

The Notification of the Ministry of Industry
“Emission Standard of the Power Plant”
B.E. 2547 (2004)

By the virtue of clause 16 of the Ministerial Regulation No. 2 B.E. 2535 (1992) issued pursuant to the Factory Act B.E. 2535(1992) which contains some provisions concerning the limitation of the people rights and liberties that is permissible by the provisions of section 29 together with section 35, section 48 and section 50 of the Constitution of the Kingdom of Thailand, the Minister of Industry hereby issues the Ministerial Notification as follows:

Article 1: The Notification of the Ministry of Industry regarding emission standard of the power plant B.E. 2544 (2001) dated 11th December B.E. 2544 (2001) shall be repealed.

Article 2: In this Notification,

“Old Power Plant using Coal, Oil or Natural Gas as Fuel” means a power plant that has received an operation license or a plant-expansion license before 31 January 1996.

“New Power Plant using Coal, Oil or Natural Gas as Fuel” means a power plant that has received an operation license or a plant-expansion license from 31 January 1996.

“Existing Power Plant” means the following power plants:

- (1) Bangpakong Power Plant
- (2) South Bangkok Power Plant
- (3) North Bangkok Power Plant
- (4) Suratthani Power Plant
- (5) Lan Krabue Power Plant
- (6) Nong Chok Power Plant
- (7) Wang Noi Power Plant
- (8) Nam Phong Power Plant
- (9) Mae Moh Power Plant

In case the above-mentioned 9 existing power plants have any changes affecting to power generation process and fuel used, the changed unit would be complied with the standard of the New Power Plant.

“Biomass fuel” means fuels produced from organic substance or living things that includes products from agriculture, livestock, and forestation; for example, firewood, woodchip, husk, straw, baggasse, stem and leaves of sugar cane, palm fiber, palm shell, palm cluster, coconut shell, plant’s residue, animal’s dung, biogas, sludge, or waste from agricultural product processing factory, etc.

“Old Power Plant using Biomass as fuel” means a power plant that uses biomass as fuel having received an operation license or a plant-expansion license before 1 October 2004.

“New Power Plant using Biomass as fuel” means a power plant that uses biomass as fuel having received an operation license or a plant-expansion license from 1 October 2004.

Article 3: Emission standard of a power plant shall be as follows:

Type and Size of a Power Plant	Emission Standard		
	SO ₂ (ppm)	NOx as NO ₂ (ppm)	Particulate (mg/m ³)
1. Old Power Plant of any sizes that uses the following fuels:			
1.1. Coal	700	400	320
1.2. Oil	950	200	240
1.3. Natural Gas	60	200	60
1.4. Biomass	60	200	320
2. New Power Plant			
2.1. New Power Plant using coal as fuel, of the following capacity:			
(1) < 300 MW	640	350	120
(2) 300-500 MW	450	350	120
(3) > 500 MW	320	350	120
2.2. New Power Plant using oil as fuel, of the following capacity:			
(1) < 300 MW	640	180	120
(2) 300-500 MW	450	180	120
(3) > 500 MW	320	180	120
2.3. New Power Plant of all sizes using natural gas as fuel	20	120	60
2.4. New Power Plant of all sizes using biomass as fuel	60	200	120
3. Old Power Plant			
3.1. Bangpakong Power Plant			
(1) Unit 1-4 (Thermal Power)	320	200	120
(2) Unit 1-2 (Combined Cycle)	60	450	60
(3) Unit 3-4 (Combined Cycle)	60	230	60

Type and Size of a Power Plant	Emission Standard		
	SO ₂ (ppm)	NO _x as NO ₂ (ppm)	Particulate (mg/m ³)
3.2. South Bangkok Power Plant			
(1) Hydro Power Unit	320	180	120
(2) Unit 1 (Combined Cycle)	60	250	60
(3) Unit 2 (Combined Cycle)	60	175	60
3.3. North Bangkok Power Plant	500	180	150
3.4. Suratthani Power Plant			
(1) Gas Turbine Unit	60	230	60
(2) Combined Cycle Unit	20	120	60
3.5. Lan Krabue Power Plant	60	250	60
3.6. Nong Chok Power Plant	60	230	60
3.7. Wang Noi Power Plant	60	175	60
3.8. Nam Phong Power Plant	60	250	60
3.9. Mae Moh Power Plant			
(1) Unit 1-3	1,300	500	180
(2) Unit 4-13	320	500	180

Article 4: In case a power plant using coal, oil, natural gas or biomass as mixed fuel, emission standard values must be calculated based upon the ratio of each type of fuel as follows:

$$\text{Emission Standard} = A W + BX + CY + DZ$$

When

A = Emission Standards for utilizing only coal as fuel

B = Emission Standards for utilizing only oil as fuel

C = Emission Standards for utilizing only natural gas as fuel

D = Emission Standard for utilizing only biomass as fuel

W = Ratio of Heat Input from utilizing only coal as fuel

X = Ratio of Heat Input from utilization only oil as fuel

Y = Ratio of Heat Input from utilization only natural gas as fuel

X = Ratio of Heat Input from utilization only biomass as fuel

Article 5: Measurement of emission from the power plant shall be carried out at a power plant's stack during an operation time.

Article 6: Measurement of emission from the power plant's stack shall follow the following methods:

(1) SO₂

- Determination of Sulfur Dioxide Emissions from Stationary Sources of U.S. EPA; OR

- Determination of Sulfuric Acid Mist and Sulfur Dioxide Emissions from Stationary Sources of U.S. EPA; OR

- Other methods approved by DIW

(2) NO_x as NO₂

- Determination of Nitrogen Oxide Emissions from Stationary Sources of U.S. EPA; OR

- Other methods approved by DIW

(3) Particulate

- Determination of Particulate Emission from Stationary Sources of U.S. EPA; OR

- Other methods approved by DIW

Article 7: In case of an existing power plant utilizing emission stack more than one, emission average values must be calculated base upon the ratio of each emission flow rate and emission concentration as follow:

$$\text{Emission Average} = \frac{\sum_{i=1}^n Q_i c_i}{\sum_{i=1}^n Q_i}$$

Q_i = Emission flow rate of stack i from existing power plant, thermal power plant, combine cycle plant, gas turbine power plant or other existing power plant (m³/hr)

C_i = Emission concentration of stack i from existing power plant, thermal power plant, combine cycle plant, gas turbine power plant as SO₂ or NO_x as NO₂ (ppm) or particulate (mg/m³)

n = Number of stack

i = 1, 2, 3,... n

Article 8: Reference condition is at 25 degree Celsius at 1 atm or 760 mmHg, excess air at 50% or excess O₂ at 7%, at dry basis.

Announced on 28th September B.E. 2547 (2004)

Mr. Pinit Jarusombat

Minister of Industry

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