ශ්‍රී ලංකා ප්‍රජාතාන්ත්‍රික සමාජවාදී ජනරජයේ ගැසට් පත්‍රය

අති විශෙෂ

The Gazette of the Democratic Socialist Republic of Sri Lanka

EXTRAORDINARY

අංක 2126/36 - 2019 ජූනි මස 05 වැනි බදාදා - 2019.06.05

No. 2126/36 - WEDNESDAY JUNE 05, 2019

(Published by Authority)

PART I : SECTION (I) — GENERAL

Government Notifications

L.D.B. 4/81(VIII)

NATIONAL ENVIRONMENTAL ACT No. 47 OF 1980

REGULATIONS made by the President under Section 32 of the National Environmental Act, No. 47 of 1980, read with Sections 23J, 23K and 23L of that Act and Section 51 of the Nineteenth Amendment to the Constitution of the Democratic Socialist Republic of Sri Lanka.

MAITHRIPALA SIRISENA,
President.

Colombo,
05th June, 2019.

REGULATIONS

1. These Regulations may be cited as the National Environmental (Stationary Sources Emission Control) Regulations, No. 01 of 2019.

2. Any person who manages or is in control off any stationary source specified in Schedule I hereto which emanates stack emissions, shall construct such stationary source in conformity with the standards specified in Schedule II hereto.

1A - PG 4551— 1367 (06/2019)

This Gazette Extraordinary can be downloaded from www.documents.gov.lk

3. All emissions from stationary sources which are not specified in Schedule I, shall comply with the standards specified in Part I and II of Schedule III hereto.

4. All fugitive emissions emanating from any industrial process shall be measured and controlled according to the methods and standards specified in Schedules IV, V, VI and VII hereto.

5. The methods approved by the Central Environmental Authority (hereinafter referred to as the "Authority") shall be used in the measurement of emissions.

6. The concentration of any stationary source emission measured shall be converted into dry condition. The following equation shall be used for such conversion :-

$$\text{DRY GAS CONCENTRATION} = \frac{\text{MEASURED CONCENTRATION}}{[100 - (\text{MOISTURE PERCENTAGE})]} \text{ X } 100$$

7. The stationary source emission concentration converted into dry condition under Regulation 6, shall be converted into standard condition. The following equation shall be used for such conversion :-

$$C_n (mg \ / \ Nm^3) = C_s (mg / m^3) \text{ x } \frac{(P_n \, . \, T_s)}{(P_s \, . \, T_n)}$$

where
C_n = Emission concentration at standard conditions
C_s = Converted dry emission concentration
P_n = Standard pressure 760 mmHg
P_s = Stack pressure in mmHg
T_n = Standard temperature 273 Kelvin
T_s = Stack temperature in Kelvin

8. The stationary source emission concentration converted into standard condition under Regulation 7 shall be converted for relevant reference oxygen level specified in Schedule VIII hereto. The following equation shall be used for such conversion :-

$$E_r (mg \ / \ Nm^3) = E_m (mg / Nm^3) \left[\frac{20.9 - O_2 \%_{ref}}{20.9 - O_2 \%_{m}} \right]$$

where
E_r = Emission concentration at fuel specific reference oxygen percentage
E_m = Standardized emission concentration
$O_2 \%_{ref}$ = Reference Oxygen percentrage of fuel type specified in Schedule VIII
$O_2 \%_{m}$ = Measured volume percentage of oxygen level on dry basis.

9. Where the fuel type is not specified in Schedule VIII, the reference oxygen level shall be six percent (6%) : Provided that, where there is a mixed-fuel usage, the major fuel type based on energy input shall be considered. Reference oxygen level shall be ten percent (10%) for incinerators.

10. In the case of multi-fuel usage, for each fuel, the standards specified in Schedule II hereto shall be applied.

11. Minimum stack height of any combustion point source shall be determined by the following equation.

$$C(m) = H(m) + 0.6U(m)$$

where H = The height in meters of the tallest building within 5U radius of the point source.

C = Minimum stack height in meters.

U = Uncorrected stack height in meters.

U shall be determined by following equation.

$$U(m) = 1.36Q^{0.6}$$

where Q = Gross heat imput in Mega Watt (MW)

(i) This rule shall be applied for the combustion source with gross heat input greater than 0.620MW.

(ii) In any case, stack height shall not be less than 20 meters except for the combustion sources with gross heat input less than 0.620 MW.

12. In relation to thermal power plants and to any other combustion source, air pollution caused by Sulfur Dioxide (SO_2) emission shall be controlled by fuel quality, stack height or Sulfur Dioxide emission control devices to maintain the existing embient air quality standards. Minimum stack height shall be determinded by accepted air quality modelling software. In the absence of such modelling software, with the approval of the Authority, following equation shall be applied to determine the minimum stack height in meters.

Minimum stack height $H(m) = 14Q^{0.25}$

Where Q is Sulfur Dioxide (SO_2) emission rate kg/hour.

13. Emissions from Crematoriums shall be controlled by emission reduction devices incorporated into the stack of the crematorium.

14. Dioxin and Furan emissions form incinerators shall be controlled by maintaining temperature between 1000^0 C to 1250^0 C and 2-3 seconds retention time in secondary chamber.

15. No person shall emit or discharge any pollutant to atmosphere exceeding the pollutant based emision limits specified in Schedule III hereto.

16. Any person who fails to comply with the above regulations, shall be liable to an offence under the National Environmental Act, No. 47 of 1980.

17. In these regulations :-

"Authority" means the Central Environmental Authority established under the National Environmental Act, No. 47 of 1980 ;

"PM" means Particulate Matter ;

"ppm" means parts per million ;

"Nm^3" means cubic meter of air at standard conditions of 0^0 C temperature and 760 mmHg Pressure ;

"Nitrogen Oxides (NO_x)" means total concentration of Nitric Oxide (NO) and Nitrogen Dioxide (NO_2) gas emissions from a stack.

(Regulation 2)

SCHEDULE I

1. Thermal Power Plants
2. Standby Generators
3. Boilers
4. Thermic Fluid Heaters
5. Incinerators
6. Cupolas, Blast Furnaces, Coke Ovens, Basic Oxygen Furnaces, Electric (induction & arc) furnaces
7. Cement Kilns

(Regulation 2)

SCHEDULE II

Instrument/Equipment Based Standards

PART I

THERMAL POWER PLANTS

Fuel	*Rated Output Capacity (C)*	*Type of Pollutant*	*Emission Limit*
Oil	C<1 MW	Particulate Matter (PM), Sulfur Dioxide (SO_2), Nitrogen Oxides (NO_x)	Shall be controlled by fuel quality and stack height as set out in Regulations 11 and 12
		Smoke	20% Opacity
	1≤C<3 MW	Sulfur Dioxide (SO_2)	Shall be controlled by fuel quality and stack height as set out in Regulation 12
		Nitrogen Oxides (NO_x)	650mg/Nm^3 for steam turbine
			550mg/Nm^3 for gas turbine/combined cycle turbine
			850mg/Nm^3 for internal combustion engines
		Particulate Matter (PM)	200mg/Nm^3
		Smoke	20% Opacity
	3≤C<25 MW	Sulfur Dioxide (SO_2)	Shall be controlled by fuel quality and stack height as set out in Regulation 12
		Nitrogen Oxides (NO_x)	600mg/Nm^3 for steam turbine
			500mg/Nm^3 for gas turbine/combined cycle turbine
			850mg/Nm^3 for internal combustion engines
		Particulate Matter (PM)	150mg/Nm^3
		Smoke	20% Opacity
	25≤C<100 MW	Sulfur Dioxide (SO_2)	Shall be controlled by fuel quality and stack height as set out in Regulations 12
		Nitrogen Oxides (NO_x)	550mg/Nm^3 for steam turbine
			450mg/Nm^3 for gas turbine/combined cycle turbine
			700mg/Nm^3 for internal combustion engines
		Particulate Matter (PM)	150mg/Nm^3
		Smoke	20% Opacity
	C≥ 100 MW	Sulfur Dioxide (SO_2)	1. 850mg/Nm^3 for new power plants with maximum 28kg SO_2 per day per MW subject to maximum 14 metric tons of SO_2/day for first 500MW plus 10kg SO_2 per day per MW for each additional MW. 2. Shall be controlled by fuel quality for existing power plants

SCHEDULE II (*Contd.*)

Instrument/Equipment Based Standards

PART I

THERMAL POWER PLANTS

Fuel	*Rated Output Capacity (C)*	*Type of Pollutant*	*Emission Limit*
Oil		Nitrogen Oxides (NO_x)	500mg/Nm^3 for steam turbine
			450mg/Nm^3 for gas turbine/combined cycle turbine
			650mg/Nm^3 for internal combustion engines
		Particulate Matter (PM)	150mg/Nm^3
		Smoke	20% Opacity
Biomass	C<0.5 MW	Particulate Matter (PM) Nitrogen Oxides (NO_x)	Shall be controlled by stack height as set out in Regulation 11
		Smoke	25% Opacity
	0.5≤C<3MW	Nitrogen Oxides (NO_x)	500mg/Nm^3
		Particulate Matter (PM)	250mg/Nm^3
		Smoke	25% Opacity
	C≥3MW	Nitrogen Oxides (NO_x)	450mg/Nm^3
		Particulate Matter (PM)	200mg/Nm^3
		Smoke	20% Opacity
Coal	C<50MW	Sulfur Dioxide (SO_2)	1600mg/Nm^3
		Nitrogen Oxides (NO_x)	750mg/Nm^3
		Particulate Matter (PM)	200mg/Nm^3
		Smoke	20% Opacity
	C≥50MW	Sulfur Dioxide (SO_2)	1. 850mg/Nm^3 for new power plants with maximum 50kg SO_2 per day per MW subject to maximum 30 metric tons of SO_2/day for first 500MW plus 25kg SO_2 per day per MW for each additional MW. 2. Shall be controlled by fuel quality for existing power plants
		Nitrogen Oxides (NO_x)	650mg/Nm^3
		Particulate Matter (PM)	150mg/Nm^3
		Smoke	15% Opacity
Natural Gas	C<50MW	Sulfur Dioxide (SO_2)	75mg/Nm^3
		Nitrogen Oxides (NO_x)	350mg/Nm^3 for steam turbine
			250mg/Nm^3 for gas turbine/combined cycle turbine
			400mg/Nm^3 for internal combustion engines
		Particulate Matter (PM)	100mg/Nm^3
	C≥50MW	Sulfur Dioxide (SO_2)	75mg/Nm^3
		Nitrogen Oxides (NO_x)	300mg/Nm^3 for steam turbine
			200mg/Nm^3 for gas turbine/combined cycle turbine
			350mg/Nm^3 for internal combustion engines
		Particulate Matter (PM)	75mg/Nm^3

SCHEDULE II (*Contd.*)

Instrument/Equipment Based Standards

PART I

THERMAL POWER PLANTS

Fuel	*Rated Output Capacity (C)*	*Type of Pollutant*	*Emission Limit*
Naphtha	Any	Sulfur Dioxide (SO_2)	75mg/Nm^3
		Nitrogen Oxides (NO_x)	350mg/Nm^3 for steam turbine
			250mg/Nm^3 for gas turbine/combined cycle turbine
			400mg/Nm^3 for internal combustion engines
		Particulate Matter (PM)	75mg/Nm^3
Municipal Solid Waste	Any	Sulfur Dioxide (SO_2)	70mg/Nm^3
		Nitrogen Oxides (NO_x)	400mg/Nm^3
		Particulate Matter (PM)	150mg/Nm^3
		Smoke	20% Opacity
		Carbon Monoxide (CO)	50mg/Nm^3
		Hydrogen Chloride (HCI)	20mg/Nm^3
		Mercury (Hg)	0.001mg/Nm^3
		Lead (Pb)	0.01mg/Nm^3

PART II

STANDBY GENERATORS

Fuel	*Rated Output Capacity*	*Type of Pollutant*	*Emission Limit*
Gasoline, kerosene diesel or heavy oil	Any	Particulate Matter (PM), Sulfur Dioxide (SO_2), Nitrogen Oxides (NO_x)	Shall be controlled by stack height and fuel quality as set out in Regulations 11 and 12
		Smoke	10% Opacity

PART III

BOILERS

Fuel	*Rated Output Capacity (C)*	*Type of Pollutant*	*Emission Limit*
Oil	C<2 metric tons of steam/hour	Particulate Matter (PM), Sulfur Dioxide (SO_2), Nitrogen Oxides (NO_x)	Shall be controlled by fuel quality and stack height as set out in Regulations 11 and 12
		Smoke	20% Opacity
	C≥2 metric tons of steam/hour	Sulfur Dioxide (SO_2) Nitrogen Oxides (NO_x)	Shall be controlled by fuel quality and stack height as set out in Regulations 11 and 12
		Smoke	15% Opacity
		Particulate Matter (PM)	100mg/Nm^3
Bio mass	C<2 metric tons of steam/hour	Particulate Matter (PM) Nitrogen Oxides (NO_x)	Shall be controlled by stack height as set out in Regulations 11
		Smoke	20% Opacity
	C≥2 metric tons of steam/hour	Nitrogen Oxides (NO_x)	Shall be controlled by stack height as set out in Regulations 11
		Smoke	15% Opacity
		Particulate Matter (PM)	200mg/Nm^3
Coal	C<2 metric tons of steam/hour	Particulate Matter (PM), Sulfur Dioxide (SO_2), Nitrogen Oxides (NO_x)	Shall be controlled by fuel quality stack height as set out in Regulations 11 and 12
		Smoke	20% Opacity
	C≥2 metric tons of steam/hour	Nitrogen Oxides (NO_x)	500mg/Nm^3
		Sulfur Dioxide (SO_2)	850mg/Nm^3
		Smoke	20% Opacity
		Particulate Matter (PM)	150mg/Nm^3

PART IV

THERMIC FLUID HEATERS

Fuel	*Rated Output Capacity (C)*	*Type of Pollutant*	*Emission Limit*
Oil	C<5000 MJ/hour	Particulate Matter (PM), Sulfur Dioxide (SO_2), Nitrogen Oxides (NO_x)	Shall be controlled by fuel quality and stack height as set out in Regulations 11 and 12
		Smoke	20% Opacity
	C≥5000 MJ/hour	Sulfur Dioxide (SO_2) Nitrogen Oxides (NO_x)	Shall be controlled by fuel quality and stack height as set out in Regulations 11 and 12
		Smoke	15% Opacity
		Particulate Matter (PM)	100mg/Nm^3
Bio mass	C<5000 MJ/hour	Particulate Matter (PM), Nitrogen Oxides (NO_x)	Shall be controlled by stack height as set out in Regulations 11
		Smoke	20% Opacity
	C≥5000 MJ/hour	Nitrogen Oxides (NO_x)	Shall be controlled by stack height as set out in Regulations 11
		Smoke	15% Opacity
		Particulate Matter (PM)	200mg/Nm^3
Coal	C<5000 MJ/hour	Particulate Matter (PM), Sulfur Dioxide (SO_2), Nitrogen Oxides (NO_x)	Shall be controlled by fuel quality and stack height as set out in Regulations 11 and 12
		Smoke	20% Opacity
	C≥5000 MJ/hour	Nitrogen Oxides (NO_x)	500mg/Nm^3
		Sulfur Dioxide (SO_2)	800mg/Nm^3
		Smoke	20% Opacity
		Particulate Matter (PM)	150mg/Nm^3

PART V

INCINERATORS

Rated Output Capacity (C)	*Type of Pollutant*	*Emission Limit*
C< 1 Metric Ton/Hour	Sulfur Dioxide (SO_2)	70mg/Nm^3
	Nitrogen Oxides (NO_x)	400mg/Nm^3
	Particulate Matter (PM)	150mg/Nm^3
	Smoke	20% Opacity
	Carbon Monoxide (CO)	50mg/Nm^3
	Hydrogen Chloride (HCl)	20mg/Nm^3
	Mercury (Hg)	0.01mg/Nm^3
	Lead (Pb)	0.05mg/Nm^3
	Dioxin and Furans	Shall be controlled by temperature and retention time as set out in Regulation 14
C≥ 1 Metric Ton/Hour	Sulfur Dioxide (SO_2)	70mg/Nm^3
	Nitrogen Oxides (NO_x)	300mg/Nm^3
	Particulate Matter (PM)	100mg/Nm^3
	Smoke	10% Opacity
	Carbon Monoxide (CO)	50mg/Nm^3
	Hydrogen Chloride (HCl)	15mg/Nm^3
	Mercury (Hg)	0.001mg/Nm^3
	Lead (Pb)	0.01mg/Nm^3
	Dioxin and Furans	Shall be controlled by temperature and retention time as set out in Regulation 14
Any Infected waste Incinerators	Sulfur Dioxide (SO_2)	70mg/Nm^3
	Nitrogen Oxides (NO_x)	300mg/Nm^3
	Particulate Matter (PM)	100mg/Nm^3
	Smoke	10% Opacity
	Carbon Monoxide (CO)	50mg/Nm^3
	Hydrogen Chloride (HCl)	15mg/Nm^3
	Mercury (Hg)	0.001mg/Nm^3
	Lead (Pb)	0.01mg/Nm^3
	Dioxin / Furans	Shall be controlled by temperature and retention time as set out in Regulation 14

PART VI

CUPOLAS, BLAST FURNACES, COKE OVENS, BASIC OXYGEN FURNACES, ELECTRIC INDUCTION & ELECTRIC ARC FURNACES

Rated Output Capacity (C)	*Type of Pollutant*	*Emission Limit*
Any	Particulate Matter (PM)	150mg/Nm^3
	Sulfur Dioxide (SO_2)	800mg/Nm^3
	Nitrogen Oxides (NO_x)	500mg/Nm^3
	Smoke	20% Opacity

PART VII

CEMENT KILNS

Rated Output Capacity (C)	*Type of Pollutant*	*Emission Limit*	
		*Existing **	*New ***
Any	Particulate Matter (PM)	400mg/Nm^3	200mg/Nm^3
	Sulfur Dioxide (SO_2)	540mg/Nm^3	270mg/Nm^3
	Nitrogen Oxides (NO_x)	1250mg/Nm^3	1000mg/Nm^3
	Smoke	20% Opacity	20% Opacity

*** Cement kilns in existence prior to the date of operation of these regulations.**

**** Cement kilns which will commence operation after the date of operation of these regulations.**

(Regulations 3 and Regulation 15)

SCHEDULE III

Pollutant Based Standards

PART I

Pollutant	*Process/Source*	*Emission Limit Combustion*	*Emission Limit Non - Combustion*
Particulate Matters (PM)	Any	150mg/Nm^3	100mg/Nm^3
Smoke	Any	25% Opacity	25% Opacity
Carbon Monoxide (CO)	Any	900mg/Nm^3	1100mg/Nm^3
Sulfur Dioxide (SO_2)	Sulfuric acid manufacturing plants	2kg/Metric ton of Sulfuric acid production	
	Any Other	1000mg/Nm^3	800mg/Nm^3
Nitrogen Oxides (NO_x)	Nitric acid manufacturing plants	1.5kg/Metric ton of Nitric acid production	
	Any Other	500mg/Nm^3	–
Total Volatile Organic Compounds (TVOC)	Any	20ppm	10ppm

PART II

Pollutant	*Process/Source*	*Emission Limits/Combustion or Non - Combustion*
Chlorine (Cl_2)	Any	Chlorine 35mg/Nm^3
Hydrogen Chloride (HCL)	Hydrochloric acid manufacturing plants	0.8 kg per Metric ton of Hydrochloric acid production
	Any other	Hydrogen Chloride 50mg/Nm^3
Fluorine (F_2)	Any	Fluorine 20mg/Nm^3
Fluoride (F^-)	Phosphate Industry	0.18 kg/Metric ton of raw material feed
(Hydrogen or Silicon)	Any Other	Hydrogen Fluoride 2mg/Nm^3
Hydrogen Sulfide (H_2S)	Any	1mg/Nm^3
Cadmium or its compounds	Any	1mg/Nm^3 as Cd
Lead or its compounds	Lead Smelling	0.2mg/Nm^3 as Pb
	Any Other	0.2mg/Nm^3 as Pb
Antimony or its compounds	Any	0.5mg/Nm^3 as Sb
Arsenic or its compounds	Any	0.1mg/Nm^3 as As
Copper or its compounds	Copper smelling	1mg/Nm^3 as Cu
	Any Other	1mg/Nm^3 as Cu
Zinc or its compounds	Any	1mg/Nm^3 as Zn
Mercury or its compounds	Any	0.01mg/Nm^3 as Hg
Dioxin/Furan	**Any**	**2mg/Nm^3**
Ammonia	Any	10mg/Nm^3

(Regulation 4)

SCHEDULE IV

Fugitive Dust Emission Standards

The difference between two simultaneous 3 hour Total Suspended Particulate Matter (TSPM) measurements (gravimetric) carried out on up-wind and down-wind basis from any process area or emission area shall not be greater than 450µg/m^3.

a. Measurement location shall be within 10 meters from any process equipment or emission area towards up-wind and down - wind directions.

b. The wind direction shall be the most predominant wind direction during the time period of measurement.

c. Any method approved by the Authority shall be used for the TSPM measurement.

(Regulation 4)

SCHEDULE V

Fugitive Non-Methane Volatile Organic Compounds (NMVOC) Emission Standards

The difference between two simultaneous Non-Methane Volatile Organic Compound measurements carried out on up-wind and down - wind basis from any process area which emits volatile organic compounds shall not be greater than 5ppm.

a. The measurement location shall be within 5 meters from any process equipment or emission area towards up - wind and down - wind directions.

b. The wind direction shall be the most predominant wind direction the time period of measurement.

c. Any method approved by the Authority shall be used for the determination of Non-Methane Volatile Organic Compounds.

(Regulation 4)

SCHEDULE VI

Fugitive Acid Mist and Ammonia Emission Standards

Fugitive acid mists or fugitive ammonia mist emissions from any process area shall not be greater than 20mg/m^3. The measurement location shall be within 5 meters down-wind from the process area. Sampling time period shall be 3 hours at the sampling flow rate 1 liter/min. Any method approved by the Authority shall be used for the determination of fugitive acid mist and ammonia mist emission level.

(Regulation 4)

SCHEDULE VII

Asbestos Fiber Emission Standards

Ambient asbestos fiber concentrations in process area shall not be greater than 1 fibre/m^3. The measurement location shall be within 20 meters down - wind from the process area. Any method approved by the Authority shall be used for the determination of asbestos fiber concentration.

(Regulation 8)

SCHEDULE VIII

Reference Oxygen Levels

Fuel Type	*Reference Oxygen Level*
Liquid and gaseous fuels	03%
Solid fuels	06%

06- 44