

SODC explanation of Air Quality data ratification.

In short the data is scaled and corrected based on monthly calibrations, national screening and biannual audits along with services of the machinery and this whole process complies with approved Defra guidance. This is why we always state the data is provisional and subject to change until we have had the final checks approved after the year end period and all data is finalised and sent to Defra in an annual report. The technical explanation of the process is provided below.

Our data management service ensures that the data the stations produce is of the same quality as that produced by Defra's national network monitoring stations. The service is fully LAQM TG(09) compliant and will ensure the council meets all monitoring requirements under the Review and Assessment regime at the detailed assessment level.

Our comprehensive data management process utilises:

- Scaling data based on routine instrument calibrations
- Instrument and site infrastructure service and maintenance records
- Local meteorological data where possible
- Our site information database where all relevant information is logged and made accessible
- Results of quality control audits
- Comparisons with other nearby site concentrations to help ensure data integrity

At the end of each data period (normally six monthly although this can be tailored to suit customer needs), we use this information, together with the following procedures, in order to formulate the final data sets. The critical review (often referred to as 'Ratification') utilises the following methods and tools;

- A time series graph and calibration control chart of the validated data for each pollutant for the six months are plotted and reviewed
- Data are loaded into the data processing package. This enables 15-minute averaged raw data, scaled concentration data and calibration results to be examined. A site information database containing all comments entered as the result of call-out visits or fault investigations is also opened on-screen
- Concentration values will be rejected where appropriate, for instance during site visits or instrument failures. Raw data will, however, always be preserved

Some adjustments to the data may be necessary for a variety of reasons including:

- Spikes in the processed zeros or span values/scaling factors
- Inconsistencies in the site calibrations
- Inclusion of spurious auto-calibration data
- Smoothing of calibration and zero drifts

Daily zero or sensitivity/scaling factors may be modified to produce a smooth progression across time, consistent with the auto-calibration response and/or manual calibrations

Site operation and data ratification notes will be prepared for each instrument. These notes will be used for discussion of data quality issues

Once all modifications to the data files have been made, time series and calibration control charts for the entire data period will once again be plotted, annotated and examined

Following any final corrections, the ratified data sets will be made available for dissemination to the Council.

In addition, if any issues remain following ratification the site data in question will be forward to the quality circle for further assessment. The quality circle is where a panel of senior data analysts carry out further investigations. The data will not be released as ratified until the quality circle is satisfied that all issues are resolved.