

REVISED NATIONAL ENVIRONMENTAL QUALITY STANDARDS (NEQS)

Background

- PEPC in its first meeting held on 10th May 1993 approved the NEQS
- The approved NEQS were uniform standards applicable to all kind of industrial and municipal effluent.
- There are 32 parameters prescribing permissible levels of pollutants in liquid effluent while 16 parameters for gaseous emission.
- In April 1996, the PEPC set up an Environmental Standards Committee (ESC) headed by Mr. Shams Kasim Lakha to review, inter alia, the NEQS and suggest changes where necessary, based on conditions in Pakistan.
- The committee realized that some of the parameters were more stringent than other
- Countries of the region, so the task of the rationalization of NEQS was referred to an Expert Advisory committee to review and suggest changes, if and where required.
- Before initiating the task, the Expert Committee was expanded to include
- representatives of trade and industry.
- The Expert Committee identified ten parameters – eight (8) liquid effluent viz. BOD; COD; TDS; Chloride; Sulphide; Chromium; Ammonia; and Temperature, and two (2) gaseous emissions viz. SO₂ (Sulphur di oxide) and Oxides of Nitrogen for review.
- After consultation with various organizations the NEQS Expert Advisory Committee completed its task and proposed it to the ESC.
- Finally after the Environmental Standards Committee endorsed the proposed revised NEQS, the Pakistan Environmental Protection Council was recommended to approve the revised draft NEQS.
- In December 28, 1999. PEPC approved the revised NEQS.

National Environmental Quality Standards for Municipal and Liquid Industrial Effluents (mg/L, Unless Otherwise Defined)

S.No	Parameter	Existing Standards	Revised Standards		
			Into Inland Water	Into Sewage Treatment ⁵	Into Sea ⁶
1.	Temperature or Temperature increase ¹	40°C	=<3 °C	=< 3 °C	=<3 °C
2.	pH value	6-10 pH	6 - 9	6 - 9	6 - 9
3.	5-days Biochemical Oxygen Demand (BOD ₅) at 20°C ¹	80 mg/l.	80	250	80**
4.	Chemical Oxygen Demand (COD) ¹	150 mg/l.	150	400	400
5.	Total suspended solids	150 mg/l.	200	400	200
6.	Total dissolved solids	3500 mg/l.	3500	3500	3500
7.	Grease and oil	10 mg/l.	10	10	10
8.	Phenolic compounds (as phenol)	0.1 mg/l.	0.1	0.3	0.3
9.	Chloride (as Cl)	1000 mg/l.	1000	1000	SC
10.	Fluoride (as F)	20 mg/l.	10	10	10
11.	Cyanide (as CN) total	2 mg/l.	1.0	1.0	1.0
12.	An-ionic detergents ² (as MBAS)	20 mg/l.	20	20	20
13.	Sulphate (SO ₄)	600 mg/l.	600	1000	SC
14.	Sulphide (S)	1.0 mg/l.	1.0	1.0	1.0
15.	Ammonia (NH ₃)	40 mg/l.	40	40	40
16.	Pesticides, herbicides, fungicides and insecticides ³	0.15 mg/l.	0.15	0.15	0.15

National Environmental Quality Standards for Municipal and Liquid Industrial Effluents (mg/L, Unless Otherwise Defined) (Contd..)

S.No	Parameter	Existing Standards	Revised Standards		
			Into Inland Water	Into Sewage Treatment ⁵	Into Sea ⁶
17.	Cadmium ⁴	0.1 mg/l.	0.1	0.1	0.1
18.	Chromium ⁴ (trivalent and hexavalent).	1.0 mg/l.	1.0	1.0	1.0
19.	Copper ⁴	1.0 mg/l.	1.0	1.0	1.0
20.	Lead ⁴	0.5 mg/l.	0.5	0.5	0.5
21.	Mercury ⁴	0.01 mg/l.	0.01	0.01	0.01
22.	Selenium ⁴	0.5 mg/l.	0.5	0.5	0.5
23.	Nickel ⁴	1.0 mg/l.	1.0	1.0	1.0
24.	Silver ⁴	1.0 mg/l.	1.0	1.0	1.0
25.	Total toxic metals	2.0 mg/l.	2.0	2.0	2.0
26.	Zinc	5.0 mg/l.	5.0	5.0	5.0
27.	Arsenic	1.0 mg/l.	1.0	1.0	1.0
28.	Barium	1.5 mg/l.	1.5	1.5	1.5
29.	Iron	2.0 mg/l.	8.0	8.0	8.0
30.	Manganese	1.5 mg/l.	1.5	1.5	1.5
31.	Boron	6.0 mg/l.	6.0	6.0	6.0
32.	Chlorine	1.0 mg/l.	1.0	1.0	1.0

Explanations :

- Summing minimum dilution 1:10 on discharge, lower ratio would attract progressively stringent standards to be determined by the Federal Environmental Protection Agency. By 1:10 dilution means for example, that for each one cubic meter of treated effluent the recipient water body should have 10 cubic meter of water for dilution of this effluent.
- Modified Benzene Alkyl Sulphate; assuming surfactant as bio-degradable.
- Pesticides herbicides, fungicides, and insecticides.

4. Subject to total toxic metal discharge as at S. No.25
5. Applicable only when and where sewage treatment is operational and BOD₅=80 mg/l. is achieved by the sewer treatment system.
6. Provided discharge is not at shore and not within 10 miles of mangrove or other important estuaries

* The effluent should not result in temperature increase of more than 3C at the edge of the zone where initial mixing and dilution take place in the receiving water body. In case zone is not defined, use 100 meters from the point of discharge.

** The value for industry is 200 mg/l.

Note: Dilution of gaseous emissions and liquid effluents to bring them to the NEQS limiting value is not permissible through excess air mixing blowing in to the gaseous emissions or through fresh water mixing with the effluent before discharge into environment.

National Environmental Quality Standards for Industrial Gaseous Emissions (mg/Nm³, Unless Otherwise Defined)

S.No.	Parameter	Source of emission	Standards	Revised Standards
1.	Smoke	Smoke opacity not to exceed:-	40% or 2 (Ringlemann Scale).	40% or 2 Ringlemann Scale or equivalent smoke number
2.	Particulate Matter ¹	(a) Boilers and furnaces:		
		(i) Oil fired.	300	300
		(ii) Coal fired.	500	500
		(iii) Cement Kilns.	200	300
		(b) Grinding, crushing, clinker coolers and related processes, metallurgical processes, convertors, blast furnaces and cupolas.	500	500
3.	Hydrogen Chloride ²	Any.	400	400
4.	Chlorine ²	Any.	150	150
5.	Hydrogen Fluoride ²	Any.	150	150
6.	Hydrogen Sulphide ²	Any.	10	10
7.	Sulphur Oxides	Sulfuric Acid / Sulfuric Acid Plants. Others Plants. ³	400 400	5000 1700
8.	Carbon Monoxide ⁴	Any.	800	800

National Environmental Quality Standards for Industrial Gaseous Emissions (mg/Nm³, Unless Otherwise Defined) (Contd..)

S.No.	Parameter	Source of emission	Standards	Revised Standards
9.	Lead ²	Any.	50	50
10.	Mercury ²	Any.	10	10
11.	Cadmium ²	Any.	20	20
12.	Arsenic ²	Any.	20	20
13.	Copper ²	Any.	50	50
14.	Antimony ²	Any.	20	20
15.	Zinc ²	Any.	200	200
16.	Oxides of Nitrogen (NOx) ⁴	(i) Nitric Acid manufacturing unit. (ii) Gas fired (iii) Oil fired (iv) Coal fired	400 400 - -	3000 400 600 1200

Explanations:

1. Based on the assumption that the size of the particles is 10 microns or more.
2. Any source.
3. Based on 1% sulphure content in fuel oil. Higher content of sulphure will cause standards to be pro-rated.
4. In respect of emissions of sulphure dioxide and nitrogen oxides, the power plants operating on oil or coal as fuel shall, in addition to National Environmental Quality Standards (NEQS) specified above, comply with the following standards.

Sulphur Dioxide

Sulphur Dioxide Background Levels (ug/m3)			Standards	
			Criterion I	Criterion II
Background Air Quality (SO ² Basis)	Annual Average	Max. 24 hours Interval	Max. SO ₂ Emission (Tons per day per Plant)	Max. allowable ground level Increment to ambient (ug//m ³) (One year average)
Unpolluted	< 50	< 200	500	50
Moderately Polluted *				
Low	50	200	500	50
High	100	400	100	10
Very Polluted **	> 100	> 400	100	10

- For intermediate values between 50 and 100 ug/m3 linear interpolations should be used.
- No project with sulphur dioxide emissions will be recommended.

Nitrogen Oxide

Ambient air concentrations of nitrogen oxides, expressed as NO₂, should not exceed the follow:

Annual Arithmetic Mean	100 ug/m3 (0.05 ppm)
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Emission levels for stationary sources discharges, before mixing with the atmosphere, should be maintained as follows:-

For fuel fired steam generations, as nanogram (10E-9 gram) per joule of heat input:

Liquid fossil fuel	130
Solid fossil fuel	300
Lignite fossil fuel	260

**National Environmental Quality Standards
for Motor Vehicle Exhaust and Noise**

S.No	Parameter	Standards (maximum permissible limit)	Measuring method
1.	Smoke	40% or 2 on the Ringlemann Scale or equivalent smoke number at end of exhaust pipe during engine acceleration mode.	To be compared with Ringlemann Chart at a distance of 6 meters or more.
2.	Carbon Monoxide.	<u>Emission Standards :</u> New Used <u>Vehicles.</u> <u>Vehicles.</u> 4.5 % 6 %	Under idling conditions. Non dispersive infrared detection through gas analyzer.
3.	Noise.	85 db (A).	Sound-meter at 7.5 meters from the source.