L.N. 163 of 2002

# ENVIRONMENT PROTECTION ACT, 2001
# (ACT NO. XX OF 2001)

## Limit Values for Benzene and Carbon Monoxide in Ambient Air Regulations, 2002

BY virtue of the powers conferred by article 9 of the Environment Protection Act, 2001, hereinafter referred to as "the Act", the Minister for Home Affairs and the Environment has made the following regulations:

Citation and commencement.

**1.** (1) The title of these regulations is the Limit Values for Benzene and Carbon Monoxide in Ambient Air Regulations, 2002.

(2) These regulations shall come into force on such date as the Minister responsible for the environment may by notice in the Gazette appoint, and different dates may be so appointed for different provisions and different purposes of these regulations.

(3) A notice under sub-regulation (2) of this regulation may make such transitional provisions as appear to the Minister responsible for the environment to be necessary or expedient in connection with the provisions thereby brought into force.

Scope.

**2.** The objective of these regulations is to -

(a) to establish limit values for concentrations of benzene and carbon monoxide in ambient air intended to avoid, prevent or reduce harmful effects on human health and the environment as a whole;

(b) to assess concentrations of benzene and carbon monoxide in ambient air on the basis of common methods and criteria;

(c) to obtain adequate information on concentrations of benzene and carbon monoxide in ambient air and ensure that it is made available to the public;

(d) to maintain ambient air quality where it is good and improve it in other cases with respect to benzene and carbon monoxide.

Definitions.

**3.** For the purposes of these regulations:

"ambient air" means outdoor air in the troposphere, excluding work places;

"pollutant" means any substance introduced directly or indirectly by man into the ambient air and likely to have harmful effects on human health and, or the environment as a whole;

"level" means the concentration of a pollutant in ambient air or the deposition thereof on surfaces in a given time;

"assessment" means any method used to measure, calculate, predict or estimate the level of a pollutant in the ambient air;

"limit value" means a level fixed on the basis of scientific knowledge, with the aim of avoiding, preventing or reducing harmful effects on human health and, or the environment as a whole, to be attained within a given period and not to be exceeded once attained;

"margin of tolerance" means the percentage of the limit value by which this value may be exceeded subject to the conditions laid down in the Ambient Air Quality Assessment and Management Regulations, 2001;

"zone" means part of the territory as may be delimited by the Minister;

"agglomeration" means a zone with a population concentration in excess of 250,000 inhabitants or, where the population concentration is 250,000 inhabitants or less, a population density per $km^2$ which for the Minister, after consulting the authority, justifies the need for ambient air quality to be assessed and managed;

"upper assessment threshold" means a level specified in Annex III, below which a combination of measurements and modelling techniques may be used to assess ambient air quality, in accordance with Regulation 6(2) of the Ambient air Quality Assessment and Management Regulations, 2001;

"lower assessment threshold" means a level specified in Annex III, below which modelling or objective estimation techniques alone may be used to assess ambient air quality in accordance with Regulation 6(3) of the Ambient Air Quality Assessment and Management Regulations, 2001;

"fixed measurements" means measurements taken in accordance with at fixed sites either continuously or by random sampling; the number of measurements shall be sufficiently large to enable the levels observed to be determined;

"Minister" means the Minister responsible for the environment;

"competent authority" means the Malta Environment and Planning Authority as prescribed by the notice entitled Nomination of the Malta Environment and Planning Authority as the competent authority, and such other body or person as the Minister responsible for the Environment may by order in the Gazette prescribe and different bodies or persons may be designated as the competent authority for different provisions and different purposes of these regulations. L.N. 107 of 2002.

Concentrations of benzene.

4. Concentrations of benzene in ambient air, as assessed in accordance with Article 6, shall not exceed the limit value laid down in Annex I according to the dates mentioned therein. The margin of tolerance laid down in Annex I shall apply in accordance with regulation 8 of the Ambient Air Quality Assessment and Management Regulations, 2001.

Concentration of carbon monoxide.

5. Concentrations of carbon monoxide in ambient air, as assessed in accordance with regulation 6, shall not exceed the limit value laid down in Annex II according to the dates mentioned therein. The margin of tolerance laid down in Annex II shall apply in accordance with Regulation 8 of the Ambient Air Quality Assessment and Management Regulations, 2001.

Assessment of concentrations.

**6.** (1) The upper and lower assessment thresholds for benzene and carbon monoxide shall be those laid down in Section I of Annex III. The classification of each zone or agglomeration for the purposes of Regulation 6 of the Ambient Air Quality Assessment and Management Regulations, 2001 shall be reviewed by the competent authority at least every five years in accordance with the procedure laid down in Section II of Annex III to these regulations:

Provided that classification shall be reviewed earlier by the competent authority in the event of significant change in activities relevant to ambient concentrations of benzene or carbon monoxide.

(2) The criteria for determining the location of sampling points for the measurement of benzene and carbon monoxide in ambient air shall be those listed in Annex IV. The minimum number of sampling

points for fixed measurements of concentrations of each relevant pollutant shall be as laid down in Annex V, and they shall be installed in each zone or agglomeration within which measurement is required if fixed measurement is the sole source of data on concentrations within it:

Provided that for zones and agglomerations within which information from fixed measurement stations is supplemented by information from other sources, such as emission inventories, indicative measurement methods and air quality modelling, the number of fixed measuring stations to be installed and the spatial resolution of other techniques shall be sufficient for the concentrations of air pollutants to be established in accordance with Section I of Annex IV, and Section I of Annex VI.

(3) The competent authority shall for zones and agglomerations within which measurement is not required, use or allow the use of modelling or objective-estimation techniques .

(4) The reference methods for the analysis and the sampling of benzene and carbon monoxide shall be as laid down in Sections I and II of Annex VII. Section III of Annex VII will set out reference techniques for air quality modelling when such techniques are available

Information.

7. (1) The competent authority shall ensure that up-to-date information on ambient concentrations of benzene and carbon monoxide is routinely made available to the public as well as to appropriate organisations, such as environmental organisations, consumer organisations, organisations representing the interests of sensitive populations and other relevant health-care bodies, by means, for example, of broadcast media, press, information screens or computer-network services, teletext, telephone or fax.

(2) The competent authority shall ensure that information on ambient concentrations of benzene, as an average value over the last 12 months, shall be updated on at least a three-monthly basis and, wherever practicable, information shall be updated on a monthly basis:

Provied that information on ambient concentrations of carbon monoxide, as a maximum running average over eight hours, shall be updated on at least a daily basis and, wherever practicable, information shall be updated on an hourly basis.

Provided further that the information referred to in the second subparagraph shall at least indicate any exceedances of the concentrations stated in the limit values over the averaging periods laid

down in Annexes I and II and it shall also provide a short assessment in relation to limit values and appropriate information regarding effects on health.

(3) The competent authority shall be responsible for making plans or programmes available to the public as required by regulation 8 (3) of the Ambient Air Quality Assessment and Management Regulation, 2001:

Provided that such plans or programmes shall also be made available to the organisations referred to in sub-regulation 1 of this Regulation. This also includes the documentation required by Annex VI(II) to these regulations.

(4) Information made available to the public and to organisations by the Authority under sub-regulations 1 and 2 shall be clear, comprehensible and accessible.

Offences.

**8.** Any person shall be guilty of an offence under these regulations if:

(a) he fails to comply with any provision of these regulations or fails to comply with permit conditions or with any order lawfully given in terms of any provision of these regulations; or

(b) he contravenes any restriction, prohibition or requirement imposed by or under these regulations; or

(c) he acts in contravention of any of the provisions of these regulations; or

(d) he conspires or attempts, or aids, or abets, any other person by whatever means, including advertising, counselling or procurement to contravene the provisions of these regulations or to fail to comply with any such provisions, including any order lawfully given in terms of any of the provision of these regulations, or to contravene any restriction, prohibition or requirement imposed by or under the said regulations.

Penalties.

**9.** Any person who commits an offence against these regulations shall, on conviction, be liable:

(a) on a first conviction to a fine (*multa*) of not less than five hundred liri but not exceeding one thousand liri;

(b) on a second or subsequent convictions, to a fine (*multa*) of not less than one thousand liri, but not exceeding two thousand liri or to imprisonment for a term not exceeding two years, or to both such fine and imprisonment:

Provided that whenever any person is found guilty of committing an offence under these regulations by means of a vehicle, the owner of the said vehicle, where applicable, is held liable in the same manner and degree:

Provided further that the court shall order any person who has been found guilty of committing an offence against these regulations to pay for the expenses incurred by the competent authority as a result of the said offence, the revocation of the permit issued by the competent authority and the confiscation of the corpus delicti, including the vehicle, if applicable.

Applicability of Cap. 9.

**10.** (1) The provisions of articles 23 and 30 of the Criminal Code shall, *mutatis mutandis*, apply to proceedings in respect of offences against these regulations, so however that the disqualification from holding or obtaining a licence, permit or authority shall in no case be for less than one year.

(2) Notwithstanding the provisions of article 370 of the Criminal Code, proceedings for an offence against these regulations shall be held before the Court of Magistrates (Malta) or the Court of Magistrates (Gozo), as the case may be, and shall be in accordance with the provisions of the Criminal Code regulating the procedure before the said courts as courts of criminal judicature.

(3) Notwithstanding the provisions of the Criminal Code, the Attorney General shall always have a right of appeal to the Court of Criminal Appeal from any judgement given by the Court of Magistrates (Malta) or the Court of Magistrates (Gozo) in respect of proceedings for any offence against these regulations.

Language of Annexes

**11.** Annexes I to VII attached to these regulations shall be published in the English language with the English version of these regulations.

*ANNEX I*

## LIMIT VALUE FOR BENZENE

The limit value must be expressed in $\mu g/m^3$, standardised at a temperature of 293 K and a pressure of 101,3 kPa.

| | Averaging period | Limit value | Margin of tolerance | Date by which limit value is to be met |
|---|---|---|---|---|
| Limit value for the protection of human health | Calendar year | 5 $\mu g/m^3$ | 5 $\mu g/m^3$ (100 %) on 13 December 2000, reducing on 1 January 2006 and every 12 months thereafter by 1 $\mu g/m^3$ to reach 0 % by 1 January 2010 | 1 January 2010 (1) |

(1) Except within zones and agglomerations within which a time-limited extension has been agreed in accordance with Article 3(2).

*ANNEX II*

## LIMIT VALUE FOR CARBON MONOXIDE

The limit value must be expressed in $mg/m^3$. The volume must be standardised at a temperature of 293 K and a pressure of 101,3 kPa.

| | Averaging period | Limit value | Margin of tolerance | Date by which limit value is to be met |
|---|---|---|---|---|
| Limit value for the protection of human health | Maximum daily 8-hour mean | 10 $mg/m^3$ | 6 $mg/m^3$ on 13 December, reducing on 1 January 2003 and every 12 months thereafter by 2 $mg/m^3$ to reach 0 % by 1 January 2005 | 1 January 2005 |

The maximum daily 8-hour mean concentration will be selected by examining 8-hour running averages, calculated from hourly data and updated each hour. Each 8-hour average so calculated will be assigned to the day on which it ends, i.e. the first calculation period for any one day will be the period from 17:00 on the previous day to 01:00 on that day; the last calculation period for any one day will be the period from 16:00 to 24:00 on that day.

*ANNEX III*

## DETERMINATION OF REQUIREMENTS FOR ASSESSMENT OF CONCENTRATIONS OF BENZENE AND CARBON MONOXIDE IN AMBIENT AIR WITHIN A ZONE OR AGGLOMERATION

### I. Upper and lower assessment thresholds

The following upper and lower assessment thresholds will apply:

(a) Benzene

| | Annual average |
|---|---|
| Upper assessment threshold | 70 % of limit value (3,5 $\mu g/m^3$) |
| Lower assessment threshold | 40 % of limit value (2 $\mu g/m^3$) |

(b) Carbon Monoxide

| | Eight-hour average |
|---|---|
| Upper assessment threshold | 70 % of limit value (7 $mg/m^3$) |
| Lower assessment threshold | 50 % of limit value (5 $mg/m^3$) |

### II. Determination of exceedances of upper and lower assessment thresholds

Exceedances of upper and lower assessment thresholds must be determined on the basis of concentrations during the previous five years where sufficient data are available. An assessment threshold will be deemed to have been exceeded if it has been exceeded during at least three separate years out of those previous five years.

Where fewer than five years' data are available, Member States may combine measurement campaigns of short duration during the period of the year and at locations likely to be typical of the highest pollution levels with results obtained from information from emission inventories and modelling to determine exceedances of the upper and lower assessment thresholds.

*ANNEX IV*

## LOCATION OF SAMPLING POINTS FOR THE MEASUREMENT OF CONCENTRATIONS OF BENZENE AND CARBON MONOXIDE IN AMBIENT AIR

The following considerations will apply to fixed measurement.

### I. Macroscale siting

Sampling points directed at the protection of human health should be sited:

(i) to provide data on the areas within zones and agglomerations where the highest concentrations occur to which the population is likely to be directly or indirectly exposed for a period which is significant in relation to the averaging period of the limit value(s);

(ii) to provide data on levels in other areas within the zones and agglomerations which are representative of the exposure of the general population.

Sampling points should in general be sited to avoid measuring very small micro-environments in their immediate vicinity. As a guideline, a sampling point should be sited to be representative of air quality in a surrounding area of no less than 200 $m^2$ at traffic-orientated sites and of several square kilometres at urban-background sites.

Sampling points should also, where possible, be representative of similar locations not in their immediate vicinity.

Account should be taken of the need to locate sampling points on islands, where that is necessary for the protection of human health.

### II. Microscale siting

The following guidelines should be met as far as practicable:

— the flow around the inlet sampling probe should be unrestricted, without any obstructions affecting the airflow in the vicinity of the sampler (normally some metres away from buildings, balconies, trees and other obstacles and at least 0,5 m from the nearest building in the case of sampling points representing air quality at the building line);

— in general, the inlet sampling point should be between 1,5 m (the breathing zone) and 4 m above the ground. Higher positions (up to 8 m) may be necessary in some circumstances. Higher siting may also be appropriate if the station is representative of a large area;

— the inlet probe should not be positioned in the immediate vicinity of sources in order to avoid direct intake of emissions unmixed with ambient air;

— the sampler's exhaust outlet should be positioned so that recirculation of exhaust air to the sample inlet is avoided;

— location of traffic-orientated samplers:

  — for all pollutants, such sampling points should be at least 25 metres from the edge of major junctions and at least 4 m from the centre of the nearest traffic lane;

  — for carbon monoxide, inlets should be no more than 5 m from the kerbside;

  — for benzene, inlets should be sited so as to be representative of air quality near to the building line.

The following factors may also be taken into account:

— interfering sources;

— security;

— access;

— availability of electrical power and telephone communications;

— visibility of the site in relation to its surroundings;

— safety of public and operators;

— the desirability of co-locating sampling points for different pollutants;

— planning requirements.

III. Documentation and review of site selection

The site selection procedures should be fully documented at the classification stage by such means as compass-point photographs of the surrounding area and a detailed map. Sites should be reviewed at regular intervals with repeated documentation to ensure that selection criteria remain valid over time.

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*ANNEX V*

## CRITERIA FOR DETERMINING NUMBERS OF SAMPLING POINTS FOR FIXED MEASUREMENT OF CONCENTRATIONS OF BENZENE AND CARBON MONOXIDE IN AMBIENT AIR

Minimum number of sampling points for fixed measurement to assess compliance with limit values for the protection of human health in zones and agglomerations where fixed measurement is the sole source of information:

(a) Diffuse sources

| Population of agglomeration or zone (thousands) | If concentrations exceed the upper assessment threshold (1) | If maximum concentrations are between the upper and lower assessment thresholds |
|---|---|---|
| 0-249 | 1 | 1 |
| 250-499 | 2 | 1 |
| 500-749 | 2 | 1 |
| 750-999 | 3 | 1 |
| 1 000-1 499 | 4 | 2 |
| 1 500-1 999 | 5 | 2 |
| 2 000-2 749 | 6 | 3 |
| 2 750-3 749 | 7 | 3 |
| 3 750-4 749 | 8 | 4 |
| 4 750-5 999 | 9 | 4 |
| ≥ 6 000 | 10 | 5 |

(1) To include at least one urban-background station and one traffic-oriented station provided this does not increase the number of sampling points.

(b) Point sources

For the assessment of pollution in the vicinity of point sources, the number of sampling points for fixed measurement should be calculated taking into account emission densities, the likely distribution patterns of ambient air pollution and potential exposure of the population.

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*ANNEX VI*

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

I. Data quality objectives

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.

| | Benzene | Carbon monoxide |
|---|---|---|
| *Fixed measurements* (1) | | |
| 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)<br>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: | | |
| Eight-hour averages | — | 50 % |
| Annual averages | 50 % | — |
| Objective estimation | | |
| Uncertainty | 100 % | 75 % |

(1) Member States may apply random measurements instead of continuous measurements for benzene if they can demonstrate to the Commission that the uncertainty, including the uncertainty due to random sampling, meets the quality objective of 25 %. Random sampling must be evenly distributed over the year in order to avoid skewing of results.

The uncertainty (on a 95 % confidence interval) of the assessment methods will be evaluated in accordance with the principles of the ISO Guide to the Expression of Uncertainty in Measurement (1993) or the methodology of ISO 5725:1994 or equivalent. 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. Until such time as CEN standards with detailed test protocols are fully adopted, the Commission will issue, before the adoption of this Directive, the guidelines for use developed by CEN.

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.

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.

II. **Results of air quality assessment**

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

— a description of assessment activities carried out;
— the specific methods used, with references to descriptions of the method;
— the sources of data and information;
— a description of results, including uncertainties and, in particular, the extent of any area or, if relevant, the length of road within the zone or agglomeration over which concentrations exceed limit value(s) or, as may be, limit value(s) plus applicable margin(s) of tolerance and of any area within which concentrations exceed the upper assessment threshold or the lower assessment threshold;
— 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.

Where possible, Member States should compile maps showing concentration distributions within each zone and agglomeration.

III. **Standardisation**

For benzene and carbon monoxide the measurement result must be standardised at a temperature of 293 K and a pressure of 101,3 kPa.

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*ANNEX VII*

## REFERENCE METHODS FOR ASSESSMENT OF CONCENTRATIONS OF BENZENE AND CARBON MONOXIDE

I. **Reference method for the sampling/analysis of benzene**

The reference method for the measurement of benzene will be the pumped sampling method on a sorbent cartridge followed by gas chromatographic determination that is currently being standardised by CEN. In the absence of a CEN standardised method, Member States are allowed to use national standard methods based on the same measurement method.

A Member State may also use any other method which it can demonstrate gives results equivalent to the above method.

II. **Reference method for the analysis of carbon monoxide**

The reference method for the measurement of carbon monoxide will be the non-dispersive infra-red spectometric (NDIR) method, that is currently being standardised by CEN. In the absence of a CEN standardised method, the Member States are allowed to use national standard methods based on the same measurement method.

A Member State may also use any other method which it can demonstrate gives results equivalent to the above method.

III. **Reference modelling techniques**

Reference modelling techniques cannot be specified at present. Any amendments to adapt this point to scientific and technical progress must be adopted in accordance with the procedure laid down in Article 6(2).

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