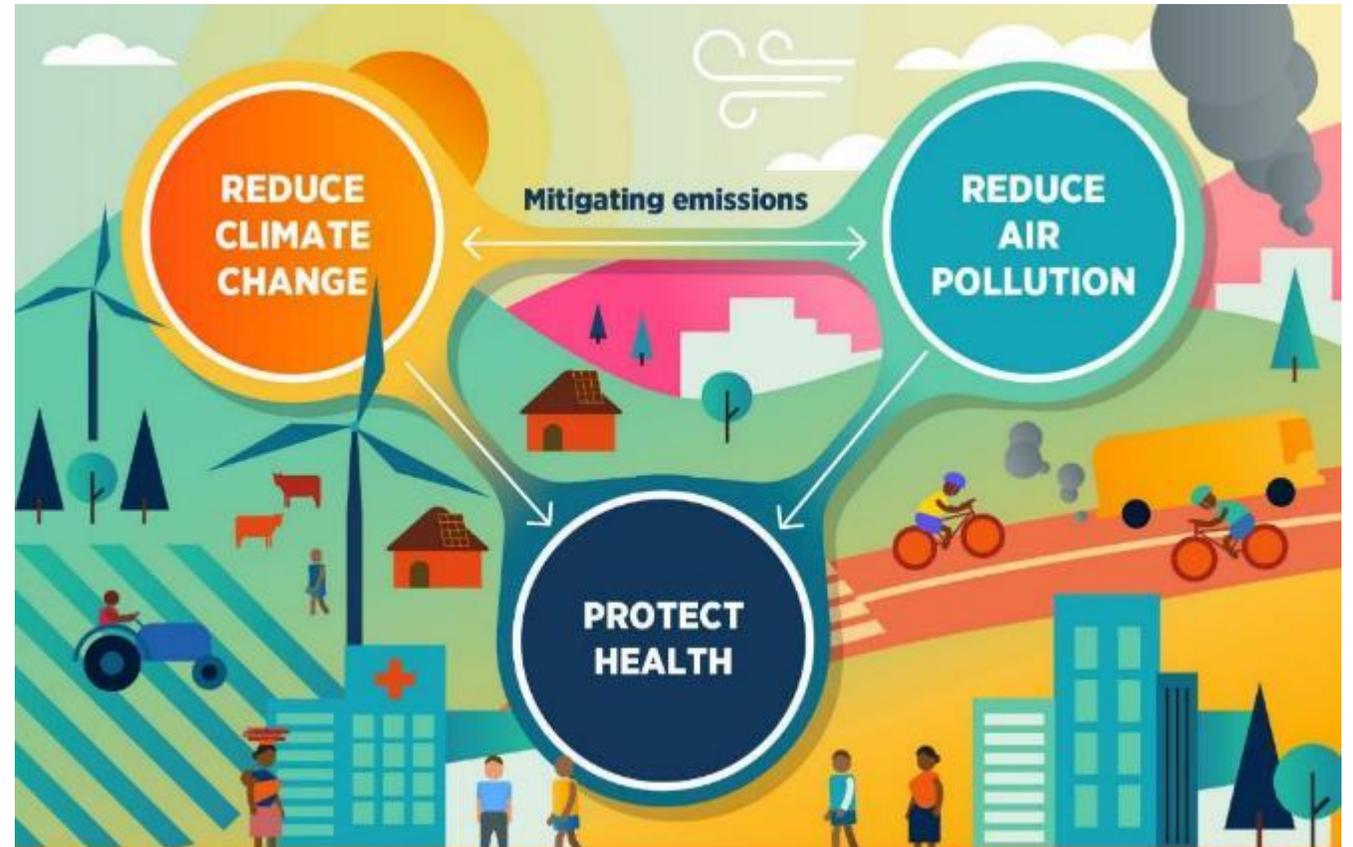
A Unique Opportunity

SDG 7.1.2: Percentage of population with primary reliance on clean fuels and technologies at the household level

SDG 11.6.2: Annual urban mean concentration of particulate matter (PM2.5), population-weighted



SDG 3.9.1: Mortality from air pollution



Solutions require multisectoral cooperation



The health sector has a crucial role

The health sector has a role in:

- **raising awareness** of the impact of air quality on health
- **advising** the public and patients about how the impact of air pollutants can be mitigated at an individual level;
- **gathering evidence** on health effects from air pollution;
- and **joining advocacy** efforts at the national and international levels to ensure that the health arguments are heard.

Engagement of the health community is crucial.



AGENDA FOR THE AMERICAS ON HEALTH, ENVIRONMENT, AND CLIMATE CHANGE

2021–2030



PAHO

How will PAHO/WHO support this process?

- In the Americas just 57% of countries have standards for at least one pollutant. AQGs can help to update standards and add more pollutants to the list.
- **PAHO/WHO is partnering with UNEP to support Member States in the Region in implementing the guidelines**
- **Science-policy dialogues** within and among Member States and with sectors and stakeholders
- **Advocacy** to support the uptake of AQGs and how to apply them
- **Capacity building** in the health and other sectors
- **Stakeholders:** Technical experts and decision-makers; International, national and local authorities; Civil society, patients and other advocacy groups; Health/environmental impact assessment practitioners; Air pollution researchers and academics

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Gracias!