# Revisions of the WHO Air Quality Guidelines: current status

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WHO European Centre for Environment and Health

Air pollution and health: recent advances to inform the European Green Deal

Brussels, 21-22 January, 2020

World Health Organization
REGIONAL OFFICE FOR Europe

Organisation mondiale de la Santé
BUREAU RÉGIONAL DE L' Europe

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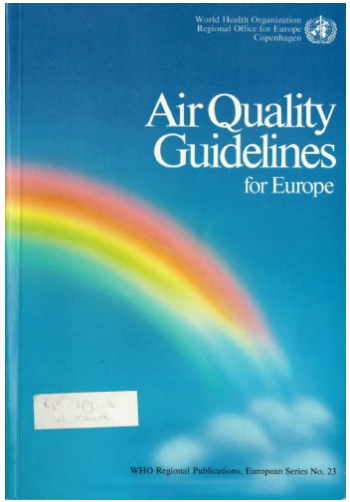
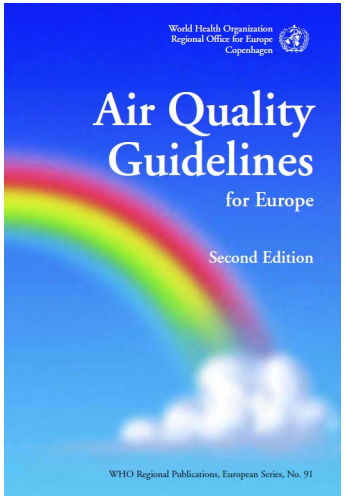
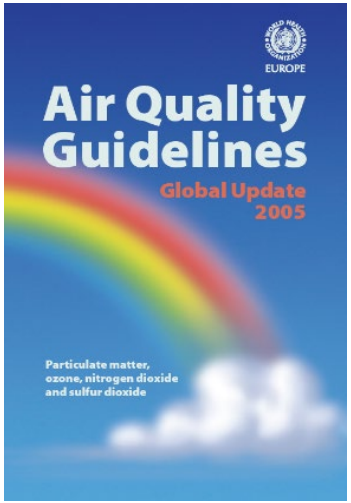
Всемирная организация здравоохранения
Европейское региональное бюро

# WHO Air Quality Guidelines



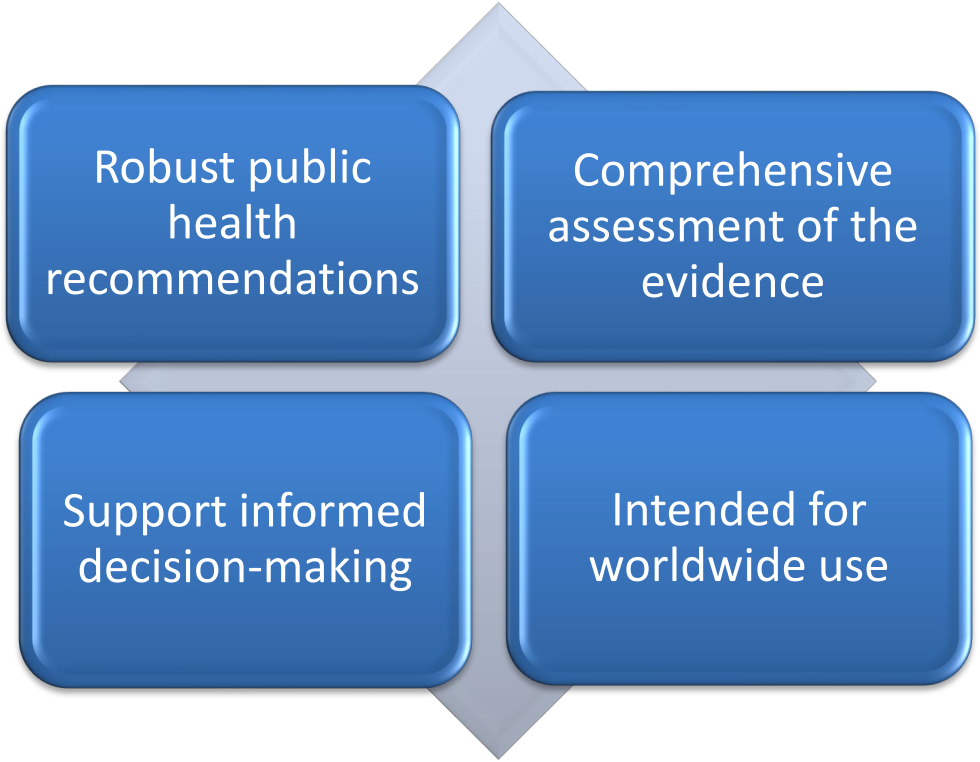




The first edition

*Published in 1987* *Published in 2000* *Published in 2006* *Under development since 2016*

# WHO Air Quality Guidelines (AQG)



# Uptake of WHO AQG in air quality policy

UNECE Convention on Long-range Transboundary Air Pollution

- Joint Task Force on the Health Aspects of Air Pollution

European Union

Individual Member States

Sub-national level

…

Int J Public Health
DOI 10.1007/s00038-017-0952-y

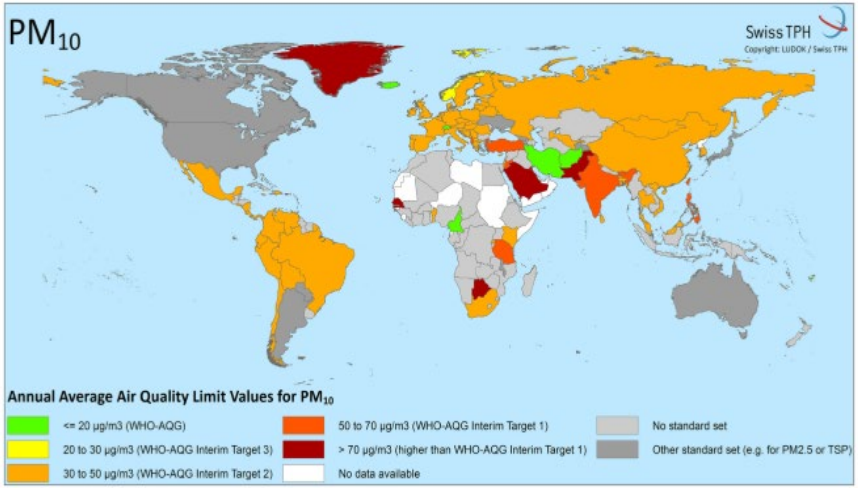
SSPH+

ORIGINAL ARTICLE

CrossMark

**Time to harmonize national ambient air quality standards**

Meltem Kutlar Joss[1,2] · Marloes Eeftens[1,2] · Emily Gintowt[1,2] · Ron Kappeler[1,2] · Nino Künzli[1,2]



# Uptake of WHO AQG in air quality policy

DIRECTIVE 2008/50/EC OF THE EURO

of 2

on ambient air qualit

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EURO
PEAN UNION,

Having regard to the Treaty establishing the European Commu
nity, and in particular Article 175 thereof,

Having regard to the proposal from the Commission,

environment as
mbat emissions

## Our definition of healthy air:

Concentrations of nitrogen dioxide ($NO_2$) and particulate matter ($PM_{10}$ and $PM_{2.5}$) that meet health-based Limit Values and World Health Organisation (WHO) Guidelines.

## Our Aim

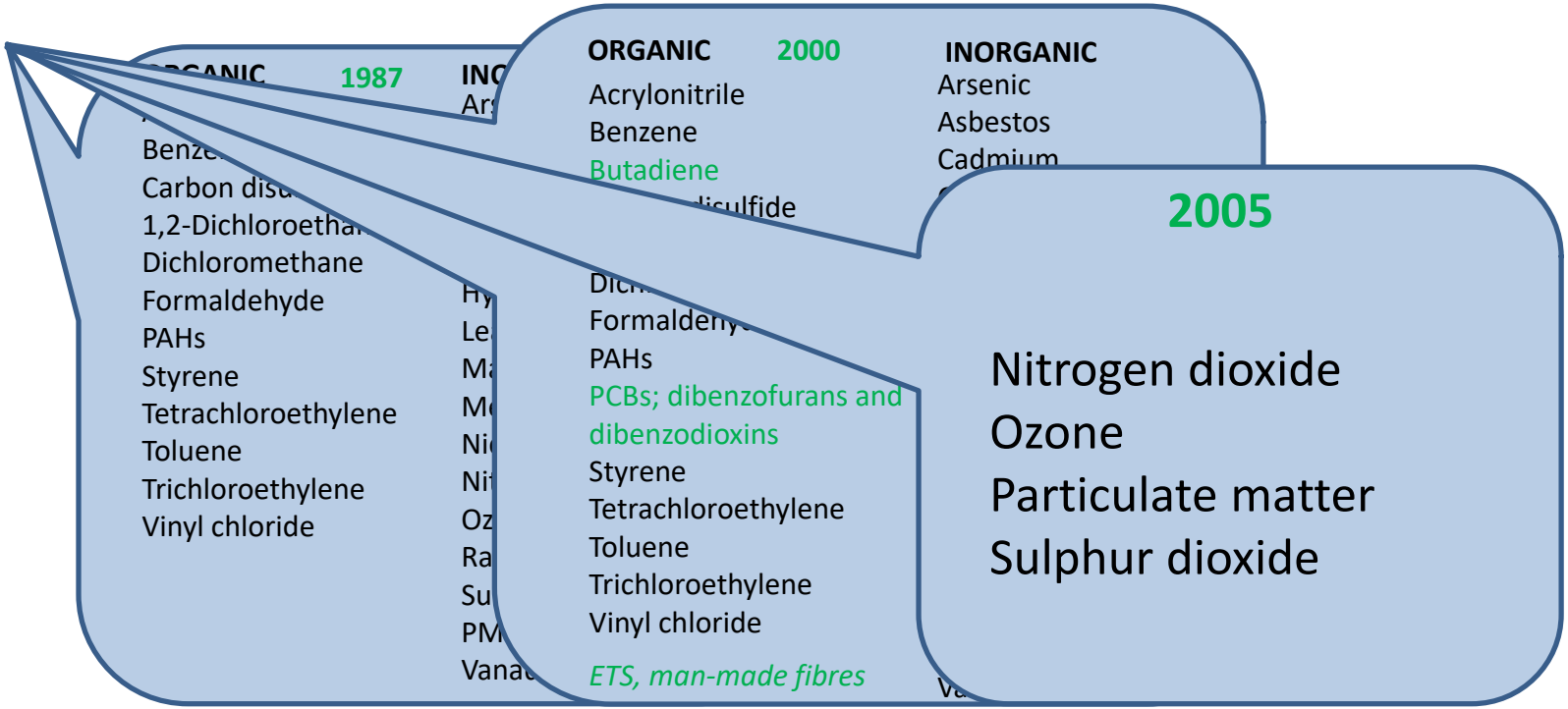
Our Aim For nitrogen dioxide to meet health-based Limit Values and WHO Guidelines in over 90% of the Square Mile by 2025 and support the Mayor of London to meet WHO Guidelines for $PM_{10}$ and $PM_{2.5}$ by 2030.

# Evolution of WHO Air Quality Guidelines

- Number of air pollutants considered
- Accumulated scientific evidence
- Use of WHO AQG to protect public health; environmental equity
- Importance of risk communication
- Interim targets to facilitate implementation
- Consideration of indoor air pollutants
- Approach to evaluating evidence and developing guidelines

# Evolution of WHO Air Quality Guidelines

- Number of air pollutants considered



# Evolution of WHO Air Quality Guidelines

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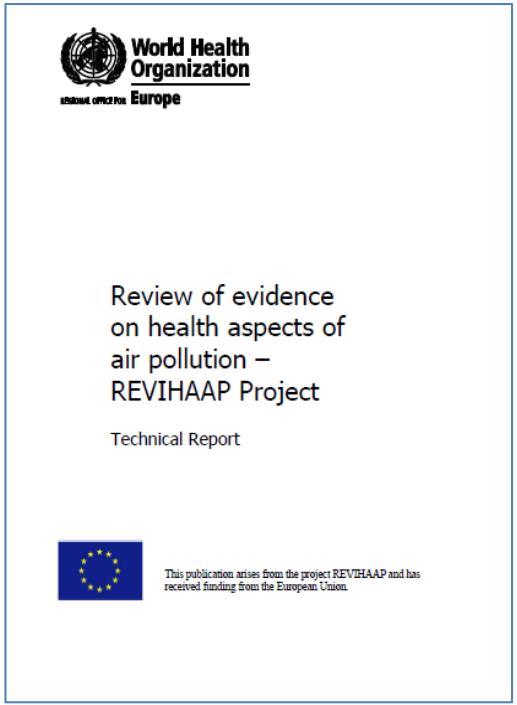
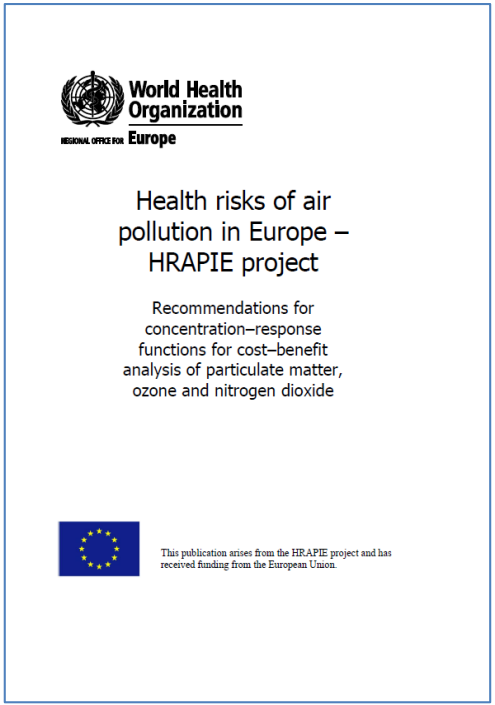
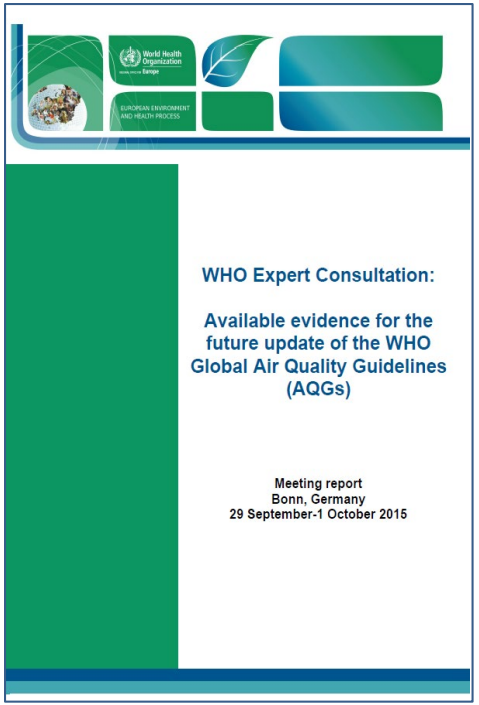
# Evolution of WHO Air Quality Guidelines

- Accumulated scientific evidence

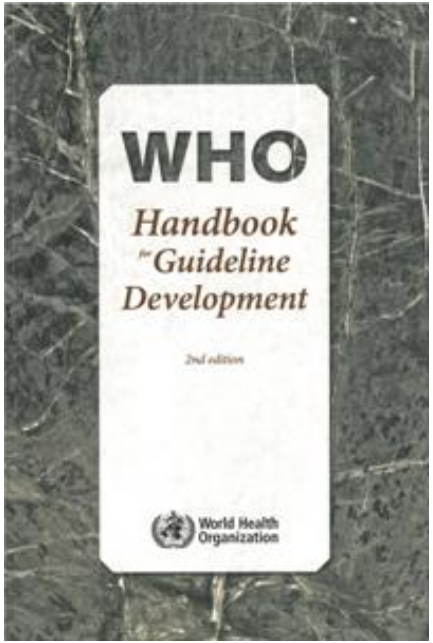


# Evolution of WHO Air Quality Guidelines

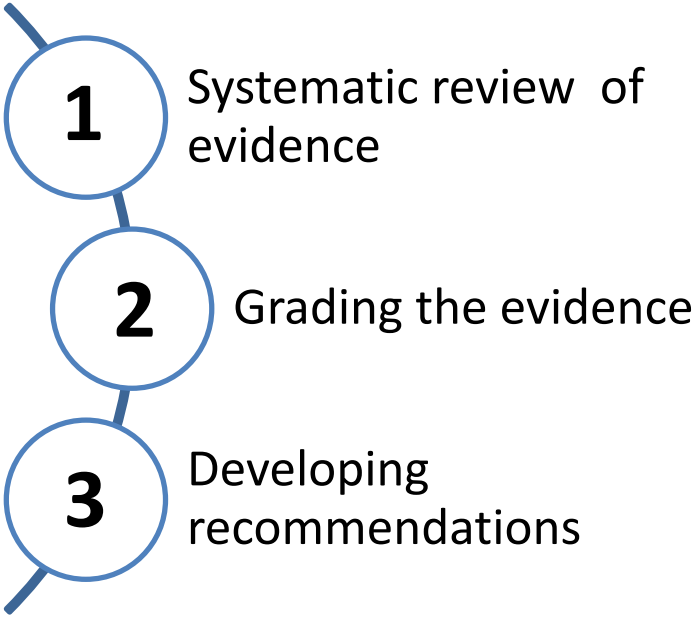
- Approach to evaluating evidence and developing guidelines




Since 2007, standards and methods adopted to ensure that guidelines are free from biases and meet public health needs

The WHO Handbook for Guideline Development (2014) provides a step-by-step guidance on how to plan, develop and publish a guideline

# Guideline development process

# Objectives of the guidelines

- To develop recommendations in the form of numerical concentration values and, where possible, with an indication of the shape of the CRF for $PM_{10}$, $PM_{2.5}$, $NO_2$, $O_3$, $SO_2$ and CO, for relevant averaging times and in relation to critical health outcomes

- To develop a qualitative recommendation / statement on desert dust

- To develop recommendations for PM components and UFPs, if feasible

- *To propose interim targets to support guideline monitoring and implementation*

# Systematic reviews of evidence

Short-term exposure to $O_3$, $NO_2$ and $SO_2$ and asthma

Long-term exposure to $O_3$ and $NO_2$ and all-cause and cause-specific mortality

Long-term exposure to PM and all-cause and cause-specific mortality


Short-term exposure to $SO_2$ and all-cause and cause-specific mortality

Short-term exposure to CO and ischaemic heart disease

Short-term exposure to PM, $NO_2$ and $O_3$ and all-cause and cause-specific mortality

# Systematic reviews of evidence

| | |
|---|---|
| Scoping: | 6 pollutants, 11 major outcomes, 6 PECOS |
| Planning: | 6 protocols, 2 new tools, 3 physical meetings |
| Identification/screening: | 12 databases searched; 20 000 papers identified/screened |
| Eligibility: | 500 eligible papers |
| Data extraction: | up to 60 data items extracted |
| Risk of bias : | 6 domains assessed |
| Synthesis: | 500 papers synthetized |
| Interpretation & conclusion: | 8 GRADE domains evaluated |

| Stage/primary contributor | Step |
|---|---|
| **Planning** | |
| WHO Member State, WHO country office or public/private entity | Request guidance on a topic |
| WHO technical unit | Determine if a guideline is needed; review existing WHO and external guidelines |
| | Obtain approval for guideline development from the director of the relevant technical unit at WHO |
| | Discuss the process with the GRC Secretariat and with other WHO staff with experience in developing guidelines |
| | Form the WHO guideline steering group |
| | Identify sufficient resources; determine the timeline |
| WHO guideline steering group | Draft the scope of the guideline; begin preparing the planning proposal |
| | Identify potential members of the GDG and its chair |
| | Obtain declaration of interests and manage any conflicts of interest among potential GDG members |
| WHO guideline steering group and GDG | Formulate key questions in PICO format; prioritize outcomes |
| WHO guideline steering group | Finalize the planning proposal and submit it to the GRC for review |
| GRC | Review and approve the planning proposal |
| **Development** | |
| Systematic review team | Perform systematic reviews of the evidence for each key question |
| | Evaluate the quality of the evidence for each important outcome, using GRADE as appropriate |
| WHO guideline steering group | Convene a meeting of the GDG |
| GDG | Formulate recommendations using the GRADE framework |
| WHO steering group | Draft the guideline document |
| External review group | Conduct external peer review |
| **Publishing and updating** | |
| WHO guideline steering group and editors | Finalize the guideline document; perform copy-editing and technical editing; submit the final guideline to the GRC for review and approval |
| GRC | Review and approve the final guideline |
| WHO guideline steering group and editors | Finalize the layout; proofread |
| | Publish (online and in print as appropriate) |
| WHO technical unit and programme manager | Disseminate, adapt, implement, evaluate |
| WHO technical unit | Update |

# Update of the WHO Global Air Quality Guidelines

- 09/2016: 1st meeting of the GDG
- 01/2017: guideline proposal approved
- Since 2017: systematic reviews of evidence
- 03/2018: 2nd meeting of the GDG
- 2018: risk of bias assessment tool
- 06/2019: 3rd meeting of the GDG
  - review of draft systematic reviews
  - adaptation of GRADE framework
  - approach to setting interim targets

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# Update of the WHO Global Air Quality Guidelines

The next steps:

- Publication of systematic reviews
- 02/2020: 4th meeting of the GDG
  - deriving guideline exposure values
- Completion of the draft guideline document
- 06/2020: 5th meeting of the GDG
- Consultation of the draft guideline document
- …..

# Take home messages

- AQGs are developed based on the evaluation of the scientific evidence, and provide robust guidance to protect public health from air pollution
- WHO has published several editions of AQGs, which have been widely used as a reference tool to help decision-makers in setting legally binding standards and goals for air quality management at international and national level
- Current update of global AQGs follows a rigorous process of reviewing and evaluating the evidence

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- United States Environmental Protection Agency
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# Thank you for your attention

http://www.euro.who.int/en/health-topics/environment-and-health