

Swedish Environmental Protection Agency Code of Statutes

Swedish Environmental Protection Agency Regulations on Assessment of Air Quality;

**NFS
2013:11**

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Pursuant to Section 49 of the Air Quality Ordinance (2010:477), the Swedish Environmental Protection Agency prescribes as follows¹.

Scope

Section 1 These Regulations apply to the measurement, modelling, objective estimation, provision of information and reporting of results for the assessment of environmental quality standards in ambient air for which the municipalities are responsible for implementing under Section 26 of the Air Quality Ordinance (2010:477). The Regulations also apply to the procedures for reporting of an action programme under Section 33 of the Air Quality Ordinance (2010:477).

Definitions

Section 2 In these Regulations, the following terms have the meaning stated below:

Data capture	Percentage of valid data that is acquired during the planned period of measurement.
Data host	Body who, on behalf of the Swedish Environmental Protection Agency receives, makes available and stores data as well as other information from various assessments and studies.
Exposure	The concentration of a substance in inhaled air to which an individual or a group of individuals is subject to.
Traffic location	Road in an urban area where people are likely to be exposed to the highest concentrations of a pollutant.

¹ Cf. the Directive of the European Parliament and of the Council on ambient air quality and cleaner air for Europe (OJ L152, 11.6.2008, p. 1-44, Celex 32008L0050), the Directive of the European Parliament and of the Council relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air (OJ L23, 26.1.2005, p. 3-16, Celex 32004L0107) and the Commission Implementing Decision of 12 December 2011 laying down rules for Directives 2004/107/EC and 2008/50/EC as regards the reciprocal exchange of information and reporting on ambient air quality (OJ L335, 17.12.2011, p. 86-106, Celex 32011D0850)

Indicative measurements	Measurements with lower quality objectives than those applicable to continuous measurements. The measurements fulfil the quality objectives in <i>Annex 1</i> and applicable parts of the requirements for reporting in <i>Annex 6</i> .
Continuous measurements	Measurements, performed during a calendar year at a fixed location, which fulfil the quality objectives in <i>Annex 1</i> and the requirements for reporting in <i>Annex 6</i> .
Quality control (QC)	The performance of activities in accordance with established routines in order to determine that the quality objectives in <i>Annex 1</i> are fulfilled.
Quality assurance (QA)	The systematic planning of activities to ensure fulfilment of the quality objectives in <i>Annex 1</i> . This includes the establishment of routines for quality control.
Modelling	Mathematical model which describes concentrations of different air pollutants in time and space.
Near real-time data	Measurement data that is made available to the public as soon as technically possible.
Objective estimation	Assessment of air quality through more basic measurements and calculations, comparison with similar locations or previous assessment results, knowledge of emissions or other relevant information.
Uncertainty	An interval around the measurement result, or other results of the assessment, which with a certain probability includes the true value. The uncertainty includes both systematic and random errors, i.e. it incorporates all errors which influence the result.
Cooperation area	Geographical area where the assessment of air quality is carried out in cooperation between two or more municipalities under Section 26 of the Air Quality Ordinance (2010:477).
Time coverage	Percentage of a calendar year during which measurement takes place in order to estimate the concentration of a particular pollutant. It should not be lower than the requirement for minimum acceptable time coverage as specified in <i>Annex 1</i> .
Urban background	Areas and locations in an urban environment where the pollutant levels are representative of the exposure to which the population in general is subject to.
Assessment threshold	Level which indicates the extent of assessment

required for an environmental quality standard.

Terms and concepts which have been defined in the Air Quality Ordinance (2010:477) have the same meaning in these Regulations.

Assessment strategy

Section 3 An assessment strategy shall be established for each municipality or cooperation area which carries out assessments in the form of measurement or modelling.

The assessment strategy must cover at least two calendar years and be updated annually.

Section 4 An assessment strategy shall contain at least the following:

1. information on and analysis of the air quality situation based on previous assessment results,
2. information on dominant emissions,
3. the requirements for assessment that the municipality or cooperation area is obliged to carry out,
4. description of sampling points and areas where any modelling is to be performed, including justifications and maps,
5. information on measurement methods and any modelling methods,
6. routines for reporting and information, and
7. long-term measurement and modelling strategy.

Quality assurance and quality control

Section 5 Air quality shall be assessed in such a way that the data quality objectives stated in *Annex 1* are fulfilled.

Section 6 There shall be a quality assurance programme in each municipality or cooperation area which carries out assessments in the form of measurement or modelling. The programme shall include a system for quality assurance (QA) and quality control (QC).

Section 7 Pursuant to Section 49 of the Air Quality Ordinance (2010:477), the Swedish Environmental Protection Agency may appoint a national air quality reference laboratory.

Cooperation

Section 8 The cooperation between municipalities pursuant to Section 26 of the Air Quality Ordinance (2010:477) shall be pursued in accordance with a programme for coordinated assessment. The programme shall be developed in consultation between the cooperating municipalities and with other parties concerned.

Section 9 A programme for coordinated assessment shall contain at least:

1. organisation (representatives of the cooperation area, cooperation partners and how the cooperation is organised),
2. assessment strategy in accordance with Sections 3-4, and
3. quality assurance programme in accordance with Section 6.

Assessments

Section 10 Results from previous measurements, modelling or objective estimation decide what minimum assessment procedure shall be applied in a municipality or cooperation area.

In cases where no information concerning air quality is available, a preliminary screening assessment of concentrations shall be carried out.

Assessment level	Minimum assessment procedure which must be applied in a municipality or cooperation area
Concentrations exceed or risk exceeding the environmental quality standard (EQS)	Continuous measurements in accordance with Sections 12-15 in the municipality with exceedance
Concentrations are between the upper assessment threshold (UAT) and the environmental quality standard (EQS)	Continuous measurements in accordance with Section 12 or application of Sections 15 and 17
Concentrations are between the lower assessment threshold (LAT) and the upper assessment threshold (UAT)	Continuous measurements in accordance with Section 12 or application of Sections 15 and 16
Concentrations are below the lower assessment threshold (LAT)	Modelling or objective estimation

Section 11 When assessing whether an assessment threshold has been exceeded, concentrations from the last five years shall be taken into account if sufficient data are available. An assessment threshold has been exceeded if the exceedance has taken place during at least three separate years of these five preceding years. If insufficient data are available, results from short-term measurements which have been taken at the times and locations where the concentrations can be assumed to be highest, as well as from modelling, may be used to establish whether an assessment threshold has been exceeded.

Continuous measurements

Section 12 Continuous measurements shall be carried out if concentrations exceed the lower assessment threshold, unless the conditions set out in Sections 15-16 are fulfilled. Where continuous measurements constitute the only source of information, the minimum number of sampling points in a municipality or cooperation area shall be as follows:

Number of inhabitants, thousands	A. Concentrations above the upper assessment threshold (UAT)				B. Concentrations between the lower assessment threshold (LAT) and the upper assessment threshold (UAT)				
	Nitrogen dioxide Sulphur dioxide Lead Carbon monoxide Benzene	Particulate matter (PM ₁₀ and PM _{2.5}) ¹	Arsenic Cadmium Nickel	Benzo(a)pyrene	Nitrogen dioxide Sulphur dioxide Lead Carbon monoxide Benzene	Particulate matter (PM ₁₀ and PM _{2.5}) ¹	Arsenic Cadmium Nickel	Benzo(a)pyrene	
10-249	1	2	1	1	1	1	1	1	
250-499	2	3	1	1	1	2	1	1	
500-749	2	3	1	1	1	2	1	1	
750-999	3	4	2	2	1	2	1	1	
1,000-1,499	4	6	2	2	2	3	1	1	
1,500-1,999	5	7	2	2	2	3	1	1	
2,000-2,499	6	8	2	3	3	4	1	1	
2,500-2,999	7	10	2	3	3	4	1	1	
3,000-3,500	8	11	2	3	3	6	1	1	

¹ The total number of sampling points for PM₁₀ and PM_{2.5}. If PM₁₀ and PM_{2.5} are measured at the same sampling point, these shall be counted as two separate sampling stations.

Section 13 If an environmental quality standard is exceeded or is at risk of being exceeded in a cooperation area, there shall be at least one sampling point in each municipality where the environmental quality standard is exceeded or is at risk of being exceeded. These sampling points may be included in the prescribed number of sampling points for the cooperation area under Section 12, but may mean that the total number required becomes greater if an environmental quality standard is exceeded or is at risk of being exceeded in several municipalities in the cooperation area.

When an environmental quality standard is exceeded or is at risk of being exceeded in two or more adjacent municipalities and the exceedance is due to the same emission source, exceptions can be made to the requirement for continuous measurements in each municipality under the first paragraph. The number of sampling points shall, however, be sufficiently high that the exceedance can be assessed with sufficient accuracy. If such an exception is made, the reduction in measurements shall be compensated for by modelling.

Section 14 Measuring stations where the environmental quality standard for particulate matter (PM₁₀) has been exceeded during any of the past three years shall be retained, unless they must be relocated due to exceptional circumstances.

Section 15 Municipalities with fewer than 10,000 inhabitants may apply objective estimation instead of measurements if concentrations are between the lower assessment threshold and the environmental quality standard. If an environmental quality standard is exceeded or is at risk of being exceeded, continuous measurements under Section 13 shall be applied.

Section 16 Municipalities which do not form part of a cooperation area may apply indicative measurements, modelling or objective estimation instead of continuous measurements, if concentrations are between the lower assessment threshold and the upper assessment threshold.

Section 17 In cases where continuous measurements are supplemented by modelling or indicative measurements, the number of sampling points in a municipality or cooperation area may be reduced by up to 50%. This shall apply in the case of concentrations above the upper assessment thresholds provided that:

1. the information is sufficient to be able to assess air quality with respect to the environmental quality standards and alert thresholds,
2. the information fulfils the requirement under Section 38 of the Air Quality Ordinance (2010:477) to inform the public, and
3. the information is sufficient to determine concentrations with the accuracy required by the data quality objectives specified in *Annex 1*.

Indicative measurements

Section 18 Indicative measurements may supplement continuous measurements if concentrations are above the upper assessment threshold, in order to ensure that sufficient information is obtained concerning the spatial distribution of air quality in the municipality or cooperation area. They may also be used in combination with continuous measurements and modelling if concentrations are between the lower and upper assessment thresholds.

Measurement methods

Section 19 Reference methods for nitrogen dioxide, sulphur dioxide, lead, benzene, particulate matter (PM₁₀ and PM_{2.5}), arsenic, cadmium, nickel and benzo(a)pyrene are stated in *Annex 2* and shall be used to carry out continuous measurements.

Other methods that are not reference methods may also be used in accordance with the first paragraph provided that the method gives results equivalent to those of the reference method.

Measurement equipment that measure in accordance with a reference method or a method equivalent to a reference method, and which is used to carry out continuous measurements, must be approved by the Swedish Environmental Protection Agency.

Section 20 Applications for the approval of measuring equipment that measure in accordance with a reference method or a method equivalent to a reference method shall be assessed by the Swedish Environmental Protection Agency.

Applications must be written in Swedish and contain:

1. the purpose of the application,
2. an account of the method's agreement with the reference method for the pollutant concerned,
3. documentation in Swedish or English from completed and approved type testing or equivalence testing in Sweden or other EU Member States,
4. any certificates which have been issued, and
5. any other documentation.

The decision may be appealed to the Land and Environment Court in accordance with Chapter 19 Section 1 third paragraph of the Environmental Code.

Section 21 Measurements shall be carried out in accordance with *Annex 3*.

Location of sampling points and siting of measuring equipment

Section 22 Sampling points shall be sited in accordance with the following:

1. In accordance with Section 26 third paragraph of the Air Quality Ordinance (2010:477), measurements shall take place:

- a. in areas and at locations where it is likely that the population is exposed to the highest concentrations, and
 - b. in areas and at locations that are representative of the exposure to which the population in general is subject to.
2. Where possible, sampling points in traffic locations shall be representative of the air quality for a road segment which is at least 100 metres long and, where possible, representative of similar locations and environments that are not in the immediate vicinity. Micro-environments shall be avoided.
3. Where possible, sampling points in urban background shall be representative of the air quality over an area of several square kilometres.
4. If only one sampling point for continuous measurements is used in an urban area, this shall be sited in a traffic location.
5. If two sampling points for continuous measurements of nitrogen dioxide, particulate matter (PM₁₀ and PM_{2.5}), benzene and carbon monoxide are used, where possible at least one shall be located in a traffic location and at least one in urban background. If more than two sampling points are used, the majority shall be located in traffic locations.
6. The value of continuity and long-termness shall be taken into account when selecting sampling points.

Section 23 Measurement equipment at a sampling point shall be sited in accordance with the instructions in *Annex 4*.

Modelling

Section 24 Modelling may supplement continuous measurements if concentrations are above the upper assessment threshold, in order to ensure that sufficient information is obtained on the spatial distribution of air quality in the municipality or cooperation area. They may also be used in combination with measurements if concentrations are between the lower and the upper assessment thresholds, and as the sole assessment method if concentrations are below the lower assessment threshold.

Section 25 All types of data that are to be used in modelling shall be quality-assured in such a way that the quality objectives in *Annex 1* can be fulfilled.

Section 26 A model that is used for modelling shall be validated for the area concerned or an area with equivalent conditions, primarily with measurements using a reference method or equivalent method, or alternatively with measurements from another standardised method.

Section 27 The selection of locations for assessment of environmental quality standards with modelling shall follow the same principles as for assessments with measurements in accordance with Sections 22-23.

Section 28 Results from modelling shall undergo quality control using measurements in the area concerned or an area with equivalent conditions.

Processing measurement data

Section 29 Measurement data shall be processed in accordance with the provisions in *Annex 5*.

Notification of exceedance or risk of exceedance of an environmental quality standard

Section 30 A notification from a municipality under Section 30 of the Air Quality Ordinance (2010:477) shall contain at least:

1. the environmental quality standard concerned,
2. measurement method,
3. documentation of the sampling point in accordance with *Annex 6 B 1-2* and where applicable, documentation of modelling in accordance with *Annex 6 E*, and
4. supporting information in accordance with *Annex 6 H* regarding the exceedance or risk of exceedance of an environmental quality standard.

Section 31 A notification under Section 30 of the Air Quality Ordinance (2010:477) shall be supplemented as soon as possible by a description based on applicable information in *Annex 6*.

Reporting

Section 32 Validated measurement data for the immediately preceding calendar year shall be reported to the Swedish Environmental Protection Agency's data host by 31 March. Relevant information in accordance with *Annex 6 A-D* and *G* shall be included in the reporting.

Section 33 Results from modelling shall be reported by 30 June, or in connection with the reporting under Section 32, to the Swedish Environmental Protection Agency's data host. Relevant information in accordance with *Annex 6 A, E* and *G* shall be included in the reporting.

Section 34 Results from objective estimation for the immediately preceding calendar year shall be reported to the Swedish Environmental Protection Agency's data host by 31 March. Relevant information in accordance with *Annex 6 A* and *F* shall be included in the reporting.

Section 35 Changes in data sets that have already been reported shall be notified to the Swedish Environmental Protection Agency's data host in the complete format.

Section 36 Near real-time data may be reported to the European Commission.

Section 37 Each year by 31 March, the representative of a cooperation area shall notify the Swedish Environmental Protection Agency's data host of the municipalities that are participating in the cooperation during the current year.

Section 38 A county administrative board or municipality that has established an action programme shall submit a report containing applicable information in *Annex 7* to the Swedish Environmental Protection Agency no later than three months after adoption of the programme.

If, in accordance with Section 36 of the Air Quality Ordinance (2010:477), the government has established parts of an action programme, the information in accordance with the first paragraph shall be provided by the county administrative board or municipality that drew up the proposal for an action programme.

These Regulations enter into force on 1 January 2014, when the Swedish Environmental Protection Agency's Regulations on assessment of air quality (2010:8) shall cease to apply.

Swedish Environmental Protection Agency

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Annex 1 - Data quality objectives

	Nitrogen dioxide Sulphur dioxide Carbon monoxide	Particulate matter (PM₁₀ and PM_{2.5}) Lead	Benzene	Arsenic Cadmium Nickel	Benzo(a)pyrene
1. Continuous measurements					
Minimum acceptable time coverage	- ¹⁾	- ¹⁾	35/90% ¹⁾	50% ¹⁾	33% ¹⁾
Minimum acceptable data capture	90% ²⁾	90% ²⁾	90% ²⁾	90% ²⁾	90% ²⁾
Uncertainty	15% ³⁾	25% ³⁾	25% ³⁾	40% ³⁾	50% ³⁾
2. Indicative measurements					
Minimum acceptable time coverage	14% ⁴⁾	14% ⁴⁾	14% ⁴⁾	14% ⁴⁾	14% ⁴⁾
Minimum acceptable data capture	90% ²⁾	90% ²⁾	90% ²⁾	90% ²⁾	90% ²⁾
Uncertainty	25% ³⁾	50% ³⁾	30% ³⁾	40% ³⁾	50% ³⁾
3. Modelling					
Uncertainty					
- hourly mean	50% ⁵⁾	-	-	-	-
- eight-hour mean	50% ⁵⁾	-	-	-	-
- daily mean	50% ⁵⁾	Not yet determined	-	-	-
- annual mean	30% ⁵⁾	50% ⁵⁾	50% ⁵⁾	60% ⁵⁾	60% ⁵⁾
4. Objective estimation					
Uncertainty	75% ⁶⁾	100% ⁶⁾	100% ⁶⁾	100% ⁶⁾	100% ⁶⁾

¹ The time coverage for continuous measurements of sulphur dioxide, nitrogen dioxide, carbon monoxide, particulate matter (PM₁₀ and PM_{2.5}) and lead signifies uninterrupted measurements during a whole calendar year. For continuous measurements of benzene, time coverage of 35% applies to measurements in urban background and traffic locations, which shall be evenly distributed over the year, and 90% to measurements in industrial environments. The time coverage for continuous measurements of arsenic, cadmium, nickel and benzo(a)pyrene signifies measurements with the stated time coverage evenly distributed over the year.

² The requirement for minimum acceptable data capture does not cover data losses due to regular calibration and normal maintenance of equipment.

³ Uncertainty in measurement results (at a confidence level of 95%) shall be evaluated in accordance with the principles of CEN's "Guide to the Expression of Uncertainty in Measurement" (ENV 13005–

1999), the methodology described in ISO 5725:1994 and the guidance provided in the CEN report entitled "Air Quality – Approach to Uncertainty Estimation for Ambient Air Reference Measurement Methods" (CR 14377:2002E). The uncertainty percentages in the table above concern the mean of individual measurements during the period considered by the relevant environmental quality standard, for a confidence interval of 95%. The uncertainty in continuous measurements shall be interpreted as being applicable in the region of the relevant environmental quality standard.

⁴ One random measurement per week (for benzene, one day's random measurement per week), evenly distributed over the year, or eight weeks evenly distributed over the year.

⁵ Uncertainty in modelling is defined as the maximum deviation of the measured and modelled concentration levels for 90% of individual sampling points, during the period considered by the relevant environmental quality standard, regardless of the timing of different events. The uncertainty for modelling shall be interpreted as being applicable in the region of the relevant environmental quality standard. Continuous measurements that are selected for comparison with modelling results shall be representative of the scale and scope of the model.

⁶ Uncertainty in objective estimation is defined as the maximum deviation of the measured and estimated concentration levels during the period considered by the relevant environmental quality standard, regardless of the timing of different events.

Annex 2 - Reference methods for measurement

1. Reference method for nitrogen dioxide

The reference method for the measurement of nitrogen dioxide is the method described in SS-EN 14211:2005 "Ambient air quality – Standard method for the measurement of the concentration of nitrogen dioxide and nitrogen dioxide by chemiluminescence”.

2. Reference method for sulphur dioxide

The reference method for the measurement of sulphur dioxide is the method described in SS-EN 14212:2005 "Ambient air - Standard method for the measurement of the concentration of sulphur dioxide by ultraviolet fluorescence”.

3. Reference method for carbon monoxide

The reference method for the measurement of carbon monoxide is the method described in SS-EN 14626:2005 “Ambient air - Standard method for the measurement of the concentration of carbon monoxide by non-dispersive infrared spectroscopy”.

4. Reference method for lead, arsenic, cadmium and nickel

The reference method for the sampling and analysis of lead, arsenic, cadmium and nickel is the method described in SS-EN 14902:2005/AC:2006 “Ambient air quality - Standard method for the measurement of Pb, Cd, As and Ni in the PM10 fraction of suspended particulate matter”.

The reference method is based on manual PM10 sampling corresponding to SS-EN 12341:1998 “Air quality – Determination of the PM10 fraction of suspended particulate matter – Reference method and field test procedure to demonstrate reference equivalence of measurement methods” with subsequent processing of the samples and analysis using atomic absorption spectrometry or ICP/mass spectrometry.

5. Reference method for benzene

The reference method for the measurement of benzene is the method described in parts 1, 2 and 3 of SS-EN 14662:2005 “Ambient air – Standard method for the measurement of benzene concentrations”.

6. Reference method for particulate matter (PM10)

The reference method for sampling and measurement of particulate matter (PM₁₀) is the method described in SS-EN 12341:1998 “Air Quality – Determination of the PM10 fraction of suspended particulate matter – Reference method and field test procedure to demonstrate reference equivalence of measurement methods”

7. Reference method for particulate matter (PM2.5)

The reference method for the sampling and measurement of particulate matter (PM_{2.5}) is the method described in SS-EN 14907:2005 “Ambient air quality - Standard gravimetric measurement method for the determination of the PM2.5 mass fraction of suspended particulate matter”.

8. Reference method for benzo(a)pyrene

The reference method for the sampling and analysis of benzo(a)pyrene is the method described in SS-EN 15549:2008 “Air quality - Standard method for the measurement of the concentration of benzo(a)pyrene in ambient air”.

The reference method is based on benzo(a)pyrene being collected through manual PM10 sampling in accordance with SS-EN 12341:1998 “Air quality – Determination of the PM10 fraction of suspended particulate matter – Reference method and field test procedure to demonstrate reference equivalence of measurement methods”, sample extraction of benzo(a)pyrene from the particle phase and analysis by high-performance liquid chromatography (HPLC) with fluorescence detector (FLD) or gas chromatography with mass spectroscopy (GC/MS).

Annex 3 – Instructions for measurements

1. Necessary measures, including calibration and maintenance of measurement equipment, shall be undertaken regularly to minimise errors in measurements.
2. For the measurement of gases, the measured values shall be converted to the standard temperature 293 K and the standard pressure 101.3 kPa. For particulate matter and substances which are to be analysed in particulate form, the sampling volume shall refer to ambient conditions during sampling, i.e. temperature and atmospheric pressure at the time of sampling.
3. The measurement operator shall document the handling of measurements.

Annex 4 – Siting of the measurement equipment

The following requirements shall be fulfilled if practically possible:

1. The inlet to the measurement equipment shall be sited between 1.5 metres (breathing zone) and 4 metres above ground level. Higher siting (up to 8 metres) may be necessary under certain circumstances and appropriate if the station is to represent the urban background.
2. Measurement equipment in traffic locations shall be sited at least 25 metres from major crossroads, but no more than 10 metres from the kerb.
3. The flow around the inlet shall be free (in an arc of at least 270°) and devoid of obstacles which influence the air flow in the vicinity of the measurement equipment (normally at a distance of a few metres from buildings, balconies, trees and other obstacles, in traffic locations at least 0.5 metres from the facade).
4. In order to avoid direct intake of pollutants which have not been mixed with the air, the inlet shall not be positioned too close to adjacent pollutant sources.
5. The measurement equipment's exhaust outlet shall be positioned so that recirculation of exhaust air to the equipment's inlet is avoided.
6. The measurement equipment shall be sited so that it is protected from soiling, precipitation, direct sunlight and wide temperature variations in cases where there is a risk of these factors influencing functionality.

The following can also be taken into account:

1. Interfering sources
2. Safety
3. Accessibility
4. Access to electricity and telecommunications
5. How visible the location is in relation to the surroundings
6. The safety of the public and responsible personnel
7. The desirability of co-locating different sampling points
8. Planning requirements

Annex 5 – Processing measurement data

In connection with reporting

1. Where possible, measurement data must be specified to the same number of digits as at the time of measurement.
2. Measured values that are greater than or equal to the negative detection limit, i.e. the inverted value of the detection limit, shall be considered as correct values. Values that are smaller than the negative detection limit shall be discarded.
3. All time references shall be specified in normal Swedish time.
4. Where possible, measurement data shall be traceable in accordance with ISO/IEC 17025:2005.

Criteria for aggregating measurement data for purposes other than reporting

1. For the aggregation of measurement data, the following criteria shall be applied:

Parameter	Requirements for proportion of valid measurement data
Hourly values	75% (i.e. 45 minutes)
Eight-hour values	75% of the values (i.e. six hours)
Maximum daily eight-hour mean	75% of the rolling eight-hour mean values (i.e. 18 eight-hour mean values per day)
Daily values	75% of the hourly values
Annual mean	90% ¹ of the hourly values, or (if these are not available) the daily values during the year

¹The requirements concerning annual mean calculations do not include data losses due to regular calibration and normal maintenance of the instrumentation.

2. Rounding shall take place only once and shall be the final step of any calculation, immediately prior to comparison with the environmental quality standard. The number of decimals shall correspond to the number of decimals according to the environmental quality standard or assessment threshold.

Annex 6 – Data to be included in reports of assessment results

Particulars	Mandatory		Comments
	Yes	No	
A. General information			
Name of municipality or name of cooperation area and municipalities included	X		
- Name of rapporteur	X		
- Address	X		
- Telephone number	X		
- E-mail address	X		
- Website address	X		
Number of inhabitants	X		
Purpose of the assessment	X		Assessment of environmental quality standards, follow-up of environmental objectives, planning, exposure, trend analysis or other reasons
Assessment strategy	X		In accordance with Sections 3-4, if the assessment is carried out through measurement or modelling. Covers the whole calendar year. Link to website.
Quality assurance programme	X		In accordance with Section 6, if the assessment is carried out through measurement or modelling. Link to website.
Programme for coordinated assessment	X		In accordance with Sections 8-9, if the assessment is carried out in the form of cooperation. Covers the calendar year. Link to website.
B. Information on sampling points			
B 1. General information on sampling point			
Name of sampling point	X		
National station code	X		Obtained from the Swedish Environmental Protection Agency's data host
Name of urban area	X		
Street address of sampling point	X		
Municipality and county code		X	
Reference/link to maps	X		If available
Reference/link to photographs	X		If available
Type of area	X		Urban, suburban, rural, etc.
Type of sampling point	X		Traffic location/industrial environment/background
Mobile sampling point	X		Yes/No
Geographic coordinates	X		Specified preferably in ETRS89
Height above sea level (m)	X		
Width of street (m)	X		For sampling points in traffic locations
Surrounding buildings	X		Buildings on both sides of the street/buildings on one side of the street/no

			buildings. For sampling points in traffic locations
Average facade height (m)	X		For sampling points in traffic locations
Displayed traffic speed (km/h)	X		For sampling points in traffic locations
Estimated volume of traffic (AADT)	X		For sampling points in traffic locations
Proportion of heavy duty vehicles (%)	X		For sampling points in traffic locations
Local dispersion conditions		X	Within a few tens of metres: traffic locations, buildings, open terrain, etc.
Regional dispersion conditions		X	Within a few tens of kilometres
The geographical representativeness of the sampling point		X	GIS information
Evaluation of the sampling point's representativeness		X	Brief description
Documentation of the representativeness of the sampling point		X	Web link
List of measured pollutant parameters	X		
List of measured meteorological parameters		X	
Start date for the sampling point	X		YYYY-MM-DD
End date for the sampling point	X		If relevant, YYYY-MM-DD
<i>B 2. Air inlet</i>			
Height above ground (m)	X		
Distance from junction (m)	X		For sampling points in traffic locations
Distance from kerb (m)	X		For sampling points in traffic locations
Distance from house facade (m)	X		With surrounding buildings
Geographic coordinates		X	Recommended if the accuracy of the coordinates exceeds the size of the measuring station. Specified preferably in ETRS89
<i>B 3. Emissions (per air pollutant)</i>			
Emission sources	X		Transport, residential heating, energy plants, long-distance transport, etc.
The main emission source(s) influencing measured concentrations	X		
Road traffic emissions over a road section of at least 100m (tonnes/km per year)		X	
Distance from road	X		
Emissions from individual heating within 1km radius per component (tonnes/km ² per year)		X	
Emissions from industrial sources per component (tonnes per year)		X	
Distance from industrial sources	X		If relevant
Other factors which may influence measurement results		X	

C. Information on measurement			
Measurement method	X		
Analytical technique	X		For non-automatic instruments
Measurement equipment	X		Instrument model, manufacturer and version
Description of equivalence with reference method	X		In accordance with Section 20, if relevant
Detection limit	X		
Sampling time	X		Minute, hour, day, week, month, etc.
Measurement interval	X		Minute, hour, day, week, month, etc.
Calibration		X	Manual or automatic method
Calibration frequency		X	Number of occasions per year
Correction factor	X		If relevant
Start date for the measurement	X		YYYY-MM-DD
End date for the measurement	X		If relevant, YYYY-MM-DD
D. Measurement data			
Pollutant	X		
Concentration	X		In accordance with Annex 3 point 2
Unit	X		
Status	X		Unverified/preliminary verified/verified data
Validity	X		Valid, invalid, etc.
Description of traceability and uncertainty calculations	X		
Uncertainty	X		
Data capture	X		
Time coverage	X		
Date	X		YYYY-MM-DD
Time	X		Start and stop time
Time reference	X		Normal Swedish time
E. Modelling			
Name of model	X		
Description of model	X		
Documentation of model	X		Link to website
Input data	X		Description of input data
Results	X		
Uncertainty	X		
Description of traceability and uncertainty calculations	X		
Period covered by the model	X		
Measurements used in quality control of modelling results	X		
Time resolution	X		
Geographic resolution	X		
Modelled geographic area	X		GIS information
F. Objective estimation			
Report which includes description of methodology for objective estimation and results	X		
Measurement data including metadata	X		If relevant
Modelling data	X		If relevant
Uncertainty	X		
Description of traceability and uncertainty calculations	X		
Geographic extent of objective estimation	X		GIS information

<i>G. In event of exceedance of an environmental quality standard</i>			
EQS concerned	X		
Concentration	X		
Geographic extent of the exceedance	X		GIS information if available
Road section covered by the exceedance (km)	X		If the exceedance is related to road traffic
Area covered by the exceedance (km ²)	X		If the exceedance is not exclusively due to road traffic
Number of persons exposed to the exceedance (residents in the area)	X		Including reference year for the estimate, if not the same as the reporting year
Method used to confirm the exceedance	X		Reference to measurement/modelling assessment
First year the exceedance was determined	X		
Presumed cause of the exceedance	X		
<i>H. Required information in notifications of exceedance or risk of exceedance of an environmental quality standard under Sections 30-31</i>			
Annual mean	X		Applies to particulate matter (PM2.5), benzene, lead, arsenic, cadmium, nickel and benzo(a)pyrene
Annual mean, based on hourly means	X		Applies to nitrogen dioxide and sulphur dioxide
Annual mean, based on daily means	X		Applies to particulate matter (PM10)
Maximum daily eight hour mean	X		Applies to carbon monoxide
Maximum measured daily and/or hourly mean	X		Applies to nitrogen dioxide, particulate matter (PM10) and sulphur dioxide
Number of days and/or hours when the relevant environmental quality standards has been exceeded	X		Applies to nitrogen dioxide, particulate matter (PM10), carbon monoxide and sulphur dioxide
Relevant percentiles for daily and hourly exceedances	X		Applies to nitrogen dioxide, particulate matter (PM10) and sulphur dioxide
Measurement results which demonstrate that an exceedance has occurred	X		Time series with maximum possible time resolution
Previous measurement results and information on relevant pollutant trends over time	X		
Estimated number of people exposed	X		

Annex 7 – Information on action programme

A. General information

1. The geographic area that the programme concerns
2. Contact information for the person who prepared the programme
3. The air pollutants covered
4. The pollutant level(s) of the relevant environmental quality standard(s) which was/were exceeded.

B. Information on the action programme

1. Reference to website or other information channel where the programme has been published.
2. Reference to website or other information channel where the public is informed of how the programme is being implemented
3. Date on which the programme was adopted
4. Schedule for implementation of the programme, including date on which the pollutant levels specified in the relevant environmental quality standard are expected to be followed

C. General information on the exceedance of the environmental quality standard

1. Year during which the first exceedance was observed
2. Location of the exceedance (municipality, urban area, measurement station)
3. Type of area within which the exceedance occurs (urban area, industrial environment, rural area)
4. Estimated area in square kilometres within which the pollutant levels specified in the relevant environmental quality standard are exceeded
5. Road section along which the pollutant levels specified in the relevant environmental quality standard are exceeded
6. Estimated number of people exposed to these pollutants
7. Meteorological conditions and topography within the area concerned
8. Objects worthy of conservation within the area concerned
9. Concentrations of the relevant pollutants during previous years
10. The assessment methods used
11. The principal factors which caused the exceedance

D. Information on source apportionment

Contribution in micrograms per cubic metre or percent from the sectors below. The source contributions should concern the site where the highest concentrations of the relevant pollutant were measured. In the case of exceedance of nitrogen dioxide, the source distribution must be done for nitrogen oxides.

1. Reference year (the year that the source apportionment concerns and which if possible is to be used as the base year for projections)
2. Regional background
 - a. Total
 - b. National sources
 - c. Transboundary sources
 - d. Natural sources
3. Urban background
 - a. Total

- b. Road traffic
 - c. Industry, including heating and power generation
 - d. Agriculture
 - e. Residential heating, including households
 - f. Shipping
 - g. Non-road mobile machinery
 - h. Natural sources
 - i. Transboundary sources
 - j. Other sources
4. Traffic location or equivalent
- a. Total
 - b. Road traffic
 - c. Industry, including heating and power generation
 - d. Agriculture
 - e. Residential heating, including households
 - f. Shipping
 - g. Non-road mobile machinery
 - h. Natural sources
 - i. Transboundary sources
 - j. Other sources

E. Information on implemented measures

1. Local and regional, as well as relevant national and international measures
2. Determined effects of measures

F. Information on approved measures

1. Information on each approved measure in the action programme
 - a. Name
 - b. Description
 - c. Type of measure (economic, technical, information, other)
 - d. Administrative level (local, regional, national)
 - e. Time-scale (short/medium/long term)
 - f. Geographical area
 - g. Sectors concerned (traffic, industry including heating and power generation, agriculture, residential heating including households, shipping, non-road mobile machinery, other)
 - h. Estimated cost of implementation
 - i. Start and end dates for implementation of the measure
 - j. Date on which the measure is expected to have achieved full effect
2. Other implementation dates of importance
3. Indicators for monitoring progress
4. Anticipated annual reduction in emissions as a result of each approved measure (kilotonnes/year)
5. Anticipated effect on concentrations of the relevant pollutants during the projection year
6. Anticipated effect on the number of exceedances of relevant pollutant levels during the projection year
7. Measures planned in the long term

G. Information on air quality projections

1. Start year for the projections (base year)
2. Year which the projections concern (projection year)
3. Projection if the action programme is not implemented (base scenario)
 - a. Description of emissions scenario
 - b. Total quantity of emissions within the geographic area covered by the action programme (kilotonnes/year)
 - c. Information on measures already approved or implemented
 - d. Anticipated concentrations in the projection year (annual mean in micrograms per cubic metre)
 - e. Anticipated number of exceedances in the projection year (if relevant for the relevant environmental quality standard)
 - f. Year during which the pollutant levels specified in the relevant environmental quality standard is expected to be followed
4. Projection if the action programme is implemented (action programme scenario)
 - a. Description of emissions scenario
 - b. Total quantity of emissions within the geographic area covered by the action programme (kilotonnes/year)
 - c. Information on measures included in the action programme
 - d. Anticipated concentrations in the projection year (annual mean in micrograms per cubic metre)
 - e. Anticipated number of exceedances in the projection year (if relevant for the relevant environmental quality standard)
 - f. Year during which the pollutant levels specified in the relevant environmental quality standard is expected to be followed

H. Other information

1. Publications or other documents which supplement the information provided in the points above.