SCHEDULE 7 Regulation 9(5), (9), (16)

DATA-QUALITY OBJECTIVES AND COMPILATION OF RESULTS OF AIR-QUALITY ASSESSMENT

PART I

RELEVANT POLLUTANTS : DATA-QUALITY OBJECTIVES

1.1. The following data-quality objectives for the required accuracy of assessment methods, of minimum time coverage and of data capture of measurement are laid down to guide quality-assurance programmes.

	Sulphur dioxide, nitrogen dioxide and oxides of nitrogen	*Particulate matter and lead*
Continuous measurement		
Accuracy	15%	25%
Minimum data capture	90%	90%
Indicative measurement		
Accuracy	25%	50%
Minimum data capture	90%	90%
Minimum time coverage	14% (One measurement a week at random, evenly distributed over the year, or eight weeks evenly distributed over the year.)	14% (One measurement a week at random, evenly distributed over the year, or eight weeks evenly distributed over the year.)
Modelling		
Accuracy		
Hourly averages	50%–60%	
Daily averages	50%	
Annual averages	30%	50%
Objective estimation		
Accuracy:	75%	100%

1.2. The accuracy of the measurement is defined as laid down in the "Guide to the Expression of Uncertainty of Measurements" (ISO 1993)(**1**) or in ISO 5725-1 "Accuracy (trueness and precision) of measurement methods and results" (ISO 1994(**1**). The percentages in the table are given for individual measurements averaged, over the period considered, by the limit value, for a

(**1**) The copies of the International Standards Organisation publications referred to in these Regulations can be purchased from the British Standards Institution "BSI" sales department either by telephone on 0208-996-9001 or by post from the BSI, Standards House, 389 Chiswick High Road, London W4 4AL.

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95% confidence interval (bias + two times the standard deviation). The accuracy for continuous measurements should be interpreted as being applicable in the region of the appropriate limit value.

1.3. The accuracy for modelling and objective estimation is defined as the maximum deviation of the measured and calculated concentration levels, over the period considered by the limit value, without taking account the timing of the events.

1.4. The requirements for minimum data capture and time coverage do not include losses of data due to the regular calibration or the normal maintenance of the instrumentation.

1.5. The Scottish Ministers may allow for random measurements to be made instead of continuous measurements for particulate matter and lead by methods for which accuracy within the 95% confidence interval with respect to continuous monitoring has been demonstrated to be within 10%. Random sampling must be spread evenly over the year.

1.6. The following data quality objectives, for allowed uncertainty of assessment methods, of minimum time coverage and of data capture of measurement are provided to guide quality assurance programmes.

	Benzene	*Carbon monoxide*
Fixed measurements		
Uncertainty	25%	15%
Minimum data capture	90%	90%
Minimum time coverage	35% urban background and traffic sites (distributed over the year to be representative of various conditions for climate and traffic) 90% industrial sites	
Indicative measurements		
Uncertainty	30%	25%
Minimum data capture	90%	90%
Minimum time coverage	14% (one day's measurement a week at random, evenly distributed over the year, or 8 weeks evenly distributed over the year)	14% (one measurement a week at random, evenly distributed over the year, or 8 weeks evenly distributed over the year)
Modelling		
Uncertainty	–	50%
Eight-hour averages Annual averages	50%	–
Objective estimation		
Uncertainty	100%	75%

1.7. The uncertainty (on a 95% confidence interval) of the assessment methods shall be evaluated in accordance with the "Guide to the Expression of Uncertainty of Measurements" (ISO 1993) or the methodology of ISO 5725:1994. The percentages for uncertainty in the above table are given for individual measurements averaged over the period considered by the limit value, for a 95%

confidence interval. The uncertainty for the fixed measurements should be interpreted as being applicable in the region of the appropriate limit value.

1.8. The uncertainty for modelling and objective estimation is defined as the maximum deviation of the measured and calculated concentration levels, over the period considered by the limit value, without taking into account the timing of the events.

1.9. The requirements for minimum data capture and time coverage do not include losses of data due to the regular calibration or the normal maintenance of the instrumentation.

1.10. The Scottish Ministers may allow for random measurements to be made instead of continuous measurements for benzene if the uncertainty, including the uncertainty due to random sampling, meets the quality objective of 25%. Random sampling must be spread evenly over the year.

PART II

RELEVANT POLLUTANTS: RESULTS OF AIR QUALITY ASSESSMENT

2.1. The following information should be compiled for zones within which sources other than measurement are employed to supplement information from measurement or as the sole means of air quality assessment:–

(a) a description of assessment activities carried out;

(b) the specific methods used, with references to descriptions of the method;

(c) the sources of data and information;

(d) a description of results, including accuracies and, in particular, the extent of any area or, if relevant, the length of road within the zone over which concentrations exceed limit value or, as may be, the limit values plus applicable margins of tolerance and of any area within which concentrations exceed the upper assessment threshold or the lower assessment threshold;

(e) for limit values the object of which is the protection of human health, the population potentially exposed to concentrations in excess of the limit value.

2.2. Where possible maps shall be compiled showing concentration distributions within each zone.

PART III

OZONE AND OZONE PRECURSOR SUBSTANCES: DATA QUALITY OBJECTIVES

3.1. The following data quality objectives, for allowed uncertainty of assessment methods, and of minimum time coverage and of data capture of measurement, are provided to guide quality-assurance programmes.

	For ozone, NO and NO_2
Continuous fixed measurement	
Uncertainty of individual measurements	15%
Minimum data capture	90% during summer
	75% during winter

	For ozone, NO and NO_2
Indicative measurement	
Uncertainty of individual measurements	30%
Minimum data capture	90%
Minimum data coverage	>10% during winter
Modelling	
Uncertainty	50%
1 hour averages (daytime)	50%
8 hours daily maximum	
Objective estimation	
Uncertainty	75%

3.2. The uncertainty (on a 95% confidence interval) of the measurement methods shall be evaluated in accordance with the principles laid down in the "Guide to the Expression of Uncertainty of Measurements" (ISO 1993) of the methodology in ISO 5725-1 "Accuracy (trueness and precision) of measurement methods and results" (ISO 1994) or equivalent. The percentages for uncertainty in the table are given for individual measurements, averaged over the period for calculating target values and long-term objectives, for a 95% confidence interval. The uncertainty for continuous fixed measurements should be interpreted as being applicable in the region of the concentration used for the appropriate threshold.

3.3. The uncertainty for modelling and objective estimation means the maximum deviation of the measured and calculated concentration levels, over the period for calculating the appropriate threshold, without taking into account the timing of events.

3.4. "Time coverage" means the percentage of time considered for settling the threshold value during which the pollutant is measured.

3.5. "Data capture" means the ratio of the time for which the instrument produces valid data, to the time for which the statistical parameter or aggregated value is to be calculated.

3.6. The requirements for minimum data capture and time coverage do not include losses of data due to the regular calibration or normal maintenance of the instrumentation.

PART IV

OZONE AND OZONE PRECURSOR SUBSTANCES: RESULTS OF AIR QUALITY ASSESSMENT

4.1. The following information should be compiled for zones within which sources other than measurements are employed to supplement information from measurement:–

(a) a description of the assessment activities carried out;

(b) specific methods used, with references to descriptions of the method;

(c) sources of data and information;

(d) a description of results, including uncertainties and, in particular, the extent of any area within the zone over which concentrations exceed long-term objectives or target values;

(e) for long-term objectives or target values whose object is the protection of human health, the population potentially exposed to concentrations in excess of the threshold.

4.2. The Scottish Ministers shall ensure that maps are compiled showing concentration distributions within each zone.