

EMISSIONS STANDARDS

TAIWAN



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Taiwan

In Taiwan, the Air Pollution Control Act was first promulgated in 1975. The Emission Standards for Power Plants were laid down by the Environmental Protection Administration (EPA) and came into force on 4 May 1994 (EPA Air 12812). The Standards were amended in 1999 (EPA Air 0017426) and 2003 (EPA Air 0920023989). The environmental legislation, including the emissions standards, are published, in Chinese, on the EPA's website at <http://ivy5.epa.gov.tw/epalaw/index.aspx>.

Emission standards for particulate matter from steam turbines

Flue gas flow rate, m ³ /min	Emission standards, mg/m ³	
	Existing units	New units*
30 and below	500	500
50	430	411
100	350	314
200	285	241
300	252	206
500	217	169
800	189	141
1000	176	129
2000	144	99
3000	127	85
5000	109	70
8000	95	58
10,000	89	53
20,000	73	41
30,000	64	35
50,000	55	29
70,000 and above	50	25

* applicable to all new units from 4 May 1994

Emission standards for sulphur oxides (SO_x) as sulphur dioxide (SO₂) from steam turbines

	Emission standards, ppm	Came into force
new units	200 (572 mg/m ³)	4 May 1994
existing units	500 (1430 mg/m ³)	4 May 1994. From 1 July 2001, emission limit value for new units are applicable to all units (new and existing)

Note:

When a mixture of fuels is burned, the emission limit value can be calculated as follows:

$$\text{emission limit value} = AX + BY + CZ$$

where A is the emission limit value for SO_x from gaseous fuel fired steam turbines;
 B is the emission limit value for SO_x from liquid fuel fired steam turbines;
 C is the emission limit value for SO_x from solid fuel fired steam turbines;
 X is the percentage of heat input from gaseous fuel to total heat input;
 Y is the percentage of heat input from liquid fuel to total heat input;
 Z is the percentage of heat input from solid fuel to total heat input.

Units which began operations before 31 December 1966 should comply with the emission standard for existing units.

Emission standards for nitrogen oxides (NO_x) as nitrogen dioxide (NO₂) from steam turbines

Emission standards, ppm	Came into force
300 (615 mg/m ³)	applicable to all existing units from 1 July 2001
250 (512.5 mg/m ³)	applicable to all new units from 4 May 1994

Note:

When a mixture of fuels is burned, the emission limit value can be calculated as follows:

$$\text{emission limit value} = AX + BY + CZ$$

where A is the emission limit value for NO_x from gaseous fuel fired steam turbines;
 B is the emission limit value for NO_x from liquid fuel fired steam turbines;
 C is the emission limit value for NO_x from solid fuel fired steam turbines;
 X is the percentage of heat input from gaseous fuel to total heat input;
 Y is the percentage of heat input from liquid fuel to total heat input;
 Z is the percentage of heat input from solid fuel to total heat input.

Emission standards for particulate matter from simple and combined cycle combustion turbines

Flue gas flow rate, m ³ /min	Emission standards, mg/m ³	
	Existing units	New units*
30 and below	500	500
50	430	411
100	350	314
200	285	241
300	252	206
500	217	169
800	189	141
1000	176	129
2000	144	99
3000	127	85
5000	109	70
8000	95	58
10,000	89	53

20,000	73	41
30,000	64	35
50,000	55	29
70,000 and above	50	25

* applicable to all new units from 4 May 1994

Emission standards for sulphur oxides (SO_x) as sulphur dioxide (SO₂) from simple and combined cycle combustion turbines

	Emission standards, ppm	Came into force
new units	200 (572 mg/m ³)	4 May 1994
existing units	500 (1430 mg/m ³)	4 May 1994. From 1 July 2001, emission limit value for new units are applicable to all units (new and existing)

Note:

When a mixture of fuels is burned, the emission limit value can be calculated as follows:

$$\text{emission limit value} = AX + BY + CZ$$

where A is the emission limit value for SO_x from gaseous fuel fired steam turbines;
 B is the emission limit value for SO_x from liquid fuel fired steam turbines;
 C is the emission limit value for SO_x from solid fuel fired steam turbines;
 X is the percentage of heat input from gaseous fuel to total heat input;
 Y is the percentage of heat input from liquid fuel to total heat input;
 Z is the percentage of heat input from solid fuel to total heat input.

Units which began operations before 31 December 1966 should comply with the emission standard for existing units.

Emission standards for nitrogen oxides (NO_x) as nitrogen dioxide (NO₂) from simple and combined cycle combustion turbines

	Emission standards, ppm	Came into force
new units	120 (246 mg/m ³)	4 May 1994
existing units	250 (512.5 mg/m ³)	4 May 1994

Note:

When a mixture of fuels is burned, the emission limit value can be calculated as follows:

$$\text{emission limit value} = AX + BY + CZ$$

where A is the emission limit value for NO_x from gaseous fuel fired steam turbines;
 B is the emission limit value for NO_x from liquid fuel fired steam turbines;
 C is the emission limit value for NO_x from solid fuel fired steam turbines;
 X is the percentage of heat input from gaseous fuel to total heat input;
 Y is the percentage of heat input from liquid fuel to total heat input;
 Z is the percentage of heat input from solid fuel to total heat input.

Emission standards for particulate matter from combined heat and power generating boilers

Flue gas flow rate, m ³ /min	Emission standards, mg/m ³	
	Existing units	New units*
30 and below	500	500
50	430	411
100	350	314
200	285	241
300	252	206
500	217	169
800	189	141
1000	176	129
2000	144	99
3000	127	85
5000	109	70
8000	95	58
10,000	89	53
20,000	73	41
30,000	64	35
50,000	55	29
70,000 and above	50	25

* applicable to all new units from 4 May 1994

Emission standards for sulphur oxides (SO_x) as sulphur dioxide (SO₂) from combined heat and power generating boilers

	Emission standards, ppm	Came into force
new units	300 (858 mg/m ³)	4 May 1994
existing units	500 (1430 mg/m ³)	4 May 1994. From 1 July 2001, emission limit value for new units are applicable to all units (new and existing)

Note:

When a mixture of fuels is burned, the emission limit value can be calculated as follows:

$$\text{emission limit value} = AX + BY + CZ$$

where

- A is the emission limit value for SO_x from gaseous fuel fired steam turbines;
- B is the emission limit value for SO_x from liquid fuel fired steam turbines;
- C is the emission limit value for SO_x from solid fuel fired steam turbines;
- X is the percentage of heat input from gaseous fuel to total heat input;
- Y is the percentage of heat input from liquid fuel to total heat input;
- Z is the percentage of heat input from solid fuel to total heat input.

Units which began operations before 31 December 1966 should comply with the emission standard for existing units.

Emission standards for nitrogen oxides (NO_x) as nitrogen dioxide (NO₂) from combined heat and power generating boilers

Emission standards, ppm		
	Existing units	New units*
Flue gas flow rate, m ³ /min		
>2500	300 (615 mg/m ³)	250 (512.5 mg/m ³)
500 – 2500	325 (666.25 mg/m ³)	280 (574 mg/m ³)
<500	350 (717.5 mg/m ³)	300 (615 mg/m ³)
Came into force	Applicable to all existing units from 1 July 2001	Applicable to all new units from 4 May 1994

Note:

When a mixture of fuels is burned, the emission limit value can be calculated as follows:

$$\text{emission limit value} = AX + BY + CZ$$

where A is the emission limit value for NO_x from gaseous fuel fired steam turbines;
 B is the emission limit value for NO_x from liquid fuel fired steam turbines;
 C is the emission limit value for NO_x from solid fuel fired steam turbines;
 X is the percentage of heat input from gaseous fuel to total heat input;
 Y is the percentage of heat input from liquid fuel to total heat input;
 Z is the percentage of heat input from solid fuel to total heat input.

General notes:

Existing units refer to those which began operations or received approval before 11 April 1992. New units refer to those that received approval after 12 April 1992.

Reference condition for the standards is 0°C, 101.3 kPa and on a dry flue gas basis.

The conversion of ppm into mg/m³ (by IEA Clean Coal Centre) is for comparative purposes only.

This paper reflects the IEA CCC understanding of the relevant legislation and is not a substitute for the official version. The IEA CCC does not guarantee the accuracy of the data included in this paper and accepts no responsibility for any consequences of their use.

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