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ENVIRONMENTAL PROTECTION AND MANAGEMENT ACT

(CHAPTER 94A, SECTION 77)

ENVIRONMENTAL PROTECTION AND MANAGEMENT (AIR IMPURITIES) REGULATIONS

History	G.N. NO.S 595/2000	->	2002 REVISED EDITION	->	RG8 2008 REVISED EDITION
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[1st January 2001]

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THE SCHEDULE

STANDARDS OF CONCENTRATION OF AIR IMPURITIES

Actual Provisions

Citation

1. These Regulations may be cited as the Environmental Protection and Management (Air Impurities) Regulations.

Dark smoke

2. —(1) For the purposes of section 11 of the Act, dark smoke includes smoke of any colour which appears to the Director-General or any authorised officer —

- (a) to be darker than shade No. 1 on the Ringelmann Chart;

(b) when observed or recorded with such instrument or device as the Director-General may approve, to be darker than shade No. 1 on the Ringelmann Chart; or

(c) to be of such opacity as to cause obscuration to a degree equivalent to smoke darker than shade No. 1 on the Ringelmann Chart.

(2) Section 11 of the Act shall not apply to the emission of dark smoke from any chimney where —

(a) the emission of dark smoke is for a duration of less than 5 minutes in any period of one hour in a day; and

(b) the total number of emissions of dark smoke from that chimney does not exceed 3 times a day.

Methods of smoke indication

3. —(1) Every occupier of any industrial or trade premises in or on which any industrial plant or fuel burning equipment is situated shall, if required by the Director-General to do so, provide or install such instrument, equipment or device in or on the premises in accordance with paragraphs (2) and (3).

(2) The instrument, equipment or device referred to in paragraph (1) must be of such type and installed in such manner as will enable any person in charge of the industrial plant or fuel burning equipment to readily ascertain at all times and without leaving the boiler room, furnace room or control room, whether smoke is being discharged from any chimney on the industrial or trade premises.

(3) The instrument, equipment or device may include one or more of the following:

(a) a smoke density indicator, recorder and alarm which will provide adequate indication in the boiler room, furnace room or control room of the density of smoke being discharged from the chimney;

(b) a closed circuit television installation with the receiver located in the boiler room, furnace room or control room; or

(c) any other instrument, equipment or device approved by the Director-General.

Standards of concentration of air impurities

4. —(1) For the purposes of section 12 of the Act, the standards of concentration of air impurities that must be complied with in the conduct of any trade, industry or process or the operation of any fuel burning equipment or industrial plant shall be those specified in the Schedule.

(2) The concentration of any substance specified in the first column of the Schedule shall be determined in accordance with such method as may be specified by or is acceptable to the Director-General.

Testing procedures and requirements

5. —(1) For the purposes of section 12 of the Act, the Director-General may specify in any particular case, the point at which the concentration of air impurities shall be measured.

(2) The point at which the concentration of air impurities shall be measured may be situated at —

(a) the fixed point of emission of any air impurities;

(b) the final point of emission of any air impurities; or

(c) any other point in or along any flue, duct or chimney located at a place in the premises other than the final point of emission of air impurities.

(3) Every owner or occupier of any industrial or trade premises shall —

(a) carry out such tests with respect to the emission of air impurities from and the consumption of fuel in or on the premises as may be required by the Director-General;

(b) keep a register of all such tests, specifying the date, nature and results of each test; and

(c) ensure that such register is available for inspection by the Director-General or any authorised officer at all reasonable times.

(4) Subject to paragraph (5), the results of all tests conducted on boilers, furnaces and incinerators with respect to the emission of air impurities shall be expressed on the basis of flue gas containing 12% by volume of carbon dioxide.

(5) The results of all tests conducted on waste incinerators with respect to the emission of dioxins and furans shall be expressed on the basis of flue gas containing 11% by volume of oxygen.

(6) Every owner or occupier of any industrial or trade premises shall, for the purposes of enabling the Director-General or any authorised officer to exercise his powers under the Act —

(a) provide the Director-General or the authorised officer with access to such premises, any part thereof and any control equipment, fuel burning equipment, industrial plant or chimney on such premises, at all reasonable times and as often as the Director-General or the authorised officer considers necessary; and

(b) provide the Director-General or the authorised officer with such assistance and facilities as may reasonably be required by the Director-General or the authorised officer.

(7) The assistance and facilities referred to in paragraph (6) (b) shall include, in respect of each chimney serving the premises, the provision of one or more inspection opening or openings and such means of safe and adequate access for the purposes of enabling an authorised officer to inspect and obtain representative samples of any discharge from the chimney.

(8) In this regulation —

"boiler" means any device in which water or other liquid is heated by any combustible material;

"furnace" means any chamber, other than a boiler in which combustion takes place;

"incinerator" means any structure or part of a structure used in any trade, industry or process to dispose of material by burning or heating with any form of energy;

"waste incinerator" means an incinerator which is used for the purposes of disposing of municipal, industrial or hospital waste.

Exemption

6. —(1) Regulation 4 shall not apply to such industrial or trade premises and for such period between 1st January 2001 to 31st December 2003 as the Director-General may determine.

(2) The Director-General may —

(a) require any industrial or trade premises referred to in paragraph (1) to comply with such

other emission standards as he may specify; and

(b) if he considers it necessary, extend the period of exemption referred to in paragraph (1), subject to such conditions as he may impose.

Penalties

7. —(1) Any person who contravenes regulation 3 or 5 (3) or (6) shall be guilty of an offence and shall be liable —

(a) on the first conviction, to a fine not exceeding \$10,000 and, in the case of a continuing offence, to a further fine not exceeding \$300 for every day or part thereof during which the offence continues after conviction; and

(b) on the second or subsequent conviction to a fine not exceeding \$20,000 and, in the case of a continuing offence, to a further fine not exceeding \$500 for every day or part thereof during which the offence continues after conviction.

(2) Any offence under these Regulations may be compounded by the Director-General in accordance with section 72 (1) of the Act.

THE SCHEDULE

Regulation 4

STANDARDS OF CONCENTRATION OF AIR IMPURITIES

1. The concentration of any substance specified in the first column emitted from any operation in any trade, industry, process, fuel burning equipment or industrial plant specified in the second column shall not at any point before admixture with air, smoke or other gases, exceed the limits specified in the third column.

<i>Substance</i>	<i>Trade, industry, process, fuel burning equipment or industrial plant</i>	<i>Emission limits</i>
(a) Ammonia and ammonium compounds	Any trade, industry or process	76 mg/Nm ³ expressed as ammonia
(b) Antimony and its compounds	Any trade, industry or process	5 mg/Nm ³ expressed as antimony
(c) Arsenic and its compounds	Any trade, industry or process	1 mg/Nm ³ expressed as arsenic
(d) Benzene	Any trade, industry or process	5 mg/Nm ³
(e) Cadmium and its compounds	Any trade, industry or process	3 mg/Nm ³ expressed as cadmium
(f) Carbon monoxide	Any trade, industry, process or fuel burning equipment	625 mg/Nm ³
(g) Chlorine	Any trade, industry or process	32 mg/Nm ³

(h) Copper and its compounds	Any trade, industry or process	5 mg/Nm ³ expressed as copper
(i) Dioxins and furans	Any waste incinerator	(i) 1.0 ng TEQ/Nm ³ for waste incinerators commissioned before 1st January 2001 (ii) 0.1 ng TEQ/Nm ³ for waste incinerators commissioned on or after 1st January 2001
(j) Ethylene oxide	Any trade, industry or process	5 mg/Nm ³
(k) Fluorine, hydrofluoric acid or inorganic fluorine compounds	Any trade, industry or process	50 mg/Nm ³ expressed as hydrofluoric acid
(l) Formaldehyde	Any trade, industry or process	20 mg/Nm ³
(m) Hydrogen chloride	Any trade, industry or process	200 mg/Nm ³
(n) Hydrogen sulphide	Any trade, industry or process	7.6 mg/Nm ³
(o) Lead and its compounds	Any trade, industry or process	5 mg/Nm ³ expressed as lead
(p) Mercury and its compounds	Any trade, industry or process	3 mg/Nm ³ expressed as mercury
(q) Oxides of nitrogen	Any trade, industry, process or fuel burning equipment	700 mg/Nm ³ expressed as nitrogen dioxide
(r) Particulate substances including smoke, soot, dust, ash, fly-ash, cinders, cement, lime, alumina, grit and other solid particles of any kind	Any trade, industry, process, fuel burning equipment or industrial plant (except for any cold blast foundry cupolas)	(i) 100 mg/Nm ³ ; or (ii) where there is more than one flue, duct or chimney in any scheduled premises, the total mass of the particulate emissions from all of such flue, duct or chimney divided by the total volume of such emissions shall not exceed 100 mg/Nm ³ and the particulate emissions from each of such flue, duct or chimney shall not exceed 200 mg/Nm ³ at any point in time.
(s) Styrene monomer	Any trade, industry or process	100 mg/Nm ³
(t) Sulphur dioxide (non-combustion sources)	Any trade, industry or process	500 mg/Nm ³
(u) Sulphur trioxide and other	The manufacture of	

acid gases	sulphuric acid	500 mg/Nm ³ expressed as sulphur trioxide. Effluent gases shall be free from persistent mist.
(v) Sulphur trioxide or sulphuric acid mist	Any trade, industry or process, other than any combustion process and any plant involving the manufacture of sulphuric acid	100 mg/Nm ³ expressed as sulphur trioxide
(w) Vinyl chloride monomer	Any trade, industry or process	20 mg/Nm ³

2. In this Schedule —

"dioxins and furans" means polychlorinated dibenzo-p-dioxins (PCDD) and polychlorinated dibenzofurans (PCDF), being tricyclic and aromatic compounds formed by 2 benzene rings which are connected by 2 oxygen atoms in PCDD and by one oxygen atom in PCDF and the hydrogen atoms of which may be replaced by up to 8 chlorine atoms;

"mg" means milligram;

"ng" means nanogram;

"Nm³" means normal cubic metre, being that amount of gas which when dry, occupies a cubic metre at a temperature of 0 degree Centigrade and at an absolute pressure of 760 millimetres of mercury;

"TEF" means Toxic Equivalency Factor;

"TEQ" means Toxic Equivalent, being the sum total of the concentrations of each of the dioxin and furan compounds specified in the first column of the table below multiplied by their corresponding TEF specified in the second column thereof:

<i>Dioxin/Furan</i>	<i>TEF</i>
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	1
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.1
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.1
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.1
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.01
Octachlorodibenzo-p-dioxin	0.0001
2,3,7,8-Tetrachlorodibenzofuran	0.1
1,2,3,7,8-Pentachlorodibenzofuran	0.05
2,3,4,7,8-Pentachlorodibenzofuran	0.5
1,2,3,4,7,8-Hexachlorodibenzofuran	0.1
1,2,3,6,7,8-Hexachlorodibenzofuran	0.1
1,2,3,7,8,9-Hexachlorodibenzofuran	0.1
2,3,4,6,7,8-Hexachlorodibenzofuran	0.1

1,2,3,4,6,7,8-Heptachlorodibenzofuran	0.01
1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.01
Octachlorodibenzofuran	0.0001

[G.N. Nos. S 595/2000;S 11/2001]

This legislation was last amended on 31 Jan 2008