World Health Organization

Frequently Asked Questions

Third WHO Urban Ambient Air Pollution Database
Updated May 2016

1. What is the aim of the ambient air pollution database ?

The third database on ambient (outdoor) air pollution - the largest of its kind – covers over 3000 human settlements, mostly cities in 103 countries, and indicates where air pollution levels and the related health risks are higher. The aim of this updated database is not to rank cities or countries but to reflect the monitoring efforts undertaken in those countries. WHO has brought together this information on ambient air pollution collected by cities and towns worldwide in order to raise awareness and facilitate adequate responses to protect public health from the adverse impacts of outdoor air pollution.

Many cities in the world, including some expected to be among the most polluted, do not collect information or report on its ambient air quality.

2. What information does the urban outdoor air pollution database include? How was this information collected and organized in this database?

Included in the ambient air pollution database are annual mean concentrations of particulate matter (PM_{10} or $PM_{2.5}$) based on daily measurements or data which could be aggregated into annual means. In a few exceptional cases, where annual means could not be calculated, measurements covering a more limited part of the year were used. In order to present air quality that is largely representative for human exposure, only measurements characterized as urban background, residential areas, commercial and mixed areas were used. Stations characterized as particular "hot spots" or exclusively industrial areas were not included, unless they were contained in reported city means and could not be dissociated.

Particulate matter is not the only air pollutant, however it is an important indicator of long-term air quality and of health risks.

The primary source of data in the ambient air pollution database includes official reporting from countries to WHO, official national and sub-national reports or institutes or websites reporting measurements of PM_{10} or $PM_{2.5}$. Additional sources of air pollution measurements are other UN agencies, other development agencies, peer-reviewed journal articles, the regional networks such as Clean Air Asia for Asia and Air quality e-reporting from the European Environment Agency for Europe, and ground measurements compiled in the framework of the Global Burden of Disease project are also included.

2. What are the most polluted cities in the world? Does WHO rank or compare cities on urban outdoor air quality?

Many cities in the world, including some expected to be among the most polluted, do not collect information or report on its outdoor air quality. WHO therefore cannot compare cities based on their levels of outdoor air pollution.

Rather, WHO has brought together information on ambient air pollution collected by cities and towns worldwide in order to raise awareness and facilitate adequate responses to protect public health from the adverse impacts of outdoor air pollution.

Cities that collect and disseminate information on outdoor air quality need to be praised for their action. This is the first crucial step to identify if there is an outdoor air pollution problem and to begin to take corrective action. The cities which have invested in the capacity to regularly monitor and report the local air quality measurements have already demonstrated a commitment to starting to address air quality issues and public health.

3. What are the key findings about the database?

The great majority of cities worldwide exceed WHO's Air Quality Guideline levels. The WHO Air Quality guideline recommended PM10 maximum annual mean levels of 20 $\mu g/m^{3\ of}$. Globally, only relatively few of the monitored cities and towns currently meet the WHO guideline values. These tend to be clustered in high-income countries. Based on the monitored cities and towns, air quality is poorest in the Eastern Mediterranean and South-East Asian regions, followed by the African countries.

Based on extrapolations of these data, more than half of the urban population live in cities that exceed by 2.5 times or more the recommended levels of fine particulate matter set out by the WHO Air Quality Guidelines and only around 16% of the total urban population assessed live in cities and towns where the air quality complies with such levels.

4. What has changed since the last database?

Information on air quality levels in 3000 human settlements, mostly cities from 103 countries have been compiled in this updated database. This is significantly more than in 2014, when the database covered 1600 cities and towns. This may indicate that more cities are concerned with their air quality, and are either aiming to take action to improve their air quality, or working to maintain the clean levels already achieved.

As seen in the previous version of the database, data on air quality in the Sub-Saharan Africa, low and middle income countries of the Western Pacific and of the Eastern Mediterranean regions remains scarce.

Based on the comparison of cities with data available in both the 2011 and the 2014 versions of the database and selected for the comparison purposes, the quality of the air is worsening globally in recent years. In several countries, mostly in high-income, however, the air quality appears to have improved.

Some cities do not necessarily follow the regional trend in terms of air quality showing it is possible to take actions locally to improve the situation.

5. What are some of the major sources or causes of urban ambient air pollution?

Both 'mobile' sources (i.e. cars) and 'stationary' sources (i.e. smoke stacks) make significant contributions to urban ambient (outdoor) air pollution. Some of the major sources include exhaust fumes from vehicles, emissions from manufacturing facilities (e.g. factories) and power generation (e.g. smoke stacks of coal fired power plants). Also in those cities where residential use of coal and wood for cooking and heating is permitted, the emissions from households using these fuels can make an important contribution to the levels of ambient air pollution.

6. WHO alert regularly on the number of deaths caused by air pollution, how are these numbers calculated?

The number of deaths caused by air pollution are estimated on the basis of the air quality levels people are exposed to, and the increased risks of cardiovascular and respiratory diseases that are incurred at those levels. The air quality levels are estimated on a combination of satellite information, chemical transport models and ground measurements of air quality, and the increased risks come from epidemiological studies. The methods are explained in detail on our web site (http://www.who.int/phe/health_topics/outdoorair/en/)

7. What are WHO next steps and what is WHO doing?

WHO-led Urban health initiative

Rapid expansion of low and middle-income cities has increased health risks on multiple fronts, particularly with regards to air pollution exposures – from poor traffic planning, energy-inefficient housing, waste incineration, and dirty power sources. And many poor urban households still rely on smoky biomass and coal cookstoves, whose particles are both a source of air pollution as well as of short-lived climate pollutants like black carbon.

WHO's Urban Health Initiative aims to catalyze action to reduce urban air pollution for health benefits, also reducing climate emissions and achieve the Sustainable Development Goals. The initiative will catalyse actions in the health sector, strengthen capacity to assess priority pollution sources, identify the most effective actions and track success. An expanded WHO-led communications effort will heighten awareness of the issues and solutions, targeting urban public opinion as well as opinion leaders, and building networks for action. The WHO-led initiative is supported by the Government of Norway, and being built upon partnerships with other UN agencies concerned with urban health and development issues, including the Climate and Clean Air Coalition and World Bank, as well as collaborations with WHO member states and pilot cities. For more information see:
http://www.who.int/sustainable-development/cities/case-studies/en/

Global air quality and health platform

WHO is building a global air quality and health platform to improve the monitoring of air pollutants worldwide, and estimations of pollution-related health impacts. The platform involves over 100 experts from national and international air quality and meteorological monitoring agencies from around the world, as well as an improved data base of key air quality indicators worldwide, by region, and by country. The aim of the Global Platform is to systematically consolidate data on air quality and health, bringing together information on air pollution exposures from different sources such as air quality monitoring networks, atmospheric modelling and satellite remote sensing. This data can be

used to improve global assessments of air pollution and its associated disease burden, worldwide, by region, and by country. Monitoring can also record and report upon improvements in air quality and health achieved by the implementation of effective air pollution reduction strategies and policies. WHO convenes expert consultations for the Global Platform every 18 months. The first took place in January 2014 and August 2015, with the next meeting in January 2017. For more information see: http://www.who.int/phe/health_topics/outdoorair/global_platform/en/

To find out more about health impacts of ambient air pollution, WHO Air Quality Guidelines, ambient air pollution fact sheet and other resources please click here

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