NO2 Diffusion Tube Information 2019

Diffusion Tube Performance Summary 2019:

Tube Type: 50% TEA : 50% Acetone

Uncertainty: "Diffusion Tubes for Ambient NO2 Monitoring: Practical Guidance" categorises diffusion tubes as an indicative method, and as such the uncertainty is defined as ± 25%.

During in field intercomparisons, SOCOTEC's diffusion tubes perform at ±10% uncertainty.

Quality Control: A quality control (QC) sample of known concentration is run with the samples. The data generated is then assessed using a Shewhart control chart to determine the process is under statistical control.

Analytical Repeatability: In 2019 7400+ QC samples were analysed, achieving a relative standard deviation of 0.84%

Confidence Intervals: 2σ ±1.67%
3σ ±2.50%

Limit of Detection: The analytical limit of detection is 0.03µg NO_2.

Over a 4-week exposure this would equate to 0.6µg/m^3, or 0.3ppb

Quality Assurance:

The manufacture and analysis of NO_2 diffusion tubes is covered by our UKAS accreditation.

The laboratory has taken part in the AIR (previously WASP) proficiency scheme since its inception. To achieve the highest ranking of "Satisfactory" a laboratory must achieve a z-score of <2. For 2019, SOCOTEC had an average z-score of 0.38.

Bought in ISO Guide 34 and ISO/IEC 17025 certified standards are used to prepare calibration and QC standards.

2% of tubes are checked for blankness during manufacture, to ensure there is no contamination introduced during the manufacturing process.

The method meets the requirements laid out in DEFRA's "Diffusion Tubes for Ambient NO2 Monitoring: A Practical Guidance."