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**ECONOMIC COMMISSION FOR EUROPE**

EXECUTIVE BODY FOR THE CONVENTION ON  
LONG-RANGE TRANSBOUNDARY AIR POLLUTION

Working Group on Abatement Techniques

**DRAFT ANNEX ON LIMIT VALUES (LVs) FOR NO<sub>x</sub>  
EMISSIONS FROM STATIONARY SOURCES**

Addendum \*/

**Introduction**

1. Limit value means the maximum quantity of a gaseous substance contained in the waste gases from an installation which is not to be exceeded. If not otherwise specified it shall be calculated in terms of mass of pollutant per volume of the waste gases (expressed as mg/m<sup>3</sup>), assuming standard conditions for temperature and pressure for dry gas (volume at 273.15 K, 101.3 kPa). With regard to the oxygen content of the exhaust gas, the values given in the tables below for each source category shall apply. Any dilution for the purpose of lowering concentrations of pollutants in waste gases is not permitted. Limit values generally address NO together with NO<sub>2</sub>, commonly named NO<sub>x</sub>, expressed as NO<sub>2</sub>. Start-up, shutdown, maintenance of equipment and exceptional operating conditions are excluded.

2. Emissions shall be monitored in all cases. Compliance with limit values shall be verified. The methods of verification can include continuous, discontinuous measurements, type approval, or any other technically sound method.

Documents prepared under the auspices or at the request of the Executive Body for the Convention on Long-range Transboundary Air Pollution for GENERAL circulation should be considered provisional unless APPROVED by the Executive Body.

\*/ Proposal prepared by Mr. L. Lindau, Chairman of the Working Group on Abatement Techniques, at the request of the Working Group on Strategies at its twenty-eighth session (EB.AIR/WG.5/58, annex II, para.2 (c)).

3. Sampling and analysis of pollutants, as well as reference measurement methods to calibrate any measurement system, shall be carried out according to the standards laid down by the Comité Européen de Normalisation (CEN). If no CEN standards are given, the standards set by the International Organization for Standardization (ISO) shall apply. While awaiting the Development of CEN or ISO standards, national standards shall apply.
4. Measurements of emissions should be carried out continuously, when emissions exceed [1000] kg NO<sub>x</sub>/day.
5. In the case of continuous measurements, compliance with the emission standards is achieved [if [95]% of the [calculated 48-hour average] values do not exceed [110]% of the limit value] [if the emissions calculated as monthly average values do not exceed the limit values].
6. [Where one operator carries out several activities falling under the same subheading at the same installation or the same site, the capacities of such activities are added together.]

#### **SPECIFIC EMISSION LIMIT VALUES FOR SELECTED MAJOR STATIONARY SOURCES**

- A. Boilers and process heaters with a rated thermal input exceeding 50 MW
7. Limit values for NO<sub>x</sub> emissions released from boilers:

	Limit value (mg/Nm <sup>3</sup> ) <sup>a/</sup>
Solid fuels, new installations:	
- Boilers 50 - 100 MW <sub>th</sub>	400
- Boilers 100 - 300 MW <sub>th</sub>	300
- Boilers >300 MW <sub>th</sub>	200
Solid fuels, existing installations:	
- Boilers 50-100 MW <sub>th</sub>	500
- Boilers >100 MW <sub>th</sub>	400
Liquid fuels, new installations:	
- Boilers 50 - 100 MW <sub>th</sub>	400
- Boilers 100 - 300 MW <sub>th</sub>	300
- Boilers >300 MW <sub>th</sub>	150
Liquid fuels, existing installations:	
- Boilers 50 - 100 MW <sub>th</sub>	400
- Boilers 100 - 300 MW <sub>th</sub>	350
- Boilers >300 MW <sub>th</sub>	250
Gaseous fuels, new installations	
- Boilers; fuel: natural gas	150
- Boilers, fuel: all other gas	200
Gaseous fuels, existing installations:	
Fuel: natural gas:	
- Boilers 50 - 300 MW <sub>th</sub>	200
- Boilers >300 MW <sub>th</sub>	150
Fuel: all other gas:	
- Boilers 50 - 300 MW <sub>th</sub>	250
- Boilers >300 MW <sub>th</sub>	200

<sup>a/</sup> These values do not apply to boilers running less than 500 hours a year. O<sub>2</sub> reference content 6% for solid fuels, 3% for others.

B. Gas turbines with a rated thermal input exceeding 50 MW

8. Limit values for NO<sub>x</sub> emissions released from gas turbines:

	Limit value (mg/Nm <sup>3</sup> ) <sup>a/</sup>
- New installations natural gas	75
- New installations all other gaseous and liquid fuels	120

<sup>a/</sup> These values do not apply to gas turbines running less than 500 hours a year O<sub>2</sub> reference content 15%.

C. Mineral oil refineries

9. Limit values for NO<sub>x</sub> emissions released from mineral oil refineries (steam and power generation are covered in para.7).

	Limit value (mg/Nm <sup>3</sup> )
New combustion installations (3% O <sub>2</sub> )	
- Liquid fuels	250
- Gaseous fuels	150
Existing combustion installations (3% O <sub>2</sub> )	
- Liquid fuels	350
- Gaseous fuels	250
Existing and new installations	
- Fluid catalytic cracker (FCC)	250

D. Cement production

10. Limit values for NO<sub>x</sub> emissions released from cement production:

	Limit value (mg/Nm <sup>3</sup> )
New installations (10% O <sub>2</sub> )	300
Existing installations (10% O <sub>2</sub> )	800