Revisions of the WHO Air Quality Guidelines: current status

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

- Robust public health recommendations
- Comprehensive assessment of the evidence
- Support informed decision-making
- Intended for worldwide use
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

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Uptake of WHO AQG in air quality policy

DIRECTIVE 2008/50/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 21 May 2008 on ambient air quality and cleaner air for Europe

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

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

Having regard to the proposal from the Commission,

Our definition of healthy air:
Concentrations of nitrogen dioxide (NO₂) and particulate matter (PM₁₀ and PM₂.₅) 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 PM₁₀ and PM₂.₅ 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

1987
- Acrylonitrile
- Benzene
- Carbon disulfide
- 1,2-Dichloroethane
- Dichloromethane
- Formaldehyde
- PAHs
- Styrene
- Tetrachloroethylene
- Toluene
- Trichloroethylene
- Vinyl chloride

2000
- Acrylonitrile
- Benzene
- Butadiene
- Carbon disulfide
- Dichloromethane
- Formaldehyde
- PAHs
- PCBs; dibenzofurans and dibenzodioxins
- Styrene
- Tetrachloroethylene
- Toluene
- Trichloroethylene
- Vinyl chloride

2005
- Nitrogen dioxide
- Ozone
- Particulate matter
- Sulphur dioxide

ETS, man-made fibres
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.

Guideline development process

1. Systematic review of evidence
2. Grading the evidence
3. Developing recommendations

WHO Steering Group
Guideline Development Group (GDG)
Systematic Review Team
External Review Group
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 O₃, NO₂ and SO₂ and asthma
- Short-term exposure to SO₂ and all-cause and cause-specific mortality
- Short-term exposure to CO and ischaemic heart disease
- Long-term exposure to O₃ and NO₂ and all-cause and cause-specific mortality
- Long-term exposure to PM and all-cause and cause-specific mortality
- Short-term exposure to O₃, NO₂ and SO₂ and asthma
- Short-term exposure to SO₂ and all-cause and cause-specific mortality
- Short-term exposure to PM, NO₂ and O₃ 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
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
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
- .....
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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Thank you for your attention

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