United Nations ECE/EB.AIR/2012/12

Economic and Social Council

Distr.: General
3 February 2012

Original: English

Economic Commission for Europe

Executive Body for the Convention on Long-range Transboundary Air Pollution

Thirtieth session
Geneva, 30 April–4 May 2012
Item 5 (j) of the provisional agenda
Revision of the annexes to the 1999 Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone: draft annex X

Draft annex X

Note by the secretariat

Summary

This document presents proposals for amendments to draft annex X to the Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone for consideration by the Executive Body for the Convention on Long-range Transboundary Air Pollution at its thirtieth session. It is based on document ECE/EB.AIR/WG.5/2011/14/Rev.1, as further revised at the twenty-ninth session of the Executive Body in December 2011. It also reflects modifications to section C subsequently submitted by the delegation of the United States of America. Proposed new text to the draft annex is indicated in bold.

Limit values for emissions of [total suspended particulates] [dust] [particulate matter] from stationary sources

1. Section A applies to Parties other than Canada and the United States of America, section B applies to Canada and section C applies to the United States of America.

A. Parties other than Canada and the United States of America

[2. In this section only, emission limit values are expressed in terms of "dust", total particulate matter or "total suspended particulate matter" (TSP). TSP or dust means the mass of particles, of any shape, structure or density, dispersed in the gas phase at the sampling point conditions which may be collected by filtration under specified conditions after representative sampling of the gas to be analysed, and which remain upstream of the filter and on the filter after drying under specified conditions.][1]

3. For the purpose of **this** section, **"emission** limit value**" (ELV)** means the quantity of **dust** contained in the waste gases from an installation that is not to be exceeded. Unless otherwise specified, it shall be calculated in terms of mass of pollutant per volume of the waste gases (expressed as mg/m^3), 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 **waste** gas, the values given in the tables below for each source category shall apply. Dilution for the purpose of lowering concentrations of pollutants in waste gases is not permitted. Start-up, shutdown and maintenance of equipment are excluded.

4. Emissions shall be monitored in all cases **via measurements or through calculations achieving at least the same accuracy**. Compliance with limit values shall be verified **through** continuous or discontinuous measurements, type approval, or any other technically sound method including verified calculation methods. In case of continuous measurements, compliance with the **limit value** is achieved if the validated **monthly** emission average does not exceed the **ELV**. In case of discontinuous measurements or other appropriate determination or calculation procedures, compliance with the **ELVs** is achieved if the mean value based on an appropriate number of measurements under representative conditions does not exceed the value of the emission standard. The inaccuracy of measurement methods may be taken into account for verification purposes.

5. **Monitoring** of relevant polluting substances and measurements of process parameters, as well as the quality assurance of automated measuring systems and the reference **measurements** to calibrate those systems, shall be carried out in accordance with CEN standards. If CEN standards are not available, ISO standards, national or international standards which will ensure the provision of data of an equivalent scientific quality shall apply.

6. Special provisions for combustion plants **referred to in paragraph 7**:

6.1 The competent authority may grant derogation from the obligation to comply with the **ELVs** provided for in paragraph 7 in the following cases:

[1] Proposal by the United States.

[(a) For combustion plants **normally** using gaseous fuel which have to resort exceptionally to the use of other fuels because of a sudden interruption in the supply of gas and for this reason would need to be equipped with a waste gas purification facility]**;**

[(b) For **existing** combustion plants not operated more than **17,500** operating hours, starting from **1 January 2016** and ending no later than **31 December 2023.]**

6.2 Where a combustion plant is extended by at least 50 MWth, the **ELV** specified in paragraph **7** for new installations shall apply to the extensional part affected by the change. The ELV is calculated as an average weighted by the ***actual* thermal input** for both the existing and the new part of the **plant**.

6.3 Parties shall ensure that provisions are made in the permits for procedures relating to malfunction or breakdown of the abatement equipment.

6.4 In the case of a multi-fuel firing combustion plant involving the simultaneous use of two or more fuels, the competent authority shall **determine the ELV as the weighted average of the ELVs for the individual fuels, on the basis of the thermal input delivered by each fuel**.

7. Combustion plants with a rated thermal input exceeding 50 MWth:[2]

Table 1
*Limit values for dust emissions from **combustion plants** [a/]*

Fuel type	*Thermal input [(MWth)]*	*ELV for dust (mg/m³) [b/]*	
		Option 2	*Option 3*
Solid fuels	50–100	New plants:	
		20 (coal, lignite **and other solid fuels**) 20 (biomass, peat)	
		Existing plants:	[Existing plants:
		30 (coal, lignite **and other solid fuels**) 30 (biomass, peat)	50 (coal, lignite) 50 (biomass, peat) – delete]
	100–300	New plants:	
		20 (coal, lignite **and other solid fuels**) 20 (biomass, peat)	
		Existing plants:	[Existing plants:
		25 (coal, lignite **and other solid fuels**) 20 (biomass, peat)	50 (coal, lignite) 50 (biomass, peat) – delete]

[2] **The rated thermal input of the combustion plant is calculated as the sum of the input of all units connected to a common stack.** Individual **units** below 15 MWth shall not be considered **when calculating** the total rated **thermal** input.

Fuel type	*Thermal input [(MWth)]*	*ELV for dust (mg/m³)* [b/]	
		Option 2	*Option 3*
	>300	New plants: 10 (coal, lignite **and other solid fuels**) 20 (biomass, peat)	
		Existing plants: 20 (coal, lignite **and other solid fuels**) 20 (biomass, peat)	[Existing plants: 50 (coal, lignite) 50 (biomass, peat) – delete]
Liquid fuels	50–100	New plants: 20	
		Existing plants: 30 **(in general)**	50 **for the firing of distillation and conversion residues within refineries from the refining of crude oil for own consumption in combustion plants**
Liquid fuels	100–300	New plants: 20	
		Existing plants: 25 **(in general)**	50 **for the firing of distillation and conversion residues within refineries from the refining of crude oil for own consumption in combustion plants**
	>300	New plants: 10	
		Existing plants: 20 **(in general)**	50 **for the firing of distillation and conversion residues within refineries from the refining of crude oil for own consumption in combustion plants**
Natural gas	> 50	5	
Other gases	**> 50**	**10** **30 for gases produced by the steel industry which can be used elsewhere**	

[a/] In particular, the **ELVs** shall not apply to:

- Plants in which the products of combustion are used for direct heating, drying, or any other treatment of objects or materials;

- Post-combustion plants designed to purify the waste gases by combustion which are not operated as independent combustion plants;
- Facilities for the regeneration of catalytic cracking catalysts;
- Facilities for the conversion of hydrogen sulphide into sulphur;
- Reactors used in the chemical industry;
- Coke battery furnaces;
- Cowpers;
- [- Recovery boilers within installations for the production of pulp**;**]
- Waste incinerators; and
- Plant**s** powered by diesel, petrol or gas engines or by combustion turbines, irrespective of the fuel used.

[b/] The O_2 reference content is 6% for solid fuels and 3% for **liquid and gaseous fuels**.

8. Mineral oil and gas refineries:

Table 2
Limit values for dust emissions released from mineral oil and gas refineries

	ELV for dust (mg/m³)
Emission source	*Option 2*
FCC regenerators	**50**

9. Cement **clinker** production:

Table 3
Limit values for dust emissions released from cement production [a/]

	ELV for dust (mg/m³)	
	Option 2	
Cement installations, **kilns, mills and clinker coolers**	20	**[50 – delete]**

[a/] Installations for the production of cement clinker in rotary kilns with a capacity >500 Mg/day or in other furnaces with a capacity >50 Mg/day. The reference **oxygen** content is 10 %.

10. Lime production:

Table 4
Limit values for dust emissions released from lime production [a/]

	ELV for dust (mg/m³)	
	Option 2	
Lime **kiln firing**	20 [b/]	**[30 – delete]**

[a/] **Installations for the** production **of lime with a capacity of 50 Mg/day or more. This includes** lime kilns integrated in other industrial processes, with the exception of the pulp industry (see table [9]). The reference oxygen content is 11%.

[b/] Where the resistivity of the dust is high, the ELV may be higher, up to 30 mg/Nm³.

11. Production and processing of metals:

Table 5
Limit values for dust emissions released from primary iron and steel production

	ELV for dust (mg/m³)	
Activity and capacity threshold	*Option 2*	
Sinter plant		
Pelletization plant	**20 for crushing, grinding and drying** **15 for all other process steps**	
Blast furnace: Hot stoves (>2.5 t/hour)	10	**[50 – delete]**
Basic oxygen steelmaking and casting (>2.5 t/hour)	30	**[50 – delete]**
Electric steelmaking and casting (>2.5 t/hour)	15 (existing) 5 (new)	

*Table **6***
Limit values for dust emissions released from iron foundries

	ELV for dust (mg/m³)	
Activity and capacity threshold	*Option 2*	
Iron foundries (>20 t/day): - all furnaces (cupola, induction, rotary) - all mouldings (lost, permanent)	20	**[50 – delete]**
Hot and cold rolling	20 **50 where a bag filter cannot be applied due to the presence of wet fumes**	

*Table **7***
Limit values for dust emissions released from non-ferrous metals production and processing

	ELV for dust (mg/m³) [(daily)]
	Option 2
Non-ferrous metal processing	20

12. Glass production:

Table 8
Limit values for dust emissions released from glass production [a/]

	ELV for dust (mg/m³)	
	Option 2	
New installations	**20**	
Existing installations	30	**[50 – delete]**

[a/] Installations for the production of glass or glass fibres with a capacity of 20 Mg/day or more. Concentrations refer to dry waste gases at 8% oxygen by volume (continuous melting), 13% oxygen by volume (discontinuous melting).

13. Pulp production:

Table 9
Limit values for dust emissions released from pulp production

	ELV for dust (mg/m³) (annual averages)
	Option 2
Auxiliary boiler	40 **when firing liquid fuels (at 3% oxygen content)** **30 when firing solid fuels (at 6% oxygen content)**
Recovery boiler and lime kiln	50

14. Waste incineration:

Table 10
Limit values for dust emissions released from waste incineration

	ELV for dust (mg/m³)
	Option 3
Municipal waste incineration plants (> 3 **Mg**/hour)	10
Hazardous and medical waste incineration (> 1 **Mg**/hour)	**10**

***Note*:** Oxygen reference: dry basis, 11%.

15. Titanium dioxide production:

Table 11
Limit values for dust emissions released from titanium dioxide production

	ELV for dust (mg/m³)
	Option 3
Sulphate process, total emission	50
Chloride process, total emission	50

Note: For minor emission sources within an installation, an ELV of 150 mg/m³ may be applied.

16.[3,4] Small combustion installations with a rated thermal input < 50 MWth:

16.1 Small combustion installations with a rated thermal input < [300] [500] kWth:

(a) Emissions from new residential combustion stoves and boilers with a rated thermal input < [300] [500] kWth can be reduced by the application of:

(i) Product standards as described in CEN standards (e.g., EN 303–5) and equivalent product standards in the United States and Canada. Countries applying such product standards may define additional national requirements **taking into account, in particular, the contribution of emissions of condensable organic compounds to the formation of ambient PM;**

(ii) Ecolabels specifying performance criteria that are typically stricter than the minimum efficiency requirements of the EN product standards or national regulations**;**

Table 12
Limit values for dust emissions released from new small wood combustion installations with a rated thermal input < [300] [500] kWth to be used with product standards (O_2 reference content: 13%)

Dust (mg/m³)	*Option 2*	*Option 3*
Open/closed fireplaces	75	110
Wood stoves	75	110
Log wood boilers (with heat storage tank)	40	110
Pellet stoves and boilers	40	110
Automatic combustion plants	50	110

[a/] **Table 12 recommends** options for additional ELVs for dust for wood combustion appliances.

[3] The EU proposes to move paragraph **15** into a separate annex or separate part of this annex, with a non-mandatory character and to select one option, which could be in the ambitious range (1 to 2) as a recommendation.

[4] **Belarus believes that further clarification is required to ensure consistency between the figures in tables 12 and 13 with regard to wood burning stoves. Furthermore, the figures proposed in tables 12 and 14 under both options 2 and 3 are considered to be too ambitious.**

(b) Emissions from existing residential combustion stoves and boilers can be reduced by the following primary measures:

(i) By public information and awareness-raising programmes regarding:

a. The proper operation of stoves and boilers;

b. The use of untreated wood only;

c. The correct seasoning of wood for moisture content**;**

(ii) By establishing a programme to promote the replacement of the oldest existing boilers and stoves by modern appliances; or

(iii) By establishing an obligation to exchange or retrofit old appliances.

16.2 Combustion installations with a rated thermal input [50] [70] [100] kWth–1 MWth:

Table 13
Limit values for dust emissions released from boilers [and process heaters] with a rated thermal input of [50] [70] [100] kWth–1 MWth. (O_2 reference content: wood, other solid biomass and peat: 13%; coal, lignite and other fossil solid fuels: 6%)

Dust (mg/m³)		*Option 2*	*Option 3*
Solid fuels [50][70][100]–500 kWth	New installations	50	150
	Existing installations	150	150
Solid fuels 500 kWth–1 MWth	New installations	50	150
	Existing installations	150	150

16.3 Combustion installations with a rated thermal input > 1–50 MWth:

Table 14
Limit values for dust emissions released from boilers [and process heaters] with a rated thermal input of 1 MWth–50 MWth (O_2 reference content: Wood, other solid biomass and peat: 11%; Coal, lignite and other fossil solid fuels: 6%; Liquid fuels, including liquid biofuels: 3%)

Dust (mg/m³)		*Option 2*	*Option 3*
Solid fuels > 1–5 MWth	New installations	20	150
	Existing installations	50	150
Solid fuels > 5–50 MWth	New installations	20	50
	Existing installations	30	50
Liquid fuels > 1–5 MWth	New installations	20	150
	Existing installations	50	150
Liquid fuels >5-50 MWth	New installations	20	50
	Existing installations	30	50

B. Canada

17. Limit values for controlling emissions of PM will be determined for stationary sources, as appropriate, taking into account information on available control technologies, limit values applied in other jurisdictions and the documents listed in

subparagraphs (a) to (h) below. Limit values may be expressed in terms of PM or TPM. TPM in this context means any PM with an aerodynamic diameter of less than 100 µm.

(a) Secondary Lead Smelter Release Regulations, SOR/91-155;

(b) Environmental Code of Practice for Base Metals Smelters and Refineries;

(c) New Source Emission Guidelines for Thermal Electricity Generation;

(d) Environmental Code of Practice for Integrated Steel Mills (EPS 1/MM/7);

(e) Environmental Code of Practice for Non-Integrated Steel Mills (EPS 1/MM/8);

(f) Emission Guidelines for Cement Kilns. PN 1284;

(g) Joint Initial Actions to Reduce Pollutant Emissions that Contribute to Particulate Matter and Ground-level Ozone; and

(h) Performance testing of solid-fuel-burning heating appliances, Canadian Standards Association, B415. 1-10.]

C. United States of America

18. Limit values for controlling emissions of PM from new stationary sources in the following stationary source categories are specified in the following documents:

(a) Steel Plants: Electric Arc Furnaces — 40 C.F.R. Part 60, Subpart AA and Subpart AAa;

(b) Small Municipal Waste Combustors — 40 C.F.R. Part 60, Subpart AAAA;

(c) Kraft Pulp Mills — 40 C.F.R. Part 60, Subpart BB;

(d) Glass Manufacturing — 40 C.F.R. Part 60, Subpart CC;

(e) Electric Utility Steam Generating Units — 40 C.F.R. Part 60, Subpart D and Subpart Da;

(f) Industrial-Commercial-Institutional Steam Generating Units — 40 C.F.R. Part 60, Subpart Db and Subpart Dc;

(g) Grain Elevators — 40 C.F.R. Part 60, Subpart DD;

(h) Municipal Waste Incinerators — 40 C.F.R. Part 60, Subpart E, Subpart Ea and Subpart Eb;

(i) Hospital/Medical/Infectious Waste Incinerators — 40 C.F.R. Part 60, Subpart Ec;

(j) Portland Cement — 40 C.F.R. Part 60, Subpart F;

(k) Lime Manufacturing — 40 C.F.R. Part 60, Subpart HH;

(l) Hot Mix Asphalt Facilities — 40 C.F.R. Part 60, Subpart I;

(m) Stationary Internal Combustion Engines: Compression Ignition — 40 C.F.R. Part 60, Subpart IIII;

(n) Petroleum Refineries — 40 C.F.R. Part 60, Subpart J and Subpart Ja;

(o) Secondary Lead Smelters — 40 C.F.R. Part 60, Subpart L;

(p) Metallic Minerals Processing — 40 C.F.R. Part 60, Subpart LL;

(q) Secondary Brass and Bronze — 40 C.F.R. Part 60, Subpart M;

(r) Basic Oxygen Process Furnaces — 40 C.F.R. Part 60, Subpart N;

(s) Basic Process Steelmaking Facilities — 40 C.F.R. Part 60, Subpart Na;

(t) Phosphate Rock Processing — 40 C.F.R. Part 60, Subpart NN;

(u) Sewage Treatment Plant Incineration — 40 C.F.R. Part 60, Subpart O;

(v) Nonmetallic Minerals Processing Plants — 40 C.F.R. Part 60, Subpart OOO;

(w) Primary Copper Smelters — 40 C.F.R. Part 60, Subpart P;

(x) Ammonium Sulfate Manufacturing — 40 C.F.R. Part 60, Subpart PP;

(y) Wool Fiberglass Insulation — 40 C.F.R. Part 60, Subpart PPP;

(z) Primary Zinc Smelters — 40 C.F.R. Part 60, Subpart Q;

(aa) Primary Lead Smelters — 40 C.F.R. Part 60, Subpart R;

(bb) Primary Aluminum reduction plants — 40 C.F.R. Part 60, Subpart Subpart S;

(cc) Phosphate Fertilizer Production — 40 C.F.R. Part 60, Subparts T, U, V, W, X;

(dd) Asphalt Processing and Asphalt Roofing Manufacturing — 40 C.F.R. Part 60, Subpart UU;

(ee) Calciners and Dryers in Mineral Industries — 40 C.F.R. Part 60, Subpart UUU;

(ff) Coal Preparation Plants — 40 C.F.R. Part 60, Subpart Y;

(gg) Ferroalloy Production Facilities — 40 C.F.R. Part 60, Subpart Z**;**

(hh) Residential Wood Heaters — 40 C.F.R. Part 60, Subpart AAA;

(ii) Small Municipal Waste Combustors (after 11/30/1999) — 40 C.F.R. Part 60, Subpart AAAA;

(jj) Small Municipal Waste Combustors (before 11/30/1999) — 40 C.F.R. Part 60, Subpart BBBB;

(kk) Other Solid Waste Incineration Units (after 12/9/2004) — 40 C.F.R. Part 60, Subpart EEEE;

(ll) Other Solid Waste Incineration Units (before 12/9/2004) — 40 C.F.R. Part 60, Subpart FFFF

(mm) Stationary Compression Ignition Internal Combustion Engines — 40 C.F.R. Part 60, Subpart IIII;

(nn) Lead Acid BatteryManufacturing Plants — 40 C.F.R. Part 60, Subpart KK.

19. Limit values for controlling emissions of PM from new and existing sources subject to National Emission Standards for Hazardous Air Pollutants:

(a) Coke oven batteries — 40 C.F.R. Part 63, Subpart L;

(b) Chrome Electroplating (major and Area sources) – 40 C.F.R. Part 63, Subpart N;

(c) Secondary lead smelters — 40 C.F.R. Part 63, Subpart X;

(d) Phosphoric Acid Manufacturing Plants — 40 C.F.R. Part 63, Subpart AA;

(e) Phosphate Fertilizers Production Plants — C.F.R. Part 63, Subpart BB

(f) Magnetic Tape Manufacturing — 40 C.F.R. Part 63, Subpart EE;

(g) Primary Aluminum— 40 C.F.R. Part 63, Subpart L;

(h) Pulp and paper II (combustion) — C.F.R. Part 63, Subpart MM;

(i) Mineral wool manufacturing — C.F.R. Part 63, Subpart DDD;

(j) Hazardous waste combustors — C.F.R. Part 63, Subpart EEE;

(k) Portland cement manufacturing — C.F.R. Part 63, Subpart LLL;

(l) Wool fiberglass manufacturing — 40 C.F.R. Part 63, Subpart NNN;

(m) Primary copper — 40 C.F.R. Part 63, Subpart QQQ;

(n) Secondary aluminum — 40 C.F.R. Part 63, Subpart RRR;

(o) Primary lead smelting — 40 C.F.R. Part 63, Subpart TTT;

(p) Petroleum refineries — 40 C.F.R. Part 63, Subpart UUU;

(q) Ferroalloys production — 40 C.F.R. Part 63, Subpart XXX;

(r) Lime manufacturing — 40 C.F.R. Part 63, Subpart AAAAAA;

(s) Coke Ovens: Pushing, Quenching, and Battery Stacks — 40 C.F.R. Part 63, Subpart CCCCC;

(t) Iron and steel foundries — 40 C.F.R. Part 63, Subpart EEEEE;

(u) Integrated iron and steel manufacturing — 40 C.F.R. Part 63, Subpart FFFFF;

(v) Site remediation — 40 C.F.R. Part 63, Subpart GGGGG;

(w) Miscellaneous coating manufacturing — 40 C.F.R. Part 63, Subpart HHHHH;

(x) Asphalt Processing and Roofing Manufacturing — 40 C.F.R. Part 63, Subpart LLLLL;

(y) Taconite Iron Ore Processing — 40 C.F.R. Part 63, Subpart RRRRR;

(z) Refractory products manufacturing — 40 C.F.R. Part 63, Subpart SSSSS;

(aa) Primary magnesium refining — 40 C.F.R. Part 63, Subpart TTTTT;

(bb) Electric Arc Furnace Steelmaking Facilities — 40 C.F.R. Part 63, Subpart YYYYY;

(cc) Iron and steel foundries — 40 C.F.R. Part 63, Subpart ZZZZZ;

(dd) Primary Copper Smelting Area Sources — 40 C.F.R. Part 63, Subpart EEEEEE;

(ee) Secondary Copper Smelting Area Sources — 40 C.F.R. Part 63, Subpart FFFFFF;

(ff) Primary Nonferrous Metals Area Sources: Zinc, Cadmium, and Beryllium — 40 C.F.R. Part 63, Subpart GGGGGG;

(gg) Lead Acid Battery Manufacturing (Area sources) — 40 C.F.R. Part 63, Subpart PPPPPP;

(hh) Glass manufacturing (area sources) — 40 C.F.R. Part 63, Subpart SSSSSS;

(ii) Secondary Nonferrous Metal Smelter (Area Sources) — 40 C.F.R. Part 63, Subpart TTTTTT;

(jj) Chemical Manufacturing (Area Sources) — 40 C.F.R. Part 63, Subpart VVVVVV;

(kk) Plating and Polishing Operations (Area sources) — 40 C.F.R. Part 63, Subpart WWWWWW;

(ll) Area Source Standards for Nine Metal Fabrication and Finishing Source Categories — 40 C.F.R.Part 63, Subpart XXXXXX;

(mm) Ferroalloys Production (Area Sources) — 40 C.F.R. Part 63, Subpart YYYYYY;

(nn) Aluminum, Copper, and Nonferrous Foundries (Area Sources) — 40 C.F.R. Part 63, Subpart ZZZZZZ;

(oo) Asphalt Processing and Roofing Manufacturing (Area Sources) — 40 C.F.R. Part 63, Subpart AAAAAAA;

(pp) Chemical Preparation (Area Sources) — 40 C.F.R. Part 63, Subpart BBBBBBB;

(qq) Paints and Allied Products Manufacturing (Area Sources) — 40 C.F.R. Part 63, Subpart CCCCCCC;

(rr) Prepared animal feeds manufacturing (Area Sources) — 40 C.F.R. Part 63, Subpart DDDDDDD; and

(ss) Gold Mine Ore Processing and Production (Area) (Area Sources) — 40 C.F.R. Part 63, Subpart EEEEEEE.