

Estimating the uncertainty in the atmospheric ammonia concentration in an urban area by Ogawa passive samplers

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Ammonia, one of the ambient gasses that require environmental monitoring, is typically measured using a passive sampling method. The present work presents an evaluation of the uncertainty according to the Guide to the Expression of Uncertainty in Measurement for the measurement of the atmospheric ammonia concentration as determined by an Ogawa passive sampler, using a colorimetric method. The analytical results report the uncertainty only as a standard deviation of repeated measurements, but not all sources of uncertainty are considered. In this work, the major sources of uncertainty in the measurements are identified as contributions to the linear least-square regression lines, repeatability and recovery. The result, including the expanded uncertainty ($k=2$) at a level of confidence of 95%, is 39.2%. The aforementioned results indicate that the Ogawa sampler can be successfully deployed to estimate the atmospheric NH_3 and could find wide application in environmental monitoring. However