

COMMERCIAL-IN-CONFIDENCE

UK SMOKE CONSTITUENTS STUDY

ANNEX B

Part 3 Validation Data: Determination of nitrogen monoxide yields in the vapour phase of cigarette smoke

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*Setting standards
in analytical science*

Validation data for nitrogen monoxide

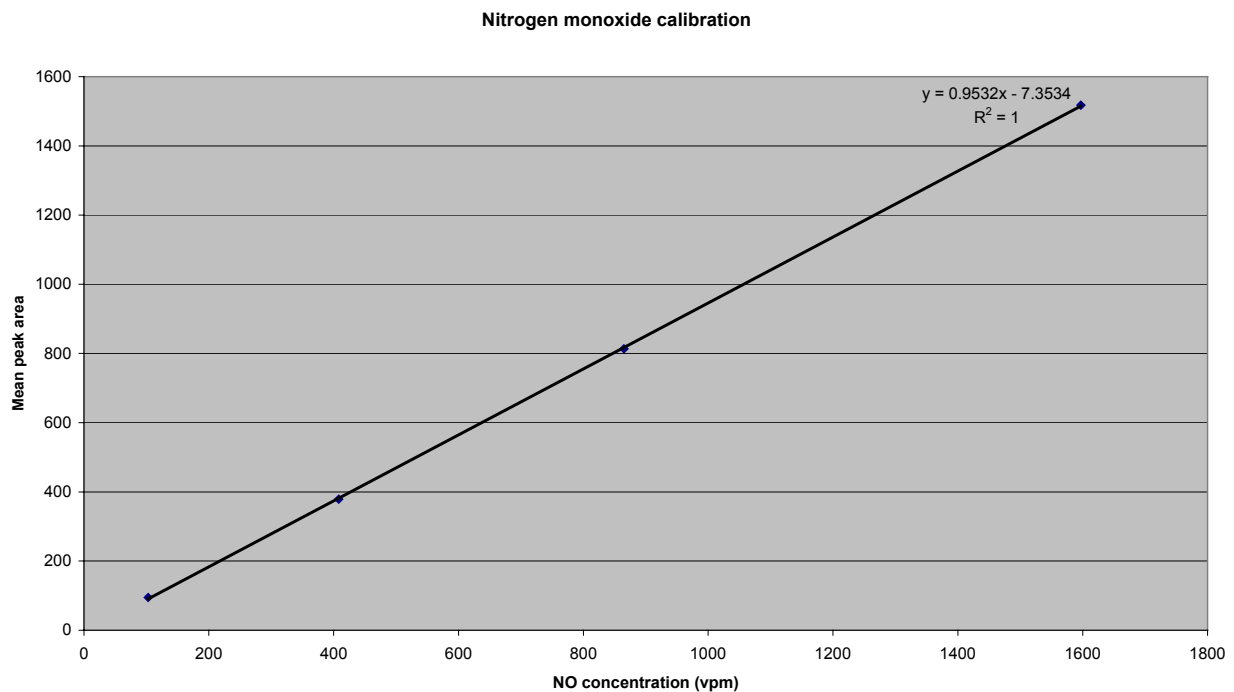
The following is a summary of the validation data obtained when validating the nitrogen monoxide method.

1. Overview

Ten cigarettes are smoked and the vapour phase smoke is passed directly into a dedicated nitrogen monoxide analyser. An aliquot of the gas is passed into the reaction chamber and reacts with ozone. The chemiluminescence produced by the reaction is measured by the calibrated photometer within the instrument.

2. Calibration

Four standards are used to calibrate the instrument. A typical chart is shown below.



The instrument is also checked that it gives zero peak areas (ie the final clearing puffs at the end of each smoking run give zero response)

3. Limit of detection/quantitation/reporting

The average peak area for virtually all the brands is expected to exceed the bottom standard.

4. Precision and accuracy and reproducibility

Brands were smoked on the same and different days to demonstrate precision and repeatability (over time). Some brands were smoked which had recently been used in an inter-comparison exercise for a range of analytes including nitrogen monoxide – the range of results from the exercise are given. NB New standards were bought during the validation exercise, the old standards having expired.

Brand	Number of determinations	Nitrogen Monoxide yield ¹ µg cig ⁻¹	Comments (range of results from the exercise)
IR4F	5	254 ± 24	Same day - old standards
1R4F	5	276 ± 14.9	Results from study – different days - new standards
1R5F	5	89.9 ± 10	Same day - old standards
1R5F	5	98.7 ± 4.4	Results from study - different days - new standards
Brand A (high tar, UK blend)	3	128 ± 13	Old standards (123-136)
Brand A Different production batch	1	110	New standards (123-136)
Brand B (low tar UK blend)	3	59.6 ± 7.1	Old standards (53-59)
Brand B Different production batch	1	56	New standards (53-59)
Brand H (medium tar UK blend)	3	52.0 ± 10.1	Old standards (56 – 65)
Brand I (high tar UK blend)	1	180	1996 sample New standards (220 ± 37)

¹ Where applicable, the mean result ± the standard deviation has been quoted.