Institute of Air Quality Management

Use of 2020 and 2021 Monitoring Datasets

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The IAQM issues Position Statements on matters that could affect the way in which Members carry out their professional tasks and on air quality topics and issues where the IAQM can provide a unique perspective from which to give a professional opinion.

Overview

Ambient air quality monitoring data are used routinely for the performance evaluation of air dispersion models used in assessments (frequently referred to as verification). The coronavirus (SARS-CoV-2/Covid-19) pandemic disrupted activity from 'business-as-usual' for the whole of the country, and therefore care is needed in selecting appropriate monitoring data.

The issue

The COVID-19 pandemic changed travel behaviours for many of us from March 2020, throughout 2021 and beyond. There were major changes in business and educational activity, and associated traffic levels, hence ambient air quality was affected. For many people, travel habits have largely returned to what they were pre-pandemic, but for some there are still differences, and this may remain the case for the foreseeable future e.g. the mode or frequency of commuting to work.

Air quality professionals use ambient air quality monitoring data in their work routinely, for instance for understanding baseline conditions, as well as for model verification and validation. In using ambient data there are two main points to consider:

1. The pandemic may have meant that monitoring equipment was not maintained/calibrated, or diffusion tubes not changed over, according to planned schedules. The data recorded by continuous analysers may not therefore be as reliable, e.g. the percentage of missing data may be higher than usual, or diffusion tubes may have been exposed for different periods to the DEFRA calendar or for longer than recommended by the supplier.
2. Many activities (transport, industrial, commercial, domestic, construction) and hence atmospheric emissions during 2020 and 2021 were interrupted or affected by lockdowns, restrictions and changes in behaviour. This means that – even if monitoring data were available for this time period – the concentrations may be atypical compared with previous (and subsequent) years and the business-as-usual assumption does not apply.

Much research has been carried out on the impact of the pandemic on air quality and it will be some time before the long-term impact is fully understood. However, the "new -normal" pattern of activity and hence emissions appear to be stabilising. Therefore, ambient air quality monitoring data for the year 2022 and beyond is generally considered to represent the current post-pandemic baseline.

IAQM's position on this issue

If you are carrying out an air quality study that includes verification of model results against monitoring data, you should use either 2019 or 2022 (or later) monitoring data as the last typical pre- and post-pandemic years. This will help to avoid introducing additional uncertainty to the results and that any adjustment factor so derived is appropriate.

IAQM members' professional opinion should be used to determine, if in the local situation, the 2022 (or later year) monitoring data is likely to represent a post-pandemic baseline. This may require discussion with transport planners to understand activity levels, or consultation with the local authority's environmental health officer (EHO) who may have local knowledge to share. Any judgement on how representative the data are should be reported in an assessment.

In carrying out model verification, where modelled concentrations are compared with local pollutant measurements, it is important that the monitoring data and meteorological data used are for the same year and that the activity/emissions data, for instance, traffic volume, is appropriate for that year. With this in mind, where traffic data are based on data from 2019 or before (i.e., associated with pre-pandemic behaviour) then it may remain appropriate to use 2019 monitoring data, for a verification exercise. Where traffic data are based on information from 2022 onwards it is more likely that 2022 onwards monitoring data is more appropriate.

If you have no option but to use 2020 or 2021 monitoring data, you should consider if the data are representative of long-term trends and state clearly if the measured concentrations are atypical. You should justify your use of data from these years and provide commentary on the consequences of the results so obtained for your assessment conclusions.

Advice on the impacts of Covid-19 on 2020 monitoring data with respect to LAQM reporting, and the appropriate treatment of data gathered in 2020, can be found in guidance from Defra and the Greater London Authority.[1]

References

[1] Department for Environment, Food & Rural Affairs and Greater London Authority (2021) COVID-19 Supplementary Guidance for LAQM Reporting in 2021, version 1.0, April 2021, Available at: https://laqm.defra.gov.uk/supporting-guidance.html [Accessed 05/12/2023]

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About the Institute of Air Quality Management (IAQM)
The IAQM aims to be the authoritative voice for air quality by maintaining, enhancing and promoting the highest standards of working practices in the field and for the professional development of those who undertake this work. Membership of the IAQM is mainly drawn from practising air quality professionals working within the fields of air quality science, air quality assessment and air quality management.