

THE GOVERNMENT OF THE REPUBLIC OF CROATIA

2467

Pursuant to Article 30 Paragraphs 1 and 2 of the Air Protection Act (Official Gazette 178/2004), the Government of the Republic of Croatia at its session on 3 November 2005, passed the

REGULATION

ON LIMIT VALUES OF POLLUTANTS IN AIR

Article 1

With the purpose of assessing the significance of pollutant levels in air, this Regulation shall prescribe:

- limit values (LV);
- margins of tolerance, tolerance values (TV);
- upper assessment threshold;
- lower assessment threshold;
- deadlines for gradual decrease of margins of tolerance;
- target values;
- basic components of the mentioned values; and
- deadlines for gradual decrease of pollutants in air.

Article 2

Prescribed values of dimensions referred to in Article 1 of this Regulation shall refer to the following pollutants:

- sulphur dioxide (SO₂);
- oxides of nitrogen (NO_x) expressed as nitrogen dioxide (NO₂);
- smoke;
- carbon monoxide (CO);
- fractions of particulate matter sized PM₁₀ and PM_{2,5};
- content of lead (Pb), cadmium (Cd), arsenic (As), manganese (Mn), nickel (Ni), benzo(a)pyrene and sulphates (SO₄⁻) in PM₁₀;
- total gaseous mercury (Hg);
- benzene;
- hydrogen sulphide (H₂S);
- mercaptans;
- ammonia (NH₃);
- phenols;
- hydrogen chloride (HCl);
- gaseous fluorides;
- total or bulk deposition;
- content of lead, arsenic, cadmium, nickel, mercury and thallium in total or bulk deposition.

Article 3

The aims of this Regulation are to:

- establish limit, tolerant and target values for levels of pollutants in air referred to in Article 2 of this Regulation, in order to avoid, prevent or decrease adverse effects to human health, quality of life and environment as a whole;
- assess pollution levels in air through application of methods of mathematical modelling and/or other estimation methods in accordance with the widely accepted practice;
- collect appropriate data on the levels of pollutants in air and ensure their availability to the public;
- protect high air quality in the environment, and to improve it when necessary in regards to the levels of pollution of pollutants.

Article 4

For the purposes of this Regulation:

- (1) pollution level means the concentration of a pollutant in air or its deposition on surfaces in a given time;
- (2) limit value (LV) means a limit pollution level below which, on the basis of scientific knowledge, there is no harmful effects on human health and/or the environment as a whole, and when once attained is not to be exceeded;
- (3) margin of tolerance means the percentage of the limit value by which this value may be exceeded subject to the prescribed conditions;
- (4) tolerant value (TV) means limit value increased by the margin of tolerance;
- (5) target value means concentration of pollutants in air, fixed with the aim of avoiding, preventing or decreasing harmful effects on human health and/or the environment as a whole, which is to be attained where possible within a given period;
- (6) assessment means an appropriate method used to measure or estimate (calculate, predict) the pollution level;
- (7) upper assessment threshold means a prescribed pollution level, below which assessment of pollution may be performed through a combination of measurements and estimation methods on the basis of standardised mathematical models and/or other appropriate estimation methods;
- (8) lower assessment threshold means a prescribed pollution level, below which assessment of pollution may be performed only with estimation methods on the basis of standardised mathematical models and/or other appropriate estimation methods;
- (9) air quality monitoring means fixed measurements and/or estimates of the pollution level according to spatial and time schedule;
- (10) air quality data means the value of each measured, calculated or estimated variable used for determining the quality of air;
- (11) zone means a part of territory delimited by the State from other such parts, which presents a functional unit in regards to monitoring, protection and improvement of air quality and air quality management;
- (12) agglomeration means a zone with a population over 250000 inhabitants or an agglomeration with a population under 250000 inhabitants with a population density per km² greater than the average in the Republic of Croatia, where assessment and management of air quality is necessary;
- (13) oxides of nitrogen means the sum of volume percentage of nitric oxide and nitrogen dioxide added as parts per billion (10⁻⁹) and expressed as nitrogen dioxide (NO₂) in micrograms per cubic meter;
- (14) smoke means mass concentration of particles which is equivalent to reduction of reflection of filter paper due to collection of black particles, which is measured only in agglomerations where the black particles prevail (heating on wood and coal);

(15) PM₁₀ means particulate matter which passes through an inlet of a collector prescribed with an HRN EN 12341 standard with a 50 % efficiency cut-off at 10 µm aerodynamic diameter;

(16) PM_{2,5} means particulate matter which passes through an inlet of a collector prescribed with an EN 14907 standard with a 50 % efficiency cut-off at 2,5µm aerodynamic

(17) arsenic, lead, cadmium, manganese, nickel and benzo(a)pyrene means content of elements and compounds in PM₁₀ particulate matter and total deposition;

(18) polycyclic aromatic hydrocarbons means organic compounds, composed of at least two fused aromatic rings made entirely from carbon and hydrogen;

(19) total gaseous mercury means elemental mercury vapour (Hg⁰) and reactive gaseous mercury, i.e. water-soluble mercury species with sufficiently high vapour pressure to exist in the gas phase;

(20) total or bulk deposition means the total mass of pollutants which is transferred from the atmosphere to surfaces (e.g. soil, vegetation, water, buildings, etc.) in a given area within a given time;

(21) natural events means volcanic eruptions, seismic activities, geothermal activities, wild-land fires, high-wind events or the atmospheric resuspension or transport of natural particles from dry regions, etc.;

(22) fixed measurement stations means stations for continuous monitoring of air quality within the state and local network;

(23) component means one of the dimensions which determine the comprehensive meaning of limit values and tolerant values (e.g., level, statistical parameter, averaging period, monitoring period);

(24) statistical parameter means chosen statistics of collectively assessed pollution levels ;

(25) averaging period means time period of prescribed duration, during which the average value per time presents individual value of pollution level;

(26) monitoring period means time period of prescribed duration, from which individual pollution level values make a set for determining statistical parameters.

Article 5

(1) Assessment of significance of levels of pollutants referred to in Article 1 of this Regulation shall be carried out pursuant to the provisions of this Regulation and Croatian standards and /or methods which can give comparable results.

(2) Results of measurements and/or estimates may be compared with LV and TV only if the pollution levels were assessed according to a special regulation.

Article 6

(1) LV and TV, upper and lower assessment values are prescribed in Tables 1, 2, 3, 4 and 5 of this Regulation.

(2) For substances for which the LV and TV are not prescribed in this Regulation, for the purpose of managing air quality supervision measures for emissions of these substances shall be used.

Article 7

(1) Monitoring of air quality shall be carried out at the stations from the state network and local networks for air quality monitoring according to the prescribed programme for measuring air quality, measurement method, measurement procedures and data collection, method for analysing and presenting results, and method for delivery of data for the purpose of the air quality information system and method of regular informing the public pursuant to the Air Protection Act.

(2) In the state and local network for fixed monitoring of air quality it is necessary to ensure measurements of concentrations of PM_{2,5}, if possible at the same measurement locations where the concentration of PM₁₀ is determined.

Article 8

(1) LVs and TVs prescribed with this Regulation shall be the basis for:

- assessment of air quality;
- sorting the zones in categories according to the levels of air pollution;
- air quality management.

(2) LVs and TVs prescribed with this Regulation may not be interpreted as values up to which it is permitted to pollute the air.

Article 9

(1) Exceedance of the upper and lower assessment threshold must be determined on the basis of concentrations of pollutants measured in the previous five years, in a certain zone or agglomeration, where there is sufficient data. The assessment threshold has been exceeded if during these five years the total sum of exceedances of numerical values of concentration of the limit is greater than three times the number of exceedances permitted for each year.

(2) If the available data refers to a period shorter than five years, it is possible to combine short-term measurements for a one year period to establish the exceedance of the upper and lower assessment threshold, at the locations where there are typically greatest pollution levels, with the data which was obtained from the cadastre of emissions and with modelling.

(3) Zoning of the territory of the State and classifying the zones according to the pollution level needs to be verified and confirmed, and if needed, measured at least every five years, if in the zone occur changes which may significantly impact the pollution level in air with these substances.

Article 10

(1) Data on the concentration of pollutants referred to in Article 2 of this Regulation shall be public and shall be published on the website of the Ministry of Environmental Protection, Physical Planning and Construction, or in the official gazette, or on the website of the local and regional self-government unit.

(2) Data referred to in Paragraph 1 of this Article must particularly caution against every exceedance of a tolerant value according to the prescribed monitoring period.

(3) Data made available to the public must be clear, understandable and accessible.

Article 11

Tables 1, 2, 3, 4 and 5 with its appropriate content are published along with this Regulation and form a constituent part thereof.

Article 12

On the day of entry into force of this Act, the provisions of the Regulation on recommended and limit values of air quality (Official Gazette 101/96 and 2/97) shall cease to apply, except in the part referring to ozone.

Article 13

This Regulation shall be published in the Official Gazette, and shall enter into force on 1 January 2006.

Class: 351-01/05-01/06

Reg.No.: 5030115-05-1
Zagreb, 3 November 2005

Vice President of the Government and
Minister of the Family, Veterans' Affairs
and Intergenerational Solidarity
Jadranka Kosor, m.p.

PROVISIONAL TRANSLATION

Table 1 LIMIT VALUES AND TOLERANT VALUES OF CONCENTRATIONS OF POLLUTANTS IN AIR FOR THE PROTECTION OF HUMAN HEALTH ⁽¹⁾

Pollutants	Averaging period	Limit values (LV)	Frequency of permitted exceedances	Tolerant values (TVs)	Numerical value for tolerant values for year N from the period from 2006-2010 (for 2nd stage of PM ₁₀ for year N from the period 2011 – 2015)	Date by which limit values are to be met
SO ₂	1 hour	350 µg m ⁻³	LVs may not be exceeded more than 24 times during a calendar year	500 µg m ⁻³ (TVs may not be exceeded more than 24 times during a calendar year)	500 – 30 (N – 2006)	31 December 2010
	24 hour	125 µg m ⁻³	LVs may not be exceeded more than 3 times during a calendar year	–	–	–
	1 year	50 µg m ⁻³	–	–	–	–
NO ₂	1 hour	200 µg m ⁻³	LVs may not be exceeded more than 18 times during a calendar year	300 µg m ⁻³ (TVs may not be exceeded more than 18 times during a calendar year)	300 – 12,5 (N – 2006)	31 December 2014

	24 hours	80 $\mu\text{g m}^{-3}$	LVs may not be exceeded more than 7 times during a calendar year	120 $\mu\text{g m}^{-3}$ (TVs may not be exceeded more than 7 times during a calendar year)	120 – 5 (N – 2006)	31 December 2014
	1 year	40 $\mu\text{g m}^{-3}$	–	60 $\mu\text{g m}^{-3}$	60 – 2,5 (N – 2006)	31 December 2014
Smoke	1 year	50 $\mu\text{g m}^{-3}$	–	75 $\mu\text{g m}^{-3}$	75 – 5 (N – 2006)	31 December 2010
PM ₁₀ 1st stage	24 hours	50 $\mu\text{g m}^{-3}$	LVs may not be exceeded more than 35 times during a calendar year	75 $\mu\text{g m}^{-3}$ (TVs may not be exceeded more than 35 times during a calendar year)	75 – 5 (N – 2006)	31 December 2010
	1 year	40 $\mu\text{g m}^{-3}$	–	60 $\mu\text{g m}^{-3}$	60 – 4 (N – 2006)	31 December 2010
PM ₁₀ 2nd stage ⁽²⁾	24 hours	50 $\mu\text{g m}^{-3}$	LVs may not be exceeded more than 7 times during a calendar year	50 $\mu\text{g m}^{-3}$ (TVs may not be exceeded more than 35 times during a calendar year)	–	31 December 2015
	1 year	20 $\mu\text{g m}^{-3}$	–	30 $\mu\text{g m}^{-3}$	30 – 0,5 (N – 2011)	31 December 2015
PM _{2,5}	1 year	25 $\mu\text{g m}^{-3}$	–	30 $\mu\text{g m}^{-3}$	30 – 0,5 (N – 2006)	31 December 2015

Sulphates in PM ₁₀	24 hours	30 µg m ⁻³	LVs may not be exceeded more than 7 times during a calendar year	-	-	-
	1 year	20 µg m ⁻³	-	-	-	-
Pb in PM ₁₀	1 year	0,5 µg m ⁻³	-	-	-	-
Mn in PM ₁₀	1 year	0,15 µg m ⁻³	-	-	-	-
Cd in PM ₁₀	1 year	5 ng m ⁻³	-	-	-	-
As in PM ₁₀	1 year	6 ng m ⁻³	-	-	-	-
Ni in PM ₁₀	1 year	20 ng m ⁻³	-	-	-	-
Benzo(a)pyrene	1 year	1 ng m ⁻³	-	2 ng m ⁻³	2 – 0,143 (N – 2006)	31 December 2012
Hg	1 year	1 µg m ⁻³	-	-	-	-
H ₂ S	1 hour	7 µg m ⁻³	LVs may not be exceeded more than 7 times during a calendar year	10 µg m ⁻³	10 – 0,6 (N – 2006)	31 December 2010
	24 hours	5 µg m ⁻³	LVs may not be exceeded more than 7 times during a calendar year	-	-	31 December 2010
	1 year	2 µg m ⁻³	-	-	-	-

mercaptans	24 hours	3 $\mu\text{g m}^{-3}$	LVs may not be exceeded more than 7 times during a calendar year	-	-	-
	1 year	1 $\mu\text{g m}^{-3}$	-	-	-	-
ammonia	24 hours	100 $\mu\text{g m}^{-3}$	LVs may not be exceeded more than 7 times during a calendar year	-	-	-
	1 year	30 $\mu\text{g m}^{-3}$	-	-	-	-
formaldehyde ⁽³⁾	24 hours	30 $\mu\text{g m}^{-3}$	-	-	-	-
phenols	24 hours	100 $\mu\text{g m}^{-3}$	LVs may not be exceeded more than 7 times during a calendar year	-	-	-
	1 year	50 $\mu\text{g m}^{-3}$	-	-	-	-
hydrogen chloride	24 hours	200 $\mu\text{g m}^{-3}$	LVs may not be exceeded more than 7 times during a calendar year	-	-	-
	1 year	100 $\mu\text{g m}^{-3}$	-	-	-	-
gaseous fluorides	24 hours	3 $\mu\text{g m}^{-3}$	LVs may not be exceeded more	-	-	-

			than 7 times during a calendar year			
	1 year	1 $\mu\text{g m}^{-3}$	–	–	–	–
benzene	1 year	5 $\mu\text{g m}^{-3}$	–	10 $\mu\text{g m}^{-3}$	10 – 1 (N – 2006)	31 December 2010
CO ⁽⁴⁾	maximum daily 8-hour mean	10 mg m^{-3}	–	16 mg m^{-3}	16 – 1,2 (N – 2006)	31 December 2010

⁽¹⁾ Volume must be reduced to the state of 101,325 kPa and 293,15 K.

⁽²⁾ Indicative limit values which need to be revised on the basis of future information on the effect to human health and environment, technical availability and experience in applying limit values from the first stage.

⁽³⁾ Serves as an ozone precursor substance.

⁽⁴⁾ Maximum daily 8-hour mean concentration is determined by an 8-hour average, which is calculated on the basis of hourly data which are updated every hour. Every 8-hour average calculated in such a way is attributed to the day in which it ends, i.e., first calculation period for any day encompasses the period from 17:00 hours of the previous day up to 01:00 of that day; last calculation period for any day is the period from 16:00 hours to 24:00 of the same day.

Table 2 LIMIT VALUES FOR CONCENTRATION OF POLLUTANTS IN AIR FOR THE PROTECTION OF THE ECOSYSTEM AND VEGETATION

Pollutant	Objective	Averaging period	Limit values **	Date by which limit values are to be met
SO ₂	ecosystem	calendar year and winter period*	20 $\mu\text{g m}^{-3}$	31 December 2010
NO _x	vegetation	1 year	30 $\mu\text{g m}^{-3}$	31 December 2010

*Winter period is a period from October 1 to March 31

**Volume must be reduced at the state of 101,325 kPa and 293,15 K

Table 3 ASSESSMENT THRESHOLDS FOR POLLUTANTS IN AIR FOR THE PROTECTION OF HUMAN HEALTH

Pollutant	Assessment threshold	Monitoring period	Averaging period	Assessment threshold amount	Frequency of permitted exceedances
SO ₂	upper	calendar year	24 hours	75 µg m ⁻³ (60% LV)	may not be exceeded more than 3 times in any calendar year
	lower	calendar year	24 hours	50 µg m ⁻³ (40% LV)	may not be exceeded more than 3 times in any calendar year
NO ₂	upper	calendar year	1 hour 1 year	140 µg m ⁻³ (70% LV) 32 µg m ⁻³ (40% LV)	hourly LV's may not be exceeded more than 18 times in any calendar year
	lower	calendar year	1 hour 1 year	100 µg m ⁻³ (50% LV) 26 µg m ⁻³ (65% LV)	hourly LVs may not be exceeded more than 18 times in any calendar year
PM ₁₀	upper	calendar year	24 hours 1 year	30 µg m ⁻³ (60% LV) 14 µg m ⁻³ (70% LV)	24-hour LVs may not be exceeded more than 7 times in any calendar year
	lower	calendar year	24 hours 1 year	20 µg m ⁻³ (40% LV) 10 µg m ⁻³ (50% LV)	24-hour LVs may not be exceeded more than 7 times in any calendar year
Pb in PM ₁₀	upper	calendar year	1 year	0,35 µg m ⁻³ (70% LV)	–
	lower	calendar year	1 year	0,25 µg m ⁻³ (50% LV)	–
arsenic in PM ₁₀	upper	calendar year	1 year	3,6 ng m ⁻³ (60% LV)	–

	lower	calendar year	1 year	2,4 ng m ⁻³ (40% LV)	-
nickel in PM ₁₀	upper	calendar year	1 year	14 ng m ⁻³ (70% LV)	
	lower	calendar year	1 year	10 ng m ⁻³ (50% LV)	
benzo(a)pyrene in PM ₁₀	upper	calendar year	1 year	0,6 ng m ⁻³ (60% LV)	
	lower	calendar year	1 year	0,4 ng m ⁻³ (40% LV)	
cadmium in PM ₁₀	upper	calendar year	1 year	3 ng m ⁻³ (60% LV)	
	lower	calendar year	1 year	2 ng m ⁻³ (40% LV)	
benzene	upper	calendar year	1 year	3,5 µg m ⁻³ (70% LV)	
	lower	calendar year	1 year	2 µg m ⁻³ (40% LV)	
CO	upper	calendar year	1 year	7 mg m ⁻³ (70% LV)	
	lower	calendar year	1 year	5 mg m ⁻³ (50% LV)	

Upper and lower assessment thresholds for PM10 are based on indicative limit values for 1 January 2010.

Table 4 ASSESSMENT THRESHOLDS FOR CONCENTRATIONS OF POLLUTANTS IN AIR FOR THE PROTECTION OF ECOSYSTEMS AND VEGETATION

Pollutant	Assessment threshold	Monitoring period	Averaging period	Assessment threshold amount
SO ₂ protection of ecosystem	upper	winter period	24 hours	12 µg m ⁻³ (60 % LV)
	lower	calendar year	24 hours	8 µg m ⁻³ (40 % LV)

NO _x protection of vegetation	upper	calendar year	1 year	24 µg m ⁻³ (80 % LV)
	lower	calendar year	1 year	19,5 µg m ⁻³ (65 % LV)

Table 5 LIMIT VALUES FOR TOTAL OR BULK DEPOSITION AND THE CONTENT OF METAL THEREIN

Pollutant	Averaging period	Limit value (LV)	Date by which limit values are to be met
Total deposition	1 year	350 mg m ⁻² d ⁻¹	31 December 2010
As	1 year	4 µg m ⁻² d ⁻¹	31 December 2010
Pb	1 year	100 µg m ⁻² d ⁻¹	31 December 2010
Cd	1 year	2 µg m ⁻² d ⁻¹	31 December 2010
Ni	1 year	15 µg m ⁻² d ⁻¹	31 December 2010
Hg	1 year	1 µg m ⁻² d ⁻¹	31 December 2010
Tl	1 year	2 µg m ⁻² d ⁻¹	31 December 2010

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PROVISIONAL TRANSLATION

← **Oblikovano:** Lijevo: 9,13 cm