ESTONIA

EE questions and comments on Ambient Air Quality Directive

1. Article 7 point 2 - *However, classifications shall be reviewed more frequently in the event of significant changes in activities emitting air pollutants and modifying the result to the ambient concentrations of sulphur dioxide, nitrogen dioxide ⌦ and ⌫or, where relevant, oxides of nitrogen, particulate matter (PM10 and PM2.5), lead, benzene, or carbon monoxide ⌦, arsenic, cadmium, nickel, benzo(a)pyrene or ozone ⌫* **- How often and what counts as "significant changes"? Does exceedances from natural sources count?**

2. Article 8 part 5 - *If modelling shows an exceedance of any limit value or ozone target value in an area of the zone not covered by fixed measurements, additional fixed or indicative measurements shall be used during at least 1 calendar year after the exceedance was recorded, to assess the concentration level of the relevant pollutant.* **- Does each MS have to choose their own type of modelling? Will there be assistance from EC/EEA? What type of models to use? How are transboundary exceendance taken into effect? What about ozone from outside EU?**

3. In all zones and agglomerations where the level of pollutants referred to in paragraph 1 exceeds the upper assessment threshold established for those pollutants, fixed measurements shall be used to assess the ambient air quality. Those fixed measurements may be supplemented by modelling techniques ⇨ applications ⇦ and/or indicative measurements ⇨ to assess air quality and ⇦ to provide adequate information on the spatial distribution of the ambient air ⇨ pollutants ⇦ quality ⇨ and on the spatial representativeness of fixed measurements ⇦ . - **It says may be supplemented by modelling techniques. Does that mean it isn't mandatory?**

4. Article 10 - Would excisting fixed monitoring sites count as supersites if they are equipped with new measuring devices? Or should completely new sites be selected?

Paragraph 7 - Measurements of particulate and gaseous divalent mercury may also be undertaken at monitoring supersites at urban background locations and rural background locations.

General questions -

Article 5 - **Can same competent authorities be designated to different paragraphs to this article?**

Article 8 paragraph 5 - *If modelling shows an exceedance of any limit value or ozone target value in an area of the zone not covered by fixed measurements, additional fixed or indicative measurements shall be used during at least 1 calendar year after the exceedance was recorded, to assess the concentration level of the relevant pollutant.* - **Can MS choose if they are going to use either fixed or indicative measure? What about in a hypotetical situation where modelling still shows exceedance but fixed or indicative measurements show no such exceedance?**

Article 19 :

If it turns out that the plan does not fulfill its purpose in the third year after the plan has been drawn up, must the procedure for updating the plan be carried out? Are the same rules applicable to it as the preparation of the plan (notification of EC, involvement, etc.)? In any case, this procedure must be carried out very quickly, because the new measures must have an effect by the end of the fourth year (the plan must be updated and the measures already implemented)?

Member States shall consult the public, in accordance with Directive 2003/35/EC of the European Parliament and of the Council 79 , and the competent authorities, which, by reason of their responsibilities in the field of air pollution and air quality, are likely to be concerned by the implementation of the air quality plans, on draft air quality plans and any significant updates of air quality plans prior to their finalisation. **– What does „significant updates" stand for?**

Article 19 paragraph 7 - Air quality plans shall be communicated to the Commission ➔ within 2 months after their adoption – Just to clarify : If there was an exceedance in PM10 (for example) in 2031, then by 2034 the air quality plan has to be adopted? And then in 2034 when the plan is adopted it has to be communicated to the EC?

BELGIUM

Comments and questions regarding the COM proposal on the revision of the AQD

Articles 1-11

In response to the presidency's request at the WPE on 23/1 to send in written comments, we hereby send our comments to the chapters I (discussed at WPE 23/1) and II (to be discussed at the next WPE). In this text we reiterate the comments we already included in the written comments we sent to the CZ presidency by 16/12/2022.

Art. 1

- We support the inclusion of the zero pollution objective in the first paragraph.
- In §2 the 'intermediate' is confusing, since in the rest of the text the wording 'intermediate limit values' is not used. Moreover the long term objectives are not to be met by 2030, which the text seems to imply. Some rewording is needed.

Art. 3

- We strongly support the inclusion of this article.
- §2: we suggest to add a point (e): 'any relevant information submitted for this purpose to the Commission by the member states'.
- At the WPE meeting, some delegations raised concerns about the possibility of strengthening the standards that enter into force in 2030 before they actually come into force. Although we did not read that in the proposal and we think that this is unfeasible anyway (timeframe for adaptation of the standards is simply too short when the review is only finished by end 2028), the concern might be addressed by explicating in the text that revised air quality standards will only enter into force after 2030.

Art. 4

- (8): lead is missing in this definition.
- (8): we suggest to add "expressed as mass concentrations" to the definition.
- (13) : why not use eBC everywhere in the text?
- (14): we acknowledge that this definition has been copied from WHO the good practice statement, but we are not convinced that this is suitable as a definition in a directive. Depending on the equipment used for measuring UFP, different results will be obtained (since larger particles will or will not be included). A definition is needed that avoids equipment dependent result.
- (21) there seems some contradiction in the definition. To our opinion 'expert judgment' doesn't include statistical tools, remote sensing and in-situ sensors. Also statistical tools, remote sensing and in-situ sensors results in quantitative information, while expert judgement results in qualitative information.
- (22): what is to be understood by the pre-defined tolerance level? Where is it specified?

- (27) what is the reasoning behind the inclusion of the part “to be complied with where possible over a given period” in the definition. This text is not in the definition of limit value either, so why add it here?
- (28): is the part starting from ‘used to check whether’ necessary? Moreover: is it necessary to specify the applicable territorial area (zone or NUTS 1) in the definition? This is made clear in the relevant article and the inclusion in the definition might lead to less flexibility. From the discussions in the WPE it is clear that for some member states it would be more practical if a smaller territorial area (such as NUTS 2) is used. We are open to an approach where member states that wish to do so, can use that smaller area (thus referring to “NUTS 1 level or a higher NUTS level where deemed appropriate by the member state”), but including that idea in the definition will render this definition very complex. The territorial area is not specified either in the definition of ‘limit value’ or ‘target value’.
- (29): is the part starting from ‘of a territorial unit’ necessary?
- (37): delete the word ‘emergency’ since it does not add anything and might only lead to different interpretations.
- A definition for bio indicators (art. 8 §8) is missing.

Art. 6

- At the WPE meeting, some member states raised the idea of deleting all references to “agglomerations”. We do not support that and we think that it is useful to have agglomerations in a separate zone (one agglomeration per zone). If the agglomeration-concept would be deleted, this would lead to even larger discrepancies in the way member states establish zones, which is contrary to the conclusion from the fitness check that a more harmonised approach in implementing the directive is needed. Precisely in view of that harmonisation we suggest to delete the “, where appropriate for the purposes of air quality management,”.
- We do support the approach taken in the proposal by treating an agglomeration as a zone and thus changing the “zones and agglomerations” references in the rest of the text to simply “zones”.

Art. 7

- We support the simplification introduced in the assessment regime by deleting the lower and upper assessment threshold and we support the alignment with the unique assessment threshold with WHO guidelines.
- §2: It would be clearer if the 2nd and 3rd part are moved to a separate §3.

Art. 8

- According to §2-4, air quality modelling is only obligatory when the AQ-standards are exceeded, in order to provide information on the spatial distribution of the pollution. Even though the monitoring sites should be located in an area with the highest concentrations, it is not always clear where that is. Therefore, it is very well possible that even when the monitoring stations do not show any exceedance, modelling will show some exceedances. In

this view, it would make sense to make modelling obligatory as well when the standards are only met by a certain (small) margin (to be determined).

- This being said, modelling should not be used for compliance checking because of its higher degree of uncertainty than measurements. Monitoring data always has to be the prime indicator. Therefore, modelling should be used as a means to identify areas where the standards are exceeded, which can be a basis for additional (temporary) monitoring.
- §3: by the way the text is written and specifically by referring to "table 1 of Section 1" modelling would also be needed when the 2030 limit value is exceeded before 2030. It is not clear whether this was the idea of the proposal, but in our view this makes no sense. We suggest to change the reference to "table 1 of Section 1" by a reference to "Section 1".
- §5: when is an area or zone not covered by fixed measurements? This should be clearly described. There is some contradiction in 'indicative measurements during at least 1 calendar year' as the minimum data coverage for indicative measurements is written in annex V B. and for most pollutants means only sampling during 2 months
- §7: what is the rationale for including additional (on top of the supersites) monitoring requirements for UFP and not for BC? High concentrations of BC occur mainly at road traffic oriented monitoring stations or at locations highly dominated by woodburning emissions and not at urban background or rural stations. Moreover BC is a proxy for UFP and much easier (and cheaper) to measure.

Art. 9

- §1: the two parts might as well be merged (unclear why there is a different sentence for ozone) .
- The references to the tables in point A of annex III seem to be erroneous. There are no references to tables 1 and 2.
- §3 (c) delete 'and the indicative measurements have a minimum duration of 2 months per calendar year'. Data coverage for indicative measurements is already mentioned in annex V B.
- §5 ensure that the distribution of **sampling points** used .. (sampling points is missing)
- §6: what is exactly meant? Does this § say that modelling results will be used for compliance checking. If so, we oppose and suggest to delete this §, because the modelling error is in our view still too high to be used as a tool for compliance checking.

Art. 10

- Why is lead missing in §6?
- §7: we suggest to include levoglucosan, a tracer for biomass combustion, as an optional pollutant to be monitored, in order to gather information on the level of pollution coming from domestic woodburning. Additional info: currently CEN TC264/WG21 is drafting a technical specification for the measurement of levoglucosan.
- The number of supersites needed is unclear. Do you need two supersites at an urban background location if the population is between 10 mil and 20 mil, or only one. If two are needed, why the inclusion of the last sentence in §1 and §2

Art. 11

- The reference to point E of annex VI is not relevant, since that point E is about modelling, not about measurements.

ITALY

Proposal for a Directive on ambient air quality and cleaner air for Europe (recast)

Preliminary comments

GENERAL COMMENTS

Italy welcomes the proposal for a revision of the ambient air quality directive and appreciates the simplification represented by merging the two existing directives into one. It is also greatly appreciated that many elements discussed in the past in the technical groups have been taken into accout with the aim of harmonizing the implementation of the Directive and to improve the knowledge of the air quality status in the territory of European Union.

Since the analysis of the text is still going on at national level, a general scrutiny reservation has to be expressed at this point, but some initial comments can be shared.

COMMENTS ON ARTICLES from 1 TO 11

Article 1

In Article 1, comma 2, we suggest removing the word "intermediate" when introducing air quality standards. Although it is clear that reference is being made to intermediate values between those currently in force and those recommended by the WHO, it seems that in this context the word could lead to confusion, as if successive steps towards approaching WHO values were already established in this directive.

Article 2

The use of the word “measures” many times in the article and with different meanings in different sentences can be confusing. We suggest to change the text as follows:

“This Directive lays down provisions aimed at the following:

1. defining and establishing objectives for ambient air quality designed to avoid, prevent or reduce harmful effects on human health and the environment;

2. setting common methods and criteria to assess the ambient air quality in Member States;

3. monitoring ambient air quality long-term trends and impacts of Union and national measures on ambient air quality;

4. ensuring that the information on ambient air quality is made available to the public;

5. maintaining air quality where it is good and improving it in other cases;

6. promoting increased cooperation between Member States in reducing air pollution.”

Article 3

The text of the directive should contain sufficient references to feasibility (technical, social, etc.) as a criterion to be considered when choosing its objectives and indicating measures that can be both effective and sustainable.

In particular, such considerations should be mentioned in article 3 among the elements to be considered when reviewing the directive. Therefore, we suggest that the assessment of the economic and social impacts

and the technical feasibility of the possible setting of more stringent air quality standards is added to the list in subsection 2, with an additional point (e).

Regarding the timing for the first review, it seems to be premature to foresee a review of the new directive in 2028 since it will enter into force presumably in 2026 and there will be no big changes in scientifical evidence nor sufficient information on the implementation of the new directive after two years. We propose to substitute 2028 with "5 years after the entry into force of the directive".

Article 4

General reservation on article 4 since we are still evaluating all definitions. Some first considerations follow.

(4) In the definition of 'total deposition' it seems unnecessary to mention the deposition on surfaces like vegetation, water, buildings, etc. and perhaps it can be sufficient to talk about "total mass deposited on ground (dry and wet deposition) for a given pollutant"

(5) ad (6) The definitions of PM10 and PM2,5 should both contain a reference to the rule EN 12341.

(14) reservation on the definition of "ultrafine particles". It seems that it is not clear in the whole text if we are talking about the number of particles or concentrations of UFP. Clarification is needed if there is the will of assessing both parameters, as it seems to be appropriate in order to get a complete picture of the situation. In this case, it could be useful to introduce both definitions.

(21) "objective estimation": we suggest making it coherent to article 8 and call it "objective estimation techniques"; in addition, we propose to delete the expert judgment that is quite confusing.

(22) Reservation on the definition of "spatial representativeness". It seems necessary to clarify whether this expression always means the same thing in the text of the directive; that is, whether it refers both to the restricted area of representativeness of a measuring station or whether, as it seems, it refers to all areas, even non-contiguous ones, that can be described by the concentration values measured by the station under consideration. If the expression is used to refer to two different concepts, two different definitions will be needed.

Anyway, it seems necessary to change the beginning of the text since spatial representativeness means "an area defined by an assessment approach" and not an assessment approach.

In addition, we believe that in Annex IV, which describes how to determine the area of representativeness, explicit reference should be made to an appropriate Guideline useful for making this determination in a homogeneous way and for also defining the expected margin of tolerance.

(28) (29) With reference to zoning, it may be useful to clarify whether NUTS level 1 territorial units must automatically correspond to those in Annex I of Regulation 1059/2003 or can be reshaped. We reserve the right to further analyse this issue but, in some cases, it would be useful to amalgamate more homogeneous national areas while respecting the territorial extent of the NUTS1 level.

(37) In the definition of "short term action plans" we suggest deleting the word "emergency" in order to better clarify the nature of the plans: they should include measures that are not really related to some kind of emergency situation but that should have short term effects.

'short-term action plans' means plans that set out ~~emergency~~ measures to be taken in the short term to reduce the immediate risk or the duration of the exceedance of the alert thresholds.

(40) (41) Finally, we suggest adding NEW definitions for "bioindicators" and for "sampling points".

Article 7

With the new assessment regime, it will be necessary to increase the minimum number of sampling points to be set on the territory with an increase of the costs associated to monitoring activities that we are still trying to estimate.

Article 8

We support the process initiated by the proposal to promote the use of modelling applications for air quality assessment; on the other hand, high uncertainties are still associated to the use of models due also to high uncertainties associated to emissions data at local level. Therefore, we believe that the a clear reference should be added in this article to the Guidelines that will be published by the Commission in order to assure a proper use of modelling applications, both for compliance purposes and spatial representativeness determination. In addition, mandatory application of new provisions related to models should enter into force in a second step and at least once the Guidelines will be available.

Paragraph 2: we suggest making it more coherent to article 9 with the following formulation.

In all zones and agglomerations where the level of pollutants referred to in paragraph 1 exceeds the upper assessment threshold **but not the respective limit values** *established for those pollutants …*

Paragraph 2 and 4: the assessment regime of each zone is defined by the relative classification, determined according to article 7. We believe that the different situation of the zone expressed in comma 2 and 4 should be referred to the classification of the zone and not to the "level of pollutants" exceeding or not the assessment threshold.

Paragraph 3: we suggest reintroducing the possibility of using also indicative measurements to supplement the knowledge framework in areas where exceedances of limit values are recorded. In particular, in the case of possible exceedances of limit values for some pollutants (especially metals and PAHs), the current difficulty of having useful information to supplement monitoring data through modelling applications is emphasized.

Paragraph 5: a clarification is needed to understand if "not covered by fixed measurements" is referred to the zone or to a specific area in the zone.

Paragraph 6: it is necessary to introduce some criteria on the number of sites and their location for other relevant polycyclic aromatic hydrocarbons.

Paragraph 6 and 7: move to article 9 since they are not referred to assessment criteria.

Ask for clarification if the possibility to supplement information with modelling and indicative measures is only in case there is a reduction up to 50% of monitoring sites.

Paragraph 8: clarifications are needed on the provision on biomonitoring. It is not clear if it implies the application of data collected by the NEC monitoring networks also for the purposes of this directive or if additional indicators will be needed, e.g. for other pollutants not included in NEC directive.

Article 9

Paragraph 1: ozone could be part of the list of pollutants in the first sentence since the reference is to the same Annex.

Paragraph 2: Tables 3 and 4 should be replaced with Tables 1 and 2.

Paragraph 3, point b: substitute modelling techniques with modelling applications, in coherence with other articles of the text.

Paragraph 3, point c: indicative measurements should meet the data coverage reported in Annex V point B.

Paragraph 7: substitute «including spatial development» with *to "be justified with a technical report that describes the reasons in detail".* It is necessary to justify in detail every change of location of the monitoring sites in order not to encounter problems of transparency with the public.

Article 10

Paragraph 6, point c: lead is not mentioned among metals.

We suggest including also data produced by monitoring supersites among those for which reporting obligations are set.

Article 11

Comma 1: delete the reference to "E" that is not referred to measurement methods but to modelling and add a new sentence "*Member States shall apply air quality modelling applications in compliance with Point E of Annex VI."*

Introduce a reference to specific Guidelines or technical documents for the assessment of pollutants referred to in article 10 for which no reference method is available.

It would be also useful to introduce a reference method or a technical document for the automatic measurement of PM.

Council of the European Union
General Secretariat

Interinstitutional files:
2022/0347 (COD)

Brussels, 20 February 2023

WK 2492/2023 INIT

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CONTRIBUTION

From:	General Secretariat of the Council
To:	Working Party on the Environment
Subject:	Air Quality Directive: follow-up to the meeting on 23 January - comments by delegations

Following the call for comments (WK 1161/23), delegations will find attached the contribution received from the BE, CZ, DE, EE, ES, FI, IT, LV, NL, AT and PL delegations.

LATVIA

Comments on Ambient Air Quality Directive in the context of WPE on 23 January 2022 - Request for written comments on the Commission proposal

Latvia would like to thank the Presidency for the discussion at the WPE on January 23 and for the opportunity to send written comments. We are still analysing the proposal and preparing our official position. Therefore, **we are keeping general scrutiny reservation**. Nevertheless, below we would like to provide our initial comments and suggestions **regarding Articles 1 - 6**:

Article 1 Objectives:

In our opinion correction is needed for Article 1 as from current text it seems that this Article suggest Member States to take the necessary steps to meet very high concentrations - alert thresholds and information thresholds. As the idea of the directive is to reduce concentrations and not to take measures to increase them until the target value is met, we suggest making corrections in Article 1 and use "not to be exceeded" instead of "to be met".

Drafting Suggestions (strikethrough suggests to delete text, new text in bold)*:*

"2. This Directive sets ~~intermediate limit values, target values, average exposure reduction obligations, average exposure concentration objectives, critical levels, information thresholds, alert thresholds and long-term objectives (' ~~ **air quality standards** ~~) to be met~~ **not to be exceeded from** ~~by~~ the year 2030, and regularly reviewed thereafter in accordance with Article 3."

Article 2 Subject matter:

We suggest adding that the aim of monitoring is not only to carry out long-term measurements but also to provide and obtain immediate information about current air quality.

Drafting Suggestions (new text in bold)*:*

This Directive lays down the following measures:

"3. measures for monitoring ambient air quality in the **short and long-term as well as** evaluating **air pollution** trends and impacts of Union and national measures on ambient air quality;"

Article 3 Regular review:

- We agree with the opinion mentioned in WPE on 23 January that deadline set for revision of Air quality standards – 31 December 2028 is not appropriate as new air quality standards will enter into force only on 2030.

- We support comments made on 23 January by those Member States that consider that responsibility for some actions should be taken also at EU level. We think that policies and measures that are connected to internal market of EU and could be more effectively solved at EU level (for example, regulations regarding quality of domestic heating appliances or vehicles produced and sold in EU internal market).

Article 4 Definitions:

- To make the text easier to read and understand we suggest including new definition - ***"Air quality standard"*** that repeats in the text and annexes of proposal.

Drafting Suggestions (new text in bold)*:*

> **"Air quality standard**" – **pollutant level that is set to protect human health and environment from negative impact from air pollution. Air quality standards include limit values, average exposure reduction obligations, average exposure concentration objectives, critical levels, alert thresholds and target value, long-term objectives and information threshold set for ozone."**

- As there are already definitions *"(23) urban background locations*" and *"(24) rural background locations"* we find it would be useful to also inculde definition "*hot spot locations*" (Mentioned in: Article 7 (2) and Annex III). This could also help later to classify station types – urban background, rural background or hot spot location monitoring stations.

Drafting Suggestions (new text in bold)*:*

> "**Hot spot locations - locations likely to be typical of the highest pollution levels to which the population is likely to be exposed."**

- *(24) "rural background locations"* – it's not clear what is the meaning of the text "areas with low population density". As the low population density in each Member State could be different, we suggest using the same approach as in defining population density for agglomerations according to point (16).
  Additionally, we suggest adding that these levels also represent impact on ecosystems as it is already mentioned in preamble's point (28).

Drafting Suggestions (new text in bold)*:*

> "(24) '*rural background locations'* means places in rural areas with low population density **to be established by Member States** where levels are representative of the exposure of the general rural population **and vegetation and natural ecosystems**;"

- Not clear why in the case of ozone it is necessary to include two separate definitions for society information - (32) "*information threshold"* and (33) "*alert threshold"*.
  Why it's not possible to use only one definition "*alert threshold*" and to delete definition "*ozone information threshold"*.

  As we understand from Article 22 (2) public information (also on levels that corresponds to "ozone information threshold" and is considered as poor air quality) will still happen through air quality index either for ozone nor for other pollutans. As there is already many different limits, targets, obligations etc. so in our opinion it would be better to minimize as much as possible different standards to easier communicate them to public and not to create unnnecesary confusion among society through different kind of information approaches.

- (39) *'sensitive population and vulnerable groups'* – we would like to see some clarification about which groups of society are considered as "vulnerable" and "sensitive" otherwise it's not clear which groups have to be treated and informed in a special way. Also not clear from definition what means "*they have a lower threshold for health effects"*. To make this definition simpler we suggest to use definition "***sensitive population***" as it is already used in EEA explanations on air quality index ("*general population*" and "*sensitive population*").

<u>Article 5 Responsibilities:</u>

To involve more health-related authorities and organizations in the public information on health aspects we suggest adding new responsibility in Article 5.

Drafting Suggestions (new text in bold)*:*

"Member States shall designate at the appropriate levels the competent authorities and bodies responsible for the following:

(j) conducting research and providing public information about the impacts of air pollution on public health."

AUSTRIA

AT COMMENTS: Air Quality Directive (WK 1161/2023)

Following the request by the Presidency after the WPE meeting on 23 January, AT submits the following comments on the Commission's proposal for the recast of the Air Quality Directives:

Art. 3 (regular review)
We suggest a broadening of the scope of the regular review as outlined in Art. 3. In particular, we see a strong need for a regular comprehensive assessment and evaluation of (existing and missing) source regulation at Union level that contributes effectively to achieving good air quality. A regular assessment and evaluation will provide sufficient clarity in which sectors and regarding which activities there is a need for action to safeguard compliance with (existing and revised) air quality standards and the zero-pollution objective 2050, respectively, or to act in timely manner (keyword: former failure of EU-legislation for emission standards of diesel vehicles and the attainability of NO_2 limit values).

In particular, we suggest a clear link to EU source legislation and the proposed joint responsibility clause in Art. 5 (see below) as follows (proposals are highlighted in **underlined and bold** text):

"2. The review shall assess whether applicable air quality standards are still appropriate to achieve the objective of avoiding, preventing or reducing harmful effects on human health and the environment and whether additional air pollutants should be covered.

In order to achieve the objectives set in Article 1, the review shall assess whether this Directive needs to be revised with a view to ensuring alignment with the World Health Organization (WHO) Air Quality Guidelines and the latest scientific information.

The review shall further assess any relevant source legislation at Union level for sectors and activities that contribute to air pollution and whether there is a need to introduce or revise legislative acts with a view to achieving the air quality standards in Annex I and any proposal to revise them or cover other air pollutants, respectively.

For the purposes of the review, the Commission shall take into account, inter alia, the following:

(a) latest scientific information from WHO and other relevant organisations,
(b) technological developments impacting air quality and its assessment,
(c) air quality situations and associated impacts on human health and the environment in Member States,
(d) progress made in implementing national and Union reduction measures for pollutants and improving air quality,
***(e) any relevant source legislation at Union level**.*

[…]

4. Where the Commission considers it appropriate, as a result of the review, it shall present a proposal to revise air quality standards or to cover other air pollutants. ***Furthermore, it shall also present proposals to introduce or revise any relevant source legislation in order to contribute to achieving the proposed revised air quality standards at Union level."***

Art. 5 (responsibilities) -**Joint Responsibility Clause**

Compliance with, in particular, the proposed limit values for $PM_{2.5}$ and NO_2 for 2030 and beyond requires significantly increased efforts at regional, national and EU level. On EU level this includes

harmonised and stricter regulations for emission sources such as residential heating, motor vehicles, industry, products, agriculture, etc. Hence, AT proposes to include a '*joint responsibility clause*' as laid down, for example, in Art. 2 para. 2 of regulation (EU) 2021/1119 (European Climate Law) to ensure that appropriate action is taken on all relevant levels.

We suggest the following text as a starting point for further discussion and development of a joint responsibility clause in Art. 5:

*"**1.** Member States shall designate at the appropriate levels […].*

2. The relevant Union institutions and the Member States shall take the necessary measures at Union and national, regional and local level, respectively, to enable the collective achievement of the air quality standards in Annex I and the zero pollution objective for air quality set out in Article 1, in particular

(a) the introduction and regular update of any relevant legislation for sectors and activities such as transport, industry, agriculture, energy and climate that contribute to air pollution, in particular setting appropriate emissions standards for key sources of air pollution, such road transport vehicles, domestic heating installations and industrial installations and

***(b) the regular update of the regulatory framework needed to act in a harmonized manner in a cost-effective way.**"*

Art. 4 (definitions)
The proposal gives a number of definitions, which are not clear or ambiguous. Clarifications would therefore be useful to facilitate and harmonise implementation.

These definitions are, in part, phrasings that have been taken from the existing text of the Directive and which have already led to differences in the implementation and ambiguities in the past. Please see the table below for concrete suggestions and comments the definitions in Article 4.

Reference	Provisions proposal	Comment	Proposed changes
Art. 4 (8)	*arsenic', 'cadmium', 'nickel' and 'benzo(a)pyrene' mean the total content of these elements and compounds in the PM10 fraction;*	'Lead' is missing	Add 'lead'
Art. 4 (21)	*(21) 'objective estimation' means an assessment method to obtain quantitative or qualitative information on the concentration or deposition level of a pollutant through expert judgement, which may include use of statistical tools, remote sensing, and in-situ sensors*	Emission data is often used as next to expert judgement *"remote sensing, and in-situ sensors"* are not defined	Add "emission data" after "*statistical tools*" It might be useful to add references for definitions of "*remote sensing*" and "*in-situ sensors*".
Art. 4 (23)	*urban background locations' means places in urban areas where levels are representative of the exposure of the general urban population.*	*„urban*", *„background*" and *„general population*" are not defined in the Directive. Art. 4 (22) does not provide quantitative criteria for *„representative*". *„low population density*" is not defined. The description the „IPR Guidance"[1] provides for *„urban*" – related to building structure, not population density – of not in line with Art. 4 (23).	We propose a (new) Guidance document or updating the "IPR Guidance" which defines the terms *„urban*", *„rural*", *„background*", *„general population*", *„representative*" and *„low population density*", replacing the descriptions in the „IPR Guidance", which are not useful for implementation of Art. 4 (22) and (23)).
Art. 4 (24)	*rural background locations' means places in rural areas with low population density where levels are representative of the exposure of the general rural population*		

[1] "Member States' and European Commission's Common Understanding of the Commission Implementing Decision laying down rules for Directives 2004/107/EC and 2008/50/EC of the European Parliament and of the Council as regards the reciprocal exchange of information and reporting on ambient air" (Decision 2011/850/EU), https://www.eionet.europa.eu/aqportal/doc/IPR%20guidance_2.0.1_final.pdf

Reference	Provisions proposal	Comment	Proposed changes
		The uncertainty of this definition concerns, inter alia, the implementation of the measurement requirements for the Average Exposure Indicator (Articles 4 (28) to (30) and Annex III B.) and the criteria for the distribution of measurements for "*diffuse sources*" in Annex III A. 1.	
Art. 4 (28) AEI	*'average exposure indicator' means an average level determined on the basis of measurements at urban background locations throughout territorial unit at NUTS 1 level as described in Regulation (EC) No 1059/2003, or, if there is no urban area located in that territorial unit, at rural background locations, and which reflects population exposure used to check whether the average exposure reduction obligation and the average exposure concentration objective for that territorial unit have been met.*	The definition of the AEI in Article 4 (28) refers to '*urban background locations*' and is not in line with the requirements of Article 9 (5), which explicitly requires '*general population exposure*' (without limitation to '*urban'*).	A clarification by the Commission is needed whether "*exposure*" refers to the total (general) population or to the urban population, and further specifying "*urban*".
Art. 4 (29)	*average exposure reduction obligation' means a percentage reduction of the average exposure of the population, expressed as average exposure indicator of a territorial unit at NUTS 1 level as described in Regulation (EC) No 1059/2003 of the European Parliament and of the Council set for the reference year with the aim of reducing harmful effects on human health, to be attained over a given period*	The text "of a territorial unit at NUTS 1 level as described in Regulation (EC) No 1059/2003 of the European Parliament and of the Council" seems not necessary as this has already been defined in Art. 4 (28).	It should be considered to delete this part of the paragraph.

Reference	Provisions proposal	Comment	Proposed changes
Art. 4 (x)		Definition for oxidative potential of particulate matter should be added.	Proposal: *The oxidative potential (OP) of particulate matter is a measure of the capacity of PM to oxidize target molecules in abiotic assays.*

Article 7 - Annex II, definitions (article 4) points 5, 6, 7, 8, 18

It is not clear to what starting point in time the phrase "*the previous 5 years*" in para. 2 refers to. A clarification is needed.

Article 8 - Annex IV A, Art 8.7 (Annex III.D, Annex VII.3), definitions (article 4) points 9, 14, 19, 20, 21, 22

Article 8.5: As an initial comment, we note that the term "*area of the zone*" is not defined.

Article 8.6: "*limited number of sampling points*" is not defined. We therefore suggest the following text:
"[…] monitor other relevant polycyclic aromatic hydrocarbons at ***~~a limited number of sampling points~~ the highest polluted sampling point in zones exceeding the assessment threshold, and in any case at monitoring supersites (Article 10)****."*

Article 9 - Annex IV B, C, D, Annex III, Art 9.4 (Annex VII.2.A-C), definitions (article 4) points 11, 12, 23, 24

Article 9.1: Ozone should be included in the list of pollutants in the first sentence instead of being mentioned in an additional (second) sentence.

Art. 9.3: Instead of "*relevant*", "*respective*" should be used:
"3. For zones where the level of pollutants exceeds the ***~~relevant~~ respective*** *assessment threshold specified in Annex II, […]"*

Art. 9.5: In the first sentence after "distribution" the words "of sampling points" are likely missing. We suggest adding „[…] the distribution ***of sampling points*** *used for the calculation […]"*

Article 10 - Art 10.6 (b) (Annex VII.1), definitions (article 4) points 4, 10, 13, 25

The wording "*per 10 million*" is ambiguous and could lead to different interpretations:
- 1 sampling point per complete 10 million (hence, a second one upon > 20 Mio);
- 1 sampling point per incomplete 10 million (hence, a second one upon > 10 Mio);
- incomplete millions are to be rounded (hence, a second one upon > 15 Mio).

Therefore, clarification is needed how to interpret "*per x million inhabitants*".

We also propose that monitoring of Levoglucosan should be required at supersites due to the possible increasing relevance of emissions from biomass burning. This has also been recommended by AQUILA. The procedure for measuring Levoglucosan is standardized by CEN TC264/WG21.
In this case, a definition of Levoglucosan should be added to Art. 4 and Levoglucosan should be added to the list of pollutants in Art. 4 para. 8.

Annex III A 2 – point sources and Annex IV B 4:

It is unclear, how the application of BAT could be monitored by AQ measurements. Clarification is needed.

Annex III B and D

The wording "*per million*" and "*per 5 million*", respectively, is ambiguous (compare already above for Article 10), clarification is needed.

Annex IV B. 2 g and Annex IV B 2 d after the second sentence:

We propose adding a reference to the „*Guidance Document on the estimation of Spatial Representativeness and of Exceedance Situation Indicators*“, since currently no criteria for the term “*representative*” are provided.

Note: The second list of enumerations following the sentence “*When defining the spatial representativeness […]*” requires an upper structure unit.

Annex IV B. 4

Regarding the criteria for rural locations for ozone assessments “*at open area sites, but not on summits of higher mountains*”: Summits of higher mountains can be representative for the exposure of alpine vegetation and ecosystems. In addition, “*higher mountains*” are not defined. We therefore propose the following text instead:

*“Rural locations for ozone assessments: […] at open area sites**, but not on summits of higher mountains**.”*

*“Rural background locations for ozone assessment: […] avoid locations which are subject to locally enhanced formation of ground-near inversion conditions**, also summits of higher mountains**”*

Ministry of Climate and Environment
Republic of Poland

Warsaw, February 15, 2023

Comments of the Republic of Poland to the article 1-6 Proposal for a Directive of the European Parliament and of the Council on ambient air quality and cleaner air (recast)

General comment:

Poland raises a scrutiny reservation on the entire Proposal for a Directive of the European Parliament and of the Council on air quality and cleaner air (AAQD).

Detailed comments

Art. 1 "Objectives"

Is it possible to clarify the provisions in Art. 1, due to the fact that the article entitled objectives should be clearly defined? Which pollution levels should be considered harmless to health and ecosystems, to be reached by 2050. How then to transpose into national law an unspecified purpose?

- **Para 1**
  The concept of "progressively improved" is also incomprehensible. Should it be understood that the draft proposes 2-stage acceptable levels (but not with "0" values), or does this wording refer to Art. 3?
- **Para 2**
  What was the purpose of marking all the criteria listed in para 2, as air quality standards introduced in the appendix with brackets, or the designation of long-term objectives as air quality standards, because these designations are unclear and incorrect? Not all levels indicated in para 2 are air quality standards, e.g. long-term objectives.
- **Para 3**
  Proposed provision of para 3 has a similar wording to the preamble, not a legal provision. Is it possible to reword it and move it to the preamble?

Article 3 "Regular review"

We propose to supplement art. 3 for additional review requirements, i.e. an analysis by the EC of technical and technological possibilities, costs and socio-economic consequences of further tightening of air quality criteria in each individual Member State.

Article 4 "Definitions"

- **Point 2)**
  The definition of "pollutant" is inconsistent with the wording of "zero pollution", the purpose of the directive in art. 1. It is proposed to clarify to amend art. 4 point 2 so that the" pollutant" means only pollution from human activity.
- **Point 3**
  Deleted "a" after point 3
  Why the definition of target value was removed (target value remains in the draft directive for ozone)?
- **Point 6**

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Ministry of Climate and Environment

The definition of PM2,5 refers to the old EN 14907 standard - now it is the EN12341 -standard.

Deleted "c" and "d"

Poland opposes the removal of the distinction between upper and lower assessment thresholds (upper and lower assessment thresholds) for the so-called five-year air quality assessments. This is due to the tightening of these thresholds for individual pollutants in specific regulations. It should be explained that there are no appropriate measurement methods for measuring such low concentrations, e.g. the assessment threshold for B(a)P at the level of 0,12 ng/m^3). Leaving this provision as it is will additionally force an increase in the number of measuring stations, and thus a significant increase in financial outlays for air quality monitoring.

- **Point 8**
  Following the discussion at the WPE, Pb should be included in this provision.
- **Point 11 and 12**
  Why the list of volatile organic compounds - VOCs that would be measured by Member States is increased from 27 + total non-methane hydrocarbons (in the current Directive 2008/50/UE, Annex X) to 45 in the draft Directive (Annex VII)?
  Why does AAQD increase the number of stations where VOCs are to be measured (from one station to one or more)?
- **Point 13**
  Poland raises a scrutiny reservation on obligation to measure BC (black carbon) as eBC, while not specifying the reference method in Annex VI (no CEN standard). Leaving the provision in its current wording would mean that Member State will investment in the establishment of measuring stations and financial outlays for measurements of unknown quality and without the possibility of comparing them with other countries due to the possibility of using different methods and devices. This is against art. 2 sec. 2 of the draft AAQD, which indicates that assessment methods and criteria should be common to all Member States. In addition, it should be emphasized that BC measurements are very expensive.
- **Point 14**
  This provision, which indicates the introduction of an obligation to measure UFP, while not specifying the reference method in Annex VI (no CEN standard), means that Member States will investment in stations and financial outlays in measurements of unknown quality and without the possibility of comparing them with other countries due to the possibility of using different methods and devices. This is against to Art. 2 sec. 2 of the draft AAQD.
  As long as reference measurement methods are not developed, such measurements should remain only in the field of scientific research.
- **Point 18**
  We have concerns regarding tightening the assessment thresholds, often even below the current lower assessment threshold (e.g. for PM2,5, the current assessment thresholds are: lower: 12 µg/m^3, upper 17 µg/m^3, while the proposed the draft AAQD is 5 µg/m^3).
- **Point 20**
  It' necessary to clarify the definition. Unclear term "less strict" in the description of indicative measurements.
- **Point 22**
  How to specifically designate an "explicitly delineated geographical area"?
  Poland do not agree to include the strict definition of the spatial representativeness in the proposal as it is now proposed. We propose to delete art. 4 p. 22 of the proposal. For over 20 years the Commission has not provided sound guidelines for delimitation of an area of spatial representativeness of a station, one reference method for doing so, etc. The numerous variations of the term spatial

representativeness of a station presumably first occurred in 1999/30/EC directive and then after it in following other daughter directives of the framework air quality 1996/62/EC directive and after that in the 2008/50/EC directive but there was never before definition of it in the EU law. Still after countless meetings, projects, presentations, etc. a Member State is left alone with the decision which method to choose, as there are no clear guidelines from the Commission which method is correct. There are many approaches and each method brings different results. Therefore having in mind that situation introducing a strict definition of spatial representativeness of a station without the Commission guidelines regarding delimitation of the areas available now for all Member States to evaluate is unacceptable.

- **Point 24**
  The definition will also include stations that measure pollution in relation to plant protection. However, the definition refers only to representativeness for the population.
- **Point 27**
  Definition in connection with the proposal to leave the "target level" only for ozone. A target level should also be defined for B(a)P, As, Cd and Ni.
- **Point 29-30**
  It's necessary to clarify these definition
- **Point 31**
  It would be reasonable to specify why the phrase "fixed on the basis of scientific knowledge was removed from the definition"?
- **Point 35**
  Poland asks for clarification whether drift from agricultural fields will be treated as the share of pollutants from natural sources, or as caused indirectly by human activity?
- **Point 36**
  Previous version of the definition relating to air quality plans was much better suited and we prefer to come back to this wording
- **Point 37**
  Poland asks for clarification of the definition of "short-term action plans", including in particular what should be understood by the term "emergency measures".
- **Point 39**
  <u>Scrutiny reservations</u>
  It's still not known what persons belonging to "sensitive populations and vulnerable groups" are. What does this definition contribute to the project AAQD?

CZECH REPUBLIC

Comments to the art. 1 – 11, and Annex II – VII of the proposed revision of the ambient air quality directive.

CZ thanks the SE Presidency for the opportunity to send written comments to the proposed revision of the ambient air quality directive. CZ still has scrutiny reservations therefore the below mentioned comments are preliminary.

Ad Art. 1 (Objectives) para 1:

CZ notes that the definition of the term "zero pollution objective" is missing. CZ proposes the definition under Art. 4.

CZ also suggests to amend para 1 to reflect the fact that most pollutants do not have a save threshold beyond which they no longer pose a threat for human health. Given the fact that future scientific evidence might suggests 0 µg/m3 as a save level for human health protection which is unrealistic to achieve in Europe, the directive should not foresee future air quality objectives for 2050. CZ suggests therefore the following:

1. This Directive sets out a zero pollution objective for air quality, so that within the Union air quality is progressively improved as much as possible to levels ~~no longer considered harmful to human health and natural ecosystems, as~~ ~~defined~~ suggested by scientific evidence for human health protection, thus contributing to a "toxic-free environment" at the latest by 2050.

Ad Art. 1 (Objectives) para 2:

In the art. 1 para 2 the term "intermediate" is used without any explanation. CZ suggests to link the "intermediate" term with "air quality standards" mentioned in this para. CZ also suggests to remove the year 2030 since not all "air quality standards" mentioned in para 2 are to be met by 2030. CZ also points out that it should be made clear here and in the definition in art. 4 that that "intermediate air quality standards" provide a less decree of human health protection compared to zero pollution objectives set for 2050 mentioned in art. 1 para 1 which is clear also from the definition of WHO interim targets. CZ therefore suggests to amend para 2 as follows:

2. This Directive sets intermediate air quality standards aiming to move the Union air quality closer to the zero pollution objectives mentioned in this Article. Intermediate air quality standards include limit values, target values, average exposure reduction obligations, average exposure concentration objectives, critical levels, information thresholds, alert thresholds and long-term objectives ~~('air quality standards') to be met by the year 2030, and~~. Intermediate air quality standards will be regularly reviewed thereafter in accordance with Article 3.

CZ suggests the definition for "intermediate air quality standards" under art. 4.

Ad Art. 2 (Subject matter) para 1:

CZ suggests to make clear in this paragraph that air quality standards cannot avoid/prevent harmful effects on human health. CZ notes that even the WHO guidelines aim at reducing the

burden of disease attributable to air pollution, not avoiding/preventing health impacts. CZ points out that it is important to set realistic expectations for the public concerning the ability of the intermediate air quality standards to protect human health. This will be crucial if the art 28 aiming at compensating the damage on human health stays unamended as proposed by the COM. CZ suggests therefore the following:

1. measures defining and establishing objectives for ambient air quality designed to ~~avoid, prevent or~~ reduce harmful effects on human health and the environment;

Ad Art. 2 (Subject matter) para 3:

CZ would like to point out that air quality monitoring alone cannot help us to distinguish the impact of national measures from the impact of Union measures. This would require to carry out a model of the air quality.

CZ suggests therefore to amend the para 3 as follows:

3. measures for monitoring ambient air quality long-term trends and joint impacts of Union and national measures on ambient air quality;

CZ further points out that para 3 highlights the impact of measures taken on the Union level, CZ view this as a step in the right direction given the fact that based on the impact assessment it is clear that air quality improvement depends heavily on measures taken on the Union level. CZ hereby supports further establishing joint responsibility for the air quality in this directive. CZ suggests to reflect the joint responsibility in the definition of zero pollution objectives and intermediate air quality standards under Art. 4.

Ad Art. 3 (Regular review) para 1:

CZ generally agrees that it is important to take into consideration new scientific findings and evidence and to keep the air quality objectives of the directive as much "UpToDate" as possible.

However, CZ does consider the timeline for the review do not seem to be appropriate. The findings of the first review will be available one year before the "intermediate" air quality standards are to be achieved. Therefore, there is a risk that MS will prepare air quality plans that might be deemed obsolete one year before their measures are fully implemented. This could lead to misleading conclusions given the fact that COM shall consider during the review also other sources of information beyond scientific evidence related to air pollutants (as stated in point b – d).

Moreover, reviewing the air quality standards before 2030 might confuse the public leading to litigations under art. 27 and 28. It also might discourage green investments (Art. 3 indicates, that it is unclear whether the "intermediate" air quality standards are set on a sufficient level and it also might give the impression that it might be "worth" waiting for the first review to happen before the investment is made). Or it might make it very difficult to justify green investment into achieving air quality standards that might not "last" even till 2030.

CZ suggests to leave the period up to 2030 uninterrupted and to initiate the review after 2030 building on the lessons learned up to 2030. This would enable the COM to fully take on board the progress made in implementing national and Union measures as expected in point d) of the

para 2 of this article. The first review should take place around 2032 given the availability of air quality data and data regarding the implementation of national/Union policies. CZ also views the 5 year period for the regular rewires to be too short, CZ suggests not to specify the period in para 1 to make the instrument more flexible.

CZ also points out, that it should be further clarified in the revised directive how the data mentioned in points a) to d) should be taken into consideration. For example, would slow progress in the air quality improvement lead to less stringent air quality standards compared to the scientific recommendations of the time?

CZ suggests to amend para 1 as follows:

1. By 31 December ~~2028~~2032, and ~~every 5 years~~ then as frequently as necessary thereafter, ~~and more often~~ if substantial new scientific findings point to the need for it, the Commission shall review the scientific evidence related to air pollutants and their effects on human health and the environment relevant to achieving the objective set in Article 1 and present a report with the main findings to the European Parliament and to the Council.

Ad Art. 4 (Definitions): general comment

CZ notes that art. 4 is missing a definition of "transboundary air pollution" used in art. 21. CZ suggests to add new definition of "transboundary air pollution" in art. 4 in order to clarify the aim of art. 21. CZ suggest the following definition:

(X1) 'transboundary air pollution' means natural or anthropogenic air pollution originating from sources located outside the territory of a given Member State which cannot be directly influenced by measures taken by this Member State

CZ also suggests definition for zero pollution objective and intermediate air quality standards mentioned in Art. 1.

(X2) 'zero pollution objective' means a level of air quality suggested by scientific evidence for human health protection that the relevant Union institutions and the Member States strive to achieve as much a possible by 2050 using cost effective and technically feasible measures;

(X3) 'intermediate air quality standards' mean limit values, target values, average exposure reduction obligations, average exposure concentration objectives, critical levels, information thresholds, alert thresholds and long-term objectives which are fixed on the basis of scientific evidence for human health protection, to be achieved by relevant Union institutions and the Member States in order to move closer towards zero pollution objective;

Ad Art. 4 (Definitions) para 15:

CZ points out that the recital 8) associates zones with population density ("It is therefore appropriate to classify the territory of each Member State into zones reflecting the population density."). The definition of zone in art. 4 para (15) however indicates that zone is a part of territory of a MS delimited by a MS regardless of population density. Recital 8) should be therefore corrected to avoid confusion. CZ points out that majority (if not all) zones are delimited with respect to administrative units corresponding to certain administrative powers of local/regional authorities in a given MS regardless of population density.

Ad Art. 4 (Definitions) para 23 and 24:

CZ points out that the term "general" is not clear. CZ suggest to substitute it with the term "majority" instead. CZ suggest therefore the following:

(23) 'urban background locations' means places in urban areas where levels are representative of the exposure of the ~~general~~ majority of the urban population;

(24) 'rural background locations' means places in rural areas with low population density where levels are representative of the exposure of the ~~general~~ majority of the rural population;

Ad Art. 4 (Definitions) para 26 and 27:

As CZ explained under Art. 2 para 1 CZ suggests to amend the para 26 a 27 as follows to set realistic expectations of the ability of air quality standards to improve health. CZ points out that the term "avoid and prevent" is missing also in para 28, 29 and 30. CZ therefore suggest to define all air quality standards in a harmonised way.

(26) 'limit value' means a level which is not to be exceeded and which is fixed on the basis of scientific knowledge, with the aim of ~~avoiding, preventing or~~ reducing harmful effects on human health or the environment;

(27) 'ozone target value' means a level fixed on the basis of scientific knowledge, with the aim of ~~avoiding, preventing or~~ reducing harmful effects from ozone on human health or the environment to be complied with where possible over a given period;

Ad Art. 4 (Definitions) para 33 and 37:

CZ believes that it is necessary to clarify in para 33 and 37 that in case of exceedance of alert threshold measures should be taken only if appropriate, similarly like it is drafted in the text of recital 23. CZ points out that the Copernicus Atmosphere Monitoring Service annual reports clearly show that serious pollution episodes are often caused by abnormal meteorological conditions together with pollution sources located in several MS. The ability of MS to reverse the pollution episodes are therefore very limited.

CZ therefore proposes the following wording for para 33 and 37:

(33) 'alert threshold' means a level beyond which there is a risk to human health from brief exposure for the population as a whole and at which immediate steps are to be taken by Member States, if appropriate;

(37) 'short-term action plans' means plans that set out emergency measures to be taken in the short term, if appropriate, to reduce the immediate risk or the duration of the exceedance of the alert thresholds;

Ad Art. 4 (Definitions) para 38 and 39:

CZ points out that the definitions of “the public concerned” and “sensitive population and vulnerable groups” are not very clear and therefore they can be interpreted differently amongst Member States. Clarification is therefore needed.

Ad Art. 9 para 6:

CZ points out that to this day it is unclear how should the MS take into account the results of modelling applications and indicative measurements. Para 6 does not provide any additional guidance on this issue. CZ would welcome any clarification on this issue. CZ notes that it is unclear what steps should be taken if modelling applications indicate additional or new exceedances that where not detected by sampling points. It should be clarified whether exceedance registered by sampling points are superior to the exceedances indicated by the modelling applications.

Ad Annex III.A table 2:

CZ points out that the table 2 is labelled as a minimum number of reduced sampling points for ozone, however it should be probably labelled as the minimum number of the unreduced sampling points since the reduced number of sampling points is already included in table 4.

Ad Annex III.A (text under table 4):

CZ points out that “at least 1 background location” should be specified more precisely if it is meant “rural background or urban background location”.

CZ points out that "measuring the contribution of transport emissions" should be more precisely specified in the sense of "traffic station".

CZ points out that wording “the total number of urban background location sampling points and the total number of sampling points where the highest concentrations occur required shall not differ by more than a factor of 2” is vague. It should be probably specified in the sense of “traffic station” since e.g. the highest concentration of PM or CO could be in industrial areas or in areas with the local heating i.e. urban background localities.

CZ points out that "factor 2" should be more precisely specified probably in the sense of “ratio”.

Ad Annex III.A point 2:

CZ points out that the implementation of this requirement concerning assessment of pollution in the vicinity of point sources proved to be difficult in praxis since it is unclear how to choose such locations and whether these sampling points can overlap with sampling points for diffuse sources.

Ad Annex III.D:

CZ notes that the siting criteria for UFP monitoring stations is very vague ("at locations where high UFP concentrations are likely to occur"). CZ points out that there could be thousands of suitable locations therefore some UFP specific site selection mechanism should be foreseen in the directive or in guidance documents.

Ad Annex V.A:

CZ would welcome further clarification regarding the interpretation of the uncertainty of the fixed measurement in praxis. For example, in situation where the measured concentration is close to the limit value (e.g. annual $PM_{2,5}$ is measured at 9 $\mu g/m^3$ +/- 3 $\mu g/m^3$ (uncertainty of measurement) - can it be concluded that the limit value is exceeded or not?).

Ad Annex V.C:

CZ disagrees with the mandatory assessment of compliance with limit values based on data not meeting the data quality objectives. This defeats the purpose of the data quality objective and quality assurance and will increase the uncertainty of air quality assessment. CZ suggest to consider modelled data as a substitute for unsatisfactory measured data and to make this process optional. CZ proposes the following:

C. Methods for assessing compliance and estimating statistical parameters to account for low data coverage or significant data losses

An assessment of compliance with the relevant limit and ozone target value ~~shall~~ may be carried out regardless of whether the data quality objectives are achieved, provided the available data, including modelled concentrations, allows for a conclusive assessment. ~~In cases relating to the short-term limit and ozone target values, measurements that only cover a fraction of the calendar year, and that have not delivered sufficient valid data as required by Point B, may still constitute non-compliance. Where this is the case, and there are no clear grounds to doubt the quality of the valid data acquired, this shall be considered an exceedance of the limit or target value and be reported as such.~~

THE NETHERLANDS

Comments of the Netherlands – Commission Proposal on the revision of the Air Quality Directive – Articles 1-11

Article 1

- We agree with the goal ('zero pollution objective') set in 1.1.
- This is the first time the wording 'toxic-free environment' is used in connection with the air quality standards. Of course the substances regulated with this directive are harmful, but we think this could be confusing. We propose to replace 'toxic-free environment' for 'environmentally safe status, which is also used in the Water Framework Directive and the European Marine Strategy Framework Directive.
- 1.2 and 1.3 could be removed altogether, the statement of 1.2 is too obvious, the reference to the 8th Environment Action Programme is already be made in recital 6.
- The Netherlands supports the proposal made by several Member States about including a statement about shared responsibility between Commission and all Member States to ensure coordinated policy development. Only with measures in all policy domains (e.g. emission source control, climate, energy, innovation and economy), and the prevention of negative tradeoffs, Member States will be able to fulfill their obligations regarding air quality standards. Only when neighboring Member States and other countries around the globe do their utmost to reduce emissions that lead to elevated concentrations in (other) Member States, those Member States can fulfull their obligations. Therefore cooperation and shared responsibility is necessary, including coordinated action in the international arena, where Member States and Commission negotiate with third countries.
- We trust that a good wording of this can be found which respects the roles of Commission and Member States.

Article 2

The Netherlands does not have any comments.

Article 3

- The Netherlands support the periodic review of scientific evidence and other aspects in order to decide on a revision of the air quality standards.
- We think the first review of the five-years-cycle could be started at the moment this directive comes into force.
- The list of issues that the Commission should take into account should also include:
    - Emission projections on basis of inter alia agreed or planned climate and energy policy measures;
    - Regulations on transboundary control of air pollution such as the standards of the National Emission Reduction Commitments (NEC) Directive, and protocols under the Convention on Long-range Transboundary Air Pollution (Air Convention).

Article 4

- General: The Netherlands is reassured that the definitions of all concepts will be dealt with at the moment the articles in which these concepts appear for the first time in the text.
- Definition 8: We agree that 'lead' should be added.

- Definition 14: The Netherlands agrees with the proposed definition of ultrafine particles.
- Definition 16: The Netherlands proposes to remove the concept of 'agglomeration' from the directive (see also Article 6), and limit area delineation to zones and NUTS-1.
- The Netherlands has a study reservation for the following definitions:
    - Definition 21 "objective estimation", the definition is vague.
    - Definition 22 "spatial representativeness", the definition is vague.
    - Definition 24 "rural background locations", the definition is vague.
    - Definition 25 "monitoring supersite".

Article 5

- The Netherlands does not have any comments.

Article 6

- The Netherlands proposes to remove the concept of 'agglomeration' from this directive. The Commission proposes to remove it in most articles. Why not everywhere? This will increase the clarity of the directive. If 'agglomeration will be retained, then the question remains who decides if it is necessary to define by a Member State?

Article 7

- 7.1: What does "each zone shall be classified in relation to those assessment tresholds" mean? What type of classification?

Article 8

- 8.3: Does the modelling and indicative measurement requirement apply for all pollutants or only the pollutant of which the limit/target value has been exceeded?
- 8.4: What is the consequence if during the calendar year that additional fixed or indicative measurement shall be used to assess the concentration level of the pollutant, the measurements indeed show that the concentration level exceeds the limit/target value of that pollutant?

Article 9:

- (No comments yet, further study is needed.)

Article 10:

- General question: What is the idea behind the monitoring supersites?
    - Motivation for this question: Other articles and the annexes of the directive indicate that fewer sampling points may be installed if the concentration of a pollutant is below a threshold. Monitoring supersites introduce a new measurement obligation in regards to those pollutants. This seems to contradict the idea of fewer sampling points (which would lower costs and capacity).
- General question: What is the estimated cost of one monitoring supersite?
- 10.1: How many monitoring supersites should be installed in the Netherlands? Is our understanding that 2 monitoring supersites should be sufficient?
- 10.4: Can or can the Netherlands not work together with for example Belgium to meet the requirements set in paragraph 1?
- 10.5: What is the definition of oxidative potential? It is missing in the list of definitions.
- 10.8: Study reservation.

Article 11

- In the detailed explanation of the specific provisions of the proposal it explains that for article 11 “A new requirement is added that requires all data to be reported and to be used for compliance assessment purposes, even if they do not meet the data quality objective”. However in actual text for article 11, no such text or reference is made to this obligation. How should we interpret this article?

The Federal Government

GERMANY

Air Quality Directive: Proposal for a Directive of the European Parliament and of the Council on ambient air quality and cleaner air for Europe (recast)

Im Nachgang zur Ratsarbeitsgruppe vom 23. Januar 2023 werden folgende Kommentare zu den Artikeln 1-7 des oben genannten Richtlinievorschlags vorgelegt:

- Deutschland dankt der Kommission für die Beantwortung der Fragen am Anfang der Sitzung der Ratsarbeitsgruppe am 23.1.23, bittet aber zusätzlich um eine schriftliche Beantwortung, da sich die Fragen zum Teil sehr detailliert auf die Zahlen und Annahmen, die dem Vorschlag der Kommission zugrunde liegen, bezogen.]
- Zunächst sieht Deutschland im Hinblick auf die Richtlinie Anpassungsbedarf im Hinblick auf die Verantwortung: in einer künftigen Luftqualitätsrichtlinie sollten EU und Mitgliedstaaten eine **gemeinsame Verantwortung für die Einhaltung künftiger Grenzwerte und Minderungsverpflichtungen** tragen.
- In vielen Fällen könnten **lokale Minderungen alleine nicht ausreichen**, um eine hinreichende Reduzierung der Luftbelastung zu erreichen.
- Die Mitgliedstaaten sind – neben nationalen und lokalen Maßnahmen – auf eine anspruchsvolle und zugleich umsetzbare Emissionsgesetzgebung der EU angewiesen, für die die Kommission das alleinige Initiativrecht hat: die **Emissionsgesetzgebung ist bei den meisten Emittenten zwischenzeitlich auf EU-Ebene geregelt.**
    - **Beispiele hierfür sind die IED- Industrieemissionsrichtlinie, MCPD – Mittelgroße Feuerungsanlagen-Richtlinie, Ökodesign-Verordnungen, Emissionsgesetzgebung für Pkw, leichte und schwere Nutzfahrzeuge.**
    - Die Mitgliedstaaten können in diesen Bereichen nicht mehr bzw. nur sehr eingeschränkt eigenständig agieren.
- Eine gemeinsame Verantwortung hätte zudem den Vorteil, dass die Luftqualität flächendeckend besser wird und nicht nur an Belastungsschwerpunkten. Dabei ist auf Angemessenheit und eine ausgewogene Kosten/Nutzen-Abwägungen der Emissionsgesetzgebung zu achten.
- Maßnahmen überwiegend technischer Natur, die im Rahmen der EU-Emissionsgesetzgebung festzulegen sind, spielen hier eine entscheidende Rolle. Diese

Maßnahmen sind für die Betroffenen oftmals verhältnismäßiger und damit auch kostengünstiger als Maßnahmen, die die Aktivitätsraten reduzieren, also bspw. ein Verwendungsverbot von Einzelraum-Holzfeuerungsanlagen oder Maßnahmen zur Verringerung des Verkehrsaufkommens (z.B. Fahrverbote). Dies bedeutet nicht, dass mögliche zukünftige Maßnahmen zur Einhaltung der vorgeschlagenen Grenzwerte, die langfristig wirken, z.B. auf die Veränderung des Mobilitätsverhaltens, oder zur Senkung lokaler Emissionen an Belastungsschwerpunkten notwendig sind außer Acht gelassen werden. Diese Maßnahmen müssen jedoch im Hinblick auf die genannten Kriterien genauer bewertet werden.

- Deutschland bittet die EU Kommission um Bestätigung, dass die in der Folgenabschätzung zur Luftqualitätsrichtlinie zugrunde gelegten Annahmen zu möglichen Einsparbeiträgen einzelner Emissionsbereiche kongruent mit den aktuellen finalen KOM-Vorschlägen Emissionsgesetzgebung sind und es hier keine Abweichungen gibt (z.B. Euro7).
- Bezüglich **Artikel 3 Absatz 1** hat Deutschland Klärungsbedarf, ob im Fall einer **Revision** alle fünf Jahre zwischen den Zyklen aus Verhandlungen auf EU-Ebene und (rechtlicher) nationaler Umsetzung noch genügend Zeit bleibt, die Wirkung auf die Luftqualität zu betrachten. Hier wäre Deutschland für weitere Erläuterungen der Europäischen Kommission dankbar.
- In **Artikel 3 Absatz 2** stellt sich die Frage, ob nicht auch Informationen aus Mitgliedsstaaten, über die reinen Daten der Luftqualität hinaus, als Grundlage der Überarbeitung der RL genutzt werden sollten.
- In **Artikel 4 Absatz 13 und 14** wird die **Definition** von **Black Carbon** und **ultrafeinen Partikeln (UFP)** angesprochen. Beide Definitionen sollten noch einmal geprüft werden
    - In Absatz 14 wird **Black Carbon** definiert. Grundsätzlich gibt es mehrere Meßmethoden, auf denen die unterschiedlichen Definitionen (organic Carbon, elemental Carbon, …) von Black Carbon basieren. Wieso wurde in Absatz 14 Ruß nur als eBc definiert? Wurde die Definition, die damit verbundene Meßmethode und dementsprechend auch mögliche Minderungsmaßnehmen auf Kohärenz mit der Emissionsgesetzgebung der verschiedenen Sektoren geprüft? Ist die Definition in Übereinstimmung mit den einschlägigen Europäischen Normen? Hier bittet Deutschland um Erläuterung der Europäischen Kommission.
    - Bezüglich **UFP** bitte Deutschland die Kommission um Erläuterung, warum keine Obergrenze für die Größenverteilung festgelegt wurde? Wäre eine einheitliche Vorgabe für die Messung von UFP nicht erforderlich, um später epidemiologische Studien durchführen zu können? Ist die Definition in Übereinstimmung mit den einschlägigen Europäischen Normen?

- In **Artikel 4 Absatz 21** bittet Deutschland die Europäische Kommission um Erläuterung, ob „statistical tools“ als „equivalent to modelling tools“ angesehen werden. Und sind mit dem terminus „remote sensing“ „satellite data“ gemeint, oder auch andere Techniken?
- In **Artikel 4 Absatz 22** bittet Deutschland die Kommission um Erläuterung, wer das „predefined tolerance level“ festlegen soll und wie.
- In **Artikel 4 Absatz 28 und 29** wird auf die **NUTS 1 Level** Bezug genommen. Im Falle von Stadt-Staaten sind diese Regionen in Deutschland jedoch sehr klein im Vergleich zu den übrigen Regionen. Möglicherweise gibt es auch in anderen MS Unterschiede in der Größe der NUTS1-Regoinen. Hier für die MS Flexiblität im Hinblick auf eine ausgewogene Umsetzung eingeräumt werden.
- In **Artikel 4 Absatz 38** ist unklar, was mit dem Terminus „meeting any requirements“ im Zusammenhang mit der **betroffenen Öffentlichkeit** gemeint ist. Hier wäre Deutschland für weitere Erläuterungen dankbar.
- Bzgl. **Artikel 5** (**Verantwortungsbereiche**) bittet Deutschland um eine Erläuterung, aus welchen Gründen bei der Anerkennung von Messeinrichtungen (Buchstabe b) sowie den Vorgaben für die Modellierung (Buchstabe d) auf EU-weite Vorgaben verzichtet werden soll und inwieweit die Vergleichbarkeit auf diese Weise gewährleistet werden kann?

Courtesy Translation - **German Comments on the Air Quality Directive: proposal for a Directive of the European Parliament and of the Council on ambient air quality and cleaner air for Europe (recast)**

Following the Working Party on the Environment on 23 January 2023, we submit the following comments on Articles 1-7 of the above proposal for a directive:

- Germany thanks the Commission for answering the questions at the beginning of the WPE meeting on 23 January 2023, but requests an additional written response because the questions, to some extent, referred in great detail to the numbers and the assumptions underlying the Commission proposal.
- First, Germany believes that the directive needs to be adapted with regard to responsibility. In a future air quality directive, the EU and the member states should bear **joint responsibility for compliance with future limit values and mitigation requirements**.
- In many cases, **local mitigation efforts alone might not be sufficient** to attain appropriate reduction of air pollution.
- In addition to national and local measures, the member states need ambitious and also implementable emissions legislation from the EU, for which the Commission has sole right of initiative. **Emissions legislation is now stipulated at EU level for most emission sources.**
    - **Examples include the Industrial Emissions Directive (IED), the Medium Combustion Plant Directive (MCPD), the Ecodesign regulations, emissions legislation for passenger vehicles and light and heavy commercial vehicles.**
    - In these areas, member states can no longer act on their own or only in a very limited way.
- Joint responsibility would also have the advantage of improving air quality everywhere and not only at pollution hotspots. At the same time, it is necessary to ensure that emissions legislation is appropriate and strikes a balance between cost and benefit.
- Measures mainly of a technical nature play a crucial role here. These measures are to be defined by EU emissions legislation. Such measures are often more proportionate for those affected and are therefore also less costly than measures that reduce activity rates, such as a ban on single-room wood burning installations or traffic reduction measures (e.g. driving bans). This does not mean ignoring potential future measures that ensure compliance with the proposed limit values in the long term, e.g. by changing mobility behaviour or that are needed to reduce local emissions at pollution hotspots. These measures must, however, be evaluated more closely with regard to the mentioned criteria.

- Germany would like confirmation from the Commission that the basic assumptions on potential savings in specific emissions areas used in the impact assessment of the AAQD

match the current final Commission proposals for emissions legislation and that there are no discrepancies on this point (e.g. Euro 7).

- Regarding **Article 3(1)**, Germany needs clarification on whether, in the case of **review** every 5 years, enough time will be left for considering the impact on air quality between the cycles of negotiations at EU level and (legislative) national implementation. Germany would be grateful for further explanation from the Commission on this point.
- **Article 3(2)** raises the question of whether the revision of the directive should not also rely on information from member states beyond pure air quality data
- **Article 4(13) and (14)** address the **definition** of **black carbon** and **ultrafine particles (UFP)**. Both definitions should be reviewed again.
    - Paragraph 13 defines **black carbon**. Generally, there are multiple measurement methods on which the various definitions of black carbon (organic carbon, elemental carbon) are based. Why is black carbon only defined as eBC in paragraph 13? Were the definition, the associated measurement method and accordingly also potential mitigation measures reviewed for coherence with the emissions legislation for the various sectors? Is the definition compatible with the relevant European standards? Germany requests further information on this point from the Commission.
    - Regarding **UFP**, Germany would like explanation from the Commission on why no upper limit was established on size range. Would subsequent epidemiological studies not require a uniform rule on UFP measurement? Is the definition compatible with the relevant European standards?
- Regarding **Article 4(21)**, Germany requests that the Commission clarify whether statistical tools are viewed as equivalent to modelling tools. And does the term "remote sensing" mean satellite data or also other methods?
- Regarding **Article 4(22)**, Germany would like the Commission to explain who will determine the pre-defined tolerance level and how.
- **Article 4(28) and (29)** refer to **NUTS 1 level**. However, in Germany, the city-states are very small in comparison to the other regions. There may be differences in the size of the NUTS 1 regions in other member states as well. The member states should be granted flexibility for a balanced implementation.
- In **Article 4(38)**, it is unclear what the phrase "meeting any requirements" is intended to mean in the context of "**the public concerned**". Germany would appreciate further clarification here.
- With regard to **Article 5 (Responsibilities)**, Germany would like the Commission to explain why there will be no EU-wide requirements on approving measurement systems (Article 5(b)) and ensuring the accuracy of modelling (Article 5(d)). We would also like to know to what extent this approach can guarantee comparability.

MINISTERIO PARA LA TRANSICIÓN
ECOLÓGICA Y EL RETO DEMOGRÁFICO

SECRETARÍA DE ESTADO DE MEDIO AMBIENTE

DIRECCION GENERAL DE CALIDAD Y EVALUACIÓN AMBIENTAL

SG CALIDAD DE AIRE LIMPIO Y SOSTENIBILIDAD INDUSTRIAL

Proposal for a Directive of the European Parliament and of the Council on ambient air quality and cleaner air for Europe (recast) - Comments from Spain to articles 1 to 11

16/02/2023

CHAPTER I: General Provisions

Article 4: Definitions

Art 4.5 and 4.6: References to EN Standards are incorporated in definitions for PM10 (and also for PM2,5). While EN standards are a reference framework, their development and revision process does not follow the same scrutiny as the development of a legislative proposal and their possible amendments could have an impact on the reference methods used and unintended effects. Also, references not including the time version could imply issues in its application. Thus, we consider that it may not be correct introducing dynamic references to EN standards in the articulate and they should only be referred in the annexes.

Also, it should be noted that the correct definition of PM2.5 is described in EN 12341 :2014 since EN 14907 is no longer in force.

We propose to eliminate the reference as follows:

(5) ~~18.~~ 'PM_{10}' ~~shall mean~~ ⌦ means ⌫ particulate matter which passes through a size-selective inlet as defined in the reference method for the sampling and measurement of PM_{10}, ~~EN12341~~ , with a 50 % efficiency cut-off at 10 µm aerodynamic diameter;

(6) ~~19.~~ '$PM_{2.5}$' ~~shall mean~~ ⌦ means ⌫ particulate matter which passes through a size-selective inlet as defined in the reference method for the sampling and measurement of $PM_{2.5}$, ~~EN 14907,~~ with a 50 % efficiency cut-off at 2,5 µm aerodynamic diameter;

Art 4.8: lead should be added to the definition of arsenic, nickel, cadmium and benzo(a)pyrene.

We propose modify the definition as follows:

(8) ~~(11)~~'arsenic', 'cadmium', 'nickel', **'lead'** and 'benzo(a)pyrene' mean the total content of these elements and compounds in the PM_{10} fraction;

Also, for consistency, it is noted that **definitions of other pollutants dealt in the proposal are not defined (SO2, O3, CO and C6H6)** and maybe their definitions could be added.

Art 4.11: Directive 2016/2284 on the reduction of national emissions of certain atmospheric pollutants (DNEC) includes the following definition: 'non-methane volatile organic compounds' or 'NMVOC' means all organic compounds other than methane, that are capable of producing photochemical oxidants by reaction with nitrogen oxides in the presence of sunlight. We wonder why DNEC definition differs from the one included in the Air Quality Directive proposal, we consider that **a matching proposal should be more adequate**.

Art 4.14: We consider very relevant to clarify that UFP or nano-particles are scientifically defined as the particle number concentration (PNC) of particles <100 nm. **The proposal of revision of the directive defines UFP as PNC of particles of a size ≥ 10 nm, without a top coarser size detection limit**. This definition is adequate for PNC but not for UFP.

Art 4.21: Definition for objective estimation now includes the use of remote sensing and in-situ sensors and this include the use of low-cost sensors that, according to the state-of-the art, may not still fulfill the AAQ Directive's data quality objective and uncertainties. Thus, **the application of sensors must be clarified and clearly regulated to ensure minimum quality standards in their use**.

Although this definition is new in the Directive proposal, it was already included in the Commission Implementing Decision laying down rules for AAQ Directives as regards the reciprocal exchange of information and reporting on ambient air (Decision 2011/850/EU/IPR Guidelines). IPR definition states that objective estimation techniques shall be interpreted as mathematical methods to calculate concentration values from values measured (…) and that examples of these are linear interpolation and **dispersion models**. Since **no definition for modelling applications is provided in this proposal**, shall modelling applications be understood as objective estimations? In any case, as the AQ model use is improved in this proposal a definition for modelling applications should be included.

We propose modify the definition as follows:

(21) 'objective estimation' means an assessment method to obtain quantitative or qualitative information on the concentration or deposition level of a pollutant through expert judgement, which may include use of ~~statistical tools,~~ remote sensing, in-situ sensors **provided these are approved type and data quality objectives are met, and/or statistical tools**;

It should be noted that a CEN Technical Specification 2021 is available for sensor systems: CEN TS 17660.1.2021 Air quality - Performance evaluation of air quality sensor systems.

Art 4.22: Definition of spatial representativeness includes the term "predefined tolerance level" that is not defined nor set in this proposal. In practice, tolerance margin close to the measurement uncertainty (20%; at Fairmode is 10-20%). A reference to a specific guideline would clarify this, so we propose modify the definition as follows:

(22) 'spatial representativeness' means an assessment approach whereby the air quality metrics observed at a sampling point are representative for an explicitly delineated geographical area

to the extent that air quality metrics within that area do not differ from the metrics observed at the sampling point by more than a pre-defined tolerance level **to be defined in specific guidelines**.

Art 4.24: The current criteria when defining the location for rural background stations (ozone measurement) do not correspond to these new locations representative of the exposure of the rural population, as examples of rural background stations indicate forests, natural ecosystems, etc. It could be desirable to distinguish these "rural background locations representative of the exposure of the general population" from current EMEP background locations, thus distinguishing between health protection and vegetation protection.

Art 4.28 and 4.29: Working with NUTS1 level will entail a very high administrative burden, as domestic competences for air quality assessment and management lie on NUTS2 regions (Autonomous Communities). The second level statistical territorial units (NUTS 2) is the suitable base that would contribute to facilitating pollution management and to simplify the processing and management of air quality improvement plans. Please assess the convenience of also including NUTS2 level for the determination of average exposure and compliance with the objectives of this indicator. We propose modify the definitions as follows:

(28) ~~20.~~'average exposure indicator' ~~shall mean~~ ⌦ means ⌫ an average level determined on the basis of measurements at urban background locations throughout the ~~territory of a Member State~~ ⇨ territorial unit at NUTS 1 **or NUTS 2, to be determined by each Member State according to its administrative structure**, as described in Regulation (EC) No 1059/2003, or, if there is no urban area located in that territorial unit, at rural background locations, ⇦ and which reflects population exposure~~. It is~~, used to ~~calculate~~ ⇨ check whether ⇦ the ~~national~~ ⇨ average ⇦ exposure reduction ⇨ obligation ⇦ ~~target~~ and the ⇨ average ⇦ exposure concentration ~~obligation~~ ⇨ objective for that territorial unit have been met ⇦ ;

~~(29) 22.~~'~~national~~ ⇨ average ⇦ exposure reduction ⇨ obligation ⇦ ~~target~~' ~~shall mean~~ ⌦ means ⌫ a percentage reduction of the average exposure of the population ⇨ , expressed as average exposure indicator, ⇦ of a ⇨ territorial unit at NUTS 1 **or NUTS 2 to be determined by each Member State according to its administrative structure**, as described in Regulation (EC) No 1059/2003 of the European Parliament and of the Council[1] ⇦ ~~Member State~~ set for the reference year with the aim of reducing harmful effects on human health, to be attained ~~where possible~~ over a given period;

Art 4.31: We propose to use the same definition for "critical level" according to Air Convention (CLRTAP) Mapping manual, chap 3, Critical levels for vegetation[2]

[1] Regulation (EC) No 1059/2003 of the European Parliament and of the Council of 26 May 2003 on the establishment of a common classification of territorial units for statistics (NUTS) (OJ L 154, 21.6.2003, p. 1).

[2] https://www.umweltbundesamt.de/sites/default/files/medien/4292/dokumente/ch3-mapman-2017-10.pdf

(31) ~~6.~~ ‘critical level’ ~~shall mean~~ ⌦ means ⌫ a level ~~fixed on the basis of scientific knowledge,~~ above which direct adverse effects may occur on ~~some receptors, such as trees, other plants or natural ecosystems but not on humans~~ **sensitive vegetation**, according to present knowledge;

Other comments to article 4:

- A **new definition for elemental carbon** and **oxidative potential** for particular matter could be provided, since no definition is included in this text.

- Clarification is needed on what is meant by **bio-indicators** in case this wording is conserved in article 8.8.

- We are concerned about the **lack of definition of concepts such as total damage or partial damage to health** and its consequences in terms of compensation. Definition for these terms would be necessary if it is not well clarified in chapter VII: access to justice, compensation and penalties.

CHAPTER II: Assessment of Ambient Air Quality and deposition rates

Article 7: Assessment regime

Article 7.2. 3rd paragraph establishes "Where ~~fewer~~ ⌦ data are available for less ⌫ than ⌦ 5 ⌫ ~~five~~ years~~, data are available~~, Member States may combine measurement campaigns of short duration during the period of the year and at locations likely to be typical of the highest pollution levels**, with results obtained from information from emission inventories and modelling** to determine exceedances of the ~~upper and lower~~ assessment thresholds".

- The text does not determine what should be understood as "campaigns of short duration". If it is equivalent, the term "indicative measures" might be more appropriate.

- We understand that when the required 5 years (to determine whether levels are above the assessment threshold) are not available, the use of campaigns, emission inventories and modelling is a recommendation. We also understand that when using measurement campaigns for this purpose, the combination of the results obtained from information from emission inventories and modelling is an option. We would appreciate to confirm if this understanding is correct.

Annex II. Assessment thresholds. Section 1 - assessment thresholds for health protection

These new assessment thresholds are much lower than the current thresholds. For some pollutants and such low values, the limits of quantification of the techniques are very near the new thresholds, also considering that uncertainties of measurement methods are higher when concentrations are lower:

- For PM2,5: it is difficult to measure below the new assessment threshold with automatic equipment and in many cases the limit of quantification is close to 5 µg/m3 or even above.

- For PM2,5 and PM10: to make PM concentration available to the public on an hourly basis, it is necessary to use automatic equipment and therefore to calculate a correction function to determine the equivalence to the reference method. To this purpose, UNE EN 16450 establishes that at least 20% of the results obtained using the reference method must be > 28 $\mu g/m^3$ for PM10 and >17 $\mu g/m^3$ for PM2.5. If assessment thresholds for PM10 is 15 µg/m3 and for PM2.5 is 5 µg/m3, the measurement methods do not allow reliable measures at these low levels proposed by the Directive.

- For BaP, the assessment threshold is much lower than other pollutants. For other pollutants, the new assessment threshold is in line with either the WHO Guidance Value or the previous lower assessment threshold or an intermediate value among the current lower and upper thresholds, but does not seem to be the case for the new BaP threshold. For this reason, we would appreciate a clarification on the new BaP threshold. To be consistent with the other pollutants criteria and due to the cost associated with the

requirements of sampling points, it seems to be justified to propose a new threshold for BaP corresponding to the previous lower assessment threshold (0,4 ng/m3).

For these reasons, **we propose the following change**:

SECTION 1 - ASSESSMENT THRESHOLDS FOR HEALTH PROTECTION	
Pollutant	**Assessment threshold (annual mean, unless specified)**
$PM_{2.5}$	5 µg/m^3
PM_{10}	15 µg/m^3
Nitrogen dioxide (NO_2)	10 µg/m^3
Sulphur dioxide (SO_2)	40 µg/m^3 (24-hour mean)(1)
Benzene	1,7 µg/m^3
Carbon monoxide (CO)	4 mg/m^3 (24-hour mean)(1)
Lead (Pb)	0,25 µg/m^3
Arsenic (As)	3,0 ng/m^3
Cadmium (Cd)	2,5 ng/m^3
Nickel (Ni)	10 ng/m^3
Benzo(a)pyrene	~~0,12~~ **0,4** ng/m^3
Ozone (O_3)	100 µg/m^3 (maximum 8-hour mean)(1)
(1) 99th percentile (i.e. 3 exceedance days per year).	

Annex II. Assessment thresholds. Section 2 - assessment thresholds for the protection of vegetation and natural ecosystems

The term "natural ecosystems" has been added to the table title. As the current Directive is only referred to the protection of the vegetation, clarification is needed on whether this new wording would imply any additional obligation with respect to the current version of the Directive.

Article 8: Assessment criteria

Article 8.2. establishes that in all zones where the level of pollutants exceeds the assessment threshold, fixed measurements shall be used to assess the ambient air quality. Being the new

assessment thresholds much lower, a higher number of fixed measurement points will be needed, with a corresponding economic impact for the Member States.

Article 8.3. In relation to the use of **modelling applications** established in article 8.3 we note that the application of modelling techniques requires subsequent guidelines to enable their use with harmonised criteria that make them comparable.

Article 8.5 implies that if modelling shows an exceedance in an area not covered by fixed measurements, additional fixed or indicative measurements must be used during at least 1 calendar year after to assess the concentration of such pollutant. On the other hand, article 19.1 and article 19.2 establish that in zones where the level of pollutants exceeds any limit value or ozone target value, Member States shall establish air quality plans for those zones as soon as possible and no later than 2 years after the calendar year during which that exceedance was recorded. In this sense, it is important to clarity in the Directive when air quality plans must be established after an exceedance showed by the model. We propose to clarify in the text the legal implications of these measurements and that the 2 years deadline for air quality plans establishment in article 19 is applicable after assessing the model exceedance with fixed or indicative measurements of at least 1 year duration.

Article 8.8: Clarification is needed on what is meant by **bio-indicators** in this section on assessment criteria and in which cases it would apply. The article refers to the NEC Directive but this Directive is mainly based on physico-chemical indicators and also includes some biological indicators and all of them are optative. On the other hand, clarification is needed on the scope of this article, as it mentions a possible assessment of regional patterns of the impact on ecosystem. Clarification is needed as to whether this is a mandatory or optional assessment.

Annex IV Assessment of ambient air quality and location of sampling points. A. General

Annex IV. A., paragraph 2 establishes that compliance with the limit values directed at the protection of human health shall not be assessed at certain locations. Paragraph (a) include any locations situated within areas where members of the public do not have access **and** there is no fixed habitation. The word "and" implies that both conditions must be met. However, the second condition is redundant, as it is not expected to find fixed habitation in areas where citizens cannot have access. The word "or" allows either one (or both) of the two conditions to suffice. Also, background locations must be considered as assessment locations.

According to this, **we suggest introducing the following change** in the text:

(a) any locations **whose spatial representativeness correspond to** ~~situated within~~ areas where members of the public do not have access ~~and~~ **or, except for background locations**, there is no fixed habitation;

Annex III.D Minimum number of sampling points for fixed measurements of ultrafine particles where high concentrations

The AAQ Directive proposal includes the measurement of new pollutants not previously regulated, such as UFPs, and setting a significant number of sites and new sampling point for UFP. For Spain, the application of the criteria of articles 8 implies the creation of **10 additional sampling points of UFP at hotspots**. The implementation of new measurements and stations in accordance with the requirements of article 8 will entail significant economic costs for Member States (MMSS), as well as a paradigm shift in the maintenance of these stations (some of the measurements, such as UFP and PNSD (Particle Number size Distribution) require much more exhaustive control and specific calibrations different from those of the other regulated pollutants). In addition, the volume of data generated will require probably different data processing methods than the existing ones. Furthermore, the proposal does not include a guidance on homogeneous measurement criteria and techniques to make the resulting data comparable between MMSS nor reference values. For these reasons, and taking into account that the purpose of UFP measurement is to have a better knowledge of levels for possible further action, we propose to **reduce the number of UFP sampling points**.

In particular, **we propose the following change**:

> Ultrafine particles shall be monitored at selected locations in addition to other air pollutants. Sampling points to monitor ultrafine particles shall coincide, where appropriate, with sampling points for particulate matter or nitrogen dioxide referred to in Point A, and be sited in accordance with Section 3 of Annex VII. For this purpose, at least 1 sampling point per ~~5~~ **10** million inhabitants shall be established at a location where high UFP concentrations are likely to occur. Member States that have fewer than ~~5~~ **10** million inhabitants shall establish at least 1 fixed sampling point at a location where high UFP concentrations are likely to occur.

Annex VII. SECTION 3. MEASUREMENT OF ULTRAFINE PARTICULES (UFP)

For UFP measurement, it is advisable to cite in the Directive's proposal the CEN and ACTRIS recommendations so that at least these are followed for total UFP measurement. Specifically, we refer to CEN/TC 16976:2016 and CEN/TC 264/WG 33, and ACTRIS (2021) for total UFP. Also, for UFP size number distribution, it is advisable to cite in the Directive's proposal the CEN and ACTRIS method so that they are at least followed for Particle Number Size Distribution (PNSD) measurement. We refer in this case to CEN/TS 17434:2020 for PNSD and ACTRIS (2021). A reference can be found at RI-URBANS (2022a). Guidelines, datasets of non-regulated pollutants including metadata, methods. UFP section and PNSD section, that adapts and discusses these recommendations for the measurement of urban air quality https://riurbans.eu/wp-content/uploads/2022/10/RI-URBANS_D1_D1_1.pdf

Regarding A. Objectives and C. Siting, more clarification is needed about the location of UFP sampling points. Taking into account the AQ Directive's general objectives, it could be of major interest to locate UFP points in areas where the population is likely be exposed.

According to this, **we propose the following changes**:

SECTION 3- MEASUREMENT OF ULTRAFINE PARTICULES (UFP)

A. Objectives

The objective of such measurements is to ensure that adequate information is available at locations where **exposure of the population to UFP is expected, taking into account that** high concentrations of UFP ~~occur that~~ are mainly influenced by sources from air, water or road transport (such as airports, ports, roads), industrial sites or domestic heating The information shall be appropriate to judge on enhanced levels of UFP concentrations from those sources.

B. Substances

UFP.

C. Siting

Sampling points shall be established in accordance with Annex IV and V at a location where **exposure of the population to UFP is expected** ~~high UFP concentrations are likely to occur and within the main wind direction~~.

Article 9. Sampling points

Article 9.1 has two paragraphs. The second paragraph referred to ozone could be merged into the first just one to avoid repeating, as locations for all pollutants are determined in annex IV.

Article 9.3 establishes **criteria to reduce by up to 50%** the minimum number of sampling points in fixed measurements where the level of pollutants exceeds the assessment thresholds but not the regulated values. We consider **that further definition of the criteria** for reducing the minimum number of sampling points is needed in this article, so that the MMSS can be clear on their application. For example, Paragraph (a) refers to a possible reduction when indicative measurements and modelling provide sufficient information and paragraph (b)where the number of sampling points and the spatial resolution of indicative measurements and modelling techniques are sufficient. In both cases, we believe that a better definition of what is considered sufficient should be provided.

Article 9.6. includes the use of the results of modelling applications for the assessment of air quality with respect to the limit values and ozone target values. In this respect, we insist on the need to count with guidance documents that help using modelling applications in a harmonised way among MMSS.

Article 9.7 establishes that sampling points at which exceedances of any limit value were recorded within the previous 3 years shall not be relocated, unless a relocation is necessary due to special circumstances, including spatial development. In this respect, as changes in the environment and emissions may cause that the location criteria for a certain sampling point are

not met anymore (especially micro-location), we suggest including the possibility of improving the location of the sampling points if this is justified.

We propose to include the following change in the text:

7. Sampling points at which exceedances of any limit value specified in Section 1 of Annex I were recorded within the previous 3 years shall not be relocated, unless a relocation is necessary due to special circumstances, including spatial development **or any other circuntance that imply not to fulfill anymore with the macroscale and micro-scale siting of sampling points of Annex IV.** Relocation of sampling points shall be done within their area of spatial representativeness and be based on modelling results.

On the other hand, if relocation is necessary due to special circumstances according to article 9.7, we suggest including a reference in the text on how this should be reported and justified.

Annex IV B, C, D. Location of sampling points

As a general comment, the macroscale and micro-scale siting of sampling points location just include slight changes from the current Directive. We consider that more precise criteria for fixed measurement points should be established, by means of a methodology or further guidance on location that will ensure that the results are comparable and achieve a harmonised application in all MMSS.

Annex IV B. Macro-scale siting of sampling points

Part 2, paragraph (a) (iii) establishes that sampling points directed at the protection of human health shall be sited in a way as to provide for arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons, the deposition rates representing **the indirect exposure of the population through the food chain**. To that purpose, clarification should be included on how to locate sampling points for such pollutants to represent indirect exposure to population along the food chain.

Part 2, paragraph (d) establishes criteria for macro-scale location where the objective is to measure contribution of **domestic heating**. Clarification is needed on whether this should be criteria for urban locations.

Afterwards, Part 2 mention some characteristics to consider when defining spatial representativeness. We consider that more specific criteria to define spatial representativeness of sampling points is needed and they could be included in the guidelines we requested for the modelling applications.

Annex IV C. Micro-scale siting of sampling points

Paragraph (e) establishes micro-scale criteria for sampling probes location for all pollutants. The content of the paragraph refers to location in relation to road traffic, so that it is implied

that these criteria is referred to traffic sites. We propose to specify it in the text, also to make it compatible with paragraph (g).

For this reason, we propose to include the following change:

(e) For **traffic stations and all** pollutants, sampling probes shall be at least 25 m from the edge of major junctions and no more than 10 m from the kerbside; for the purpses of this point, a 'kerbside' means the line that separates motorised traffic from other areas; a 'major junction' means a junction which interrupts the traffic flow and causes different emissions (stop&go) from the rest of the road;

Additionally, we would appreciate common criteria or ulterior guidance on the concept **"major junction".**

Annex III. Minimum numbers of sampling points for fixed measurement

Annex III. A. Part 1. Diffuse sources

Table 1 and table 3 establishes a minimum number of sampling points for fixed measurements for population of zone (thousands). If compared with the current Directive, the new proposal doubles the number of PM sampling points for population 0-249. Nevertheless, in areas with low density of population, it would be justified a lower number of sampling points for PM. For this reason, it might be considered the determination of the minimum number of sampling points taking into account the exposed population, the representativeness or to consider the possibility of using random sampling points, instead of a minimum number of sampling points only based on population.

Annex III. A. Part 2. Point sources

Part 2 establishes that, for the assessment of pollution in the vicinity of point sources, sampling points shall be sited such that the application of BAT (Best Available Techniques) as defined by Directive 2010/75/EU can be monitored. In this point, clarification is needed on whether this paragraph is referred to industrial sources.

With relation to the last sentence of Annex III. A. Part 2, it should be noticed that the goal of the Air Quality Directive is not to monitor the use of BAT but rather the exposure of population to air pollution. The last sentence of the paragraph contradicts the goal of the Air Quality Directive and does not ensure that the suggested monitoring would result in the achievement of the AQ Directive's goals. For this reason, we suggest rephrasing this paragraph as follows:

Proposal of change:

2. Point sources

For the assessment of pollution in the vicinity of point sources, the number of sampling points for fixed measurement shall be calculated taking into account emission densities, the likely distribution patterns of ambient-air pollution and the potential exposure of the population. ~~Such sampling points shall be sited such that the application of BAT (Best Available Techniques) as defined by Directive 2010/75/EU can be monitored.~~ **Sampling points established in the framework of the Directive 2010/75/EU, provided that they comply the requirements set out in this Directive, shall be taken into account in determining compliance with the minimum number of sampling points and, when possible, may also be sited such that the application of BAT (Best Available Techniques) as defined by Directive 2010/75/EU can be monitored.**

Annex III. B. Minimum number of sampling points for fixed measurement to assess compliance with the PM_{25} and NO_2 average exposure reduction obligations for the protection of human health

As it was stated in former reports by Spain, working with NUTS1 territorial units will entail a very high administrative burden, as domestic competences for air quality assessment and management lie on **NUTS2 regions** (Autonomous Communities).

For this reason we propose the following change:

For $PM_{2.5}$ and NO_2 each, one sampling point per NUTS 1 **or NUTS 2** region as described in Regulation (EC) No 1059/2003, and at least 1 sampling point per million inhabitants calculated over urban areas in excess of 100 000 inhabitants shall be operated for this purpose. Those sampling points may coincide with sam pling points under Point A.

Annex VII.2.A-C Ozone precursors

B. Substances:

- As no particular reference method is proposed in annex VI for VOCs, it is desirable to define in the text of the Directive how VOCs should be measured and also to propose a measurement method in other to obtain comparable data. Such method should be as affordable as possible in terms of cost, since there are reference material is very expensive for COVs measurement.

- The list of VOCs provided is considered to be quite complete. We propose to incorporate in this table the Ozone Formation Potential (OFP) and the Potential Secondary Organic Aerosol (PSOA).

Article 10: Monitoring supersites

- The implementation of measurements and supersites in accordance with the requirements of Articles 8 and 10 of the proposed revision of the Directive will entail very **significant economic costs** for the Member States, as well as a paradigm shift in the maintenance of observing stations. Some of the measurements, such as UFP, PNSD (Particle Number Size Distribution) and VOCs, require an exhaustive control and specific calibrations, different from those of the regulated pollutants. For this, specific and significant budget items must be allocated, and the funding source must be identified. Moreover, the substantial volume of data

generated by the new variables will require data management methods that are probably different from the existing ones.

- **European coordination and guidance are required to maintain pan-European harmonisation**. It is important that a European and National coordination is followed for the implementation of supersite networks to ensure harmonisation of instrumentation, measurement and analytical procedures, especially in techniques that do not have a reference method.

- If **reference method** is available it should be included in the Directives to ensure the quality of the measurements and their comparability throughout the EU

- It is fundamental to **seek synergies with the existing infrastructure in place** and ACTRIS in particular.

- **Article 10.1** states the number of supersites to be installed by each Member States.

    - According to these criteria, Spain should have **10 supersites (5 urban, 5 rural).**

    - Based on the experience gained in ACTRIS and RI-URBANS, and on the scales of regional climate variations, we believe that **the number of super-sites proposed in the review of the directive could be reduced by a half**, while keeping in mind the need to cover relevant climatic regions and cities and keeping at least one of each even in small countries. Likewise, the stations with monitoring of atmospheric deposition could be reduced by half.

      We propose the following change:

      1. Each Member State shall establish at least one monitoring supersite per ~~10~~ **20** million inhabitants at an urban background location. Member States that have fewer than ~~10~~ **20** million inhabitants shall establish at least one monitoring supersite at an urban background location.

      Each Member State shall establish at least one monitoring supersite per ~~100 000~~ **200 000** km^2 at a rural background location. Member States whose territory is less than ~~100 000~~ **200 000** km^2 shall establish at least one monitoring supersite at a rural background location.

    - Clarification is need in the term **"rural background locations".** Are these stations in small towns in rural settings? Or do these include regional background stations in rural settings but separated from the rural population (EMEP type)? It would be good to **define what are the objectives of the measurements** in urban and rural environments. For urban sites the objective seems more obvious, but not so clear for rural supersites. These might be useful to monitor the regional background, as EMEP sites do, but also the exposure of rural population in small villages with relatively high emissions of domestic sources and affected in summer by high O3. The siting criteria might be quite different.

- **Article 10.2** states the criteria for the location of supersites according to Annex IV. We believe specific criteria should be included for supersite location specially for rural background locations so measured data at supersites are comparable between different MMSS.

- **Article 10.5** introduces the obligation of measuring **particulate matter oxidative potential**.

    - Oxidative potential (OP) measurements are of great importance to identify the components of PM10 and PM2.5 having a greater capacity to cause oxidative stress when inhaled. This may allow, policy makers propose in future reference values for the concentration of specific components in addition to bulk PM.

    - However, the measurement of the OP can be carried out with a wide variety of techniques and methods, and currently there are no accepted standard operating procedures nor commercially available instruments.

    - It would be desirable to make use of the first recommendation from RI-URBANS and engage with the academic community to define the most suited OP techniques and their standard operating procedures before engaging in CEN initiatives.

    - Definition of particulate matter oxidative potential should be included in article 4.

- **Article 10.6**

  a) introduces the obligation of measuring **ultrafine particles (UFP)**

    - WHO Air Quality Guidelines (WHO, 2021), state that the results on the health effects of UFPs are inconsistent, although there are indications that these may be harmful. The guidelines propose a greater extension of the measurements for UFP so that, in the future, the effects on human health might be evaluated with less uncertainty. Furthermore, the document entitled White Paper: *Ambient ultrafine particles: Evidence for policy makers (Cassee et al., 2019) and Rivas et al. (2021),* among others, state that the above inconsistency may be due, at least in part, to the inconsistency of the measurement methods and conditions, as there are no reference methods, nor a minimum value required for the lower size detection limit, a key parameter for the measurement of UFPs. Also, many studies are based on the exposure obtained in a single urban station, but the UFP present a high spatial variability.

    - Given the inconsistency of the UFP and health relationship, but the need to obtain data, we believe that **the number of super-sites could be reduced by a half,** covering relevant climatic regions and cities, and keeping at least 1 of each in very small countries.

    - We consider very relevant to clarify that UFP or nano-particles are scientifically defined as the particle number concentration (PNC) of particles <100 nm. **The**

proposal of revision of the directive defines UFP as PNC of particles of a size ≥ 10 nm, without a top coarser size detection limit. This definition is adequate for PNC but not for UFP. It is advisable to cite in the directive the CEN (European Committee for Standardization) and ACTRIS recommendations so that at least these are followed for the measurement of total UFP. Specifically, we refer to CEN/TC 16976:20163 and ACTRIS[4] for total UFP. See RI-URBANS UFP section [5].

- It is important to define what lower limit is intended to be obtained for the UFP measurements. The proposal defines 10 nm or less, but this limit rules out 50% of the nucleation mode (<20nm) and we cannot rule out, a priori, that these finest UFPs have no effect on health. However, CEN recommendations fix this at 7 nm. This CEN/TC is under revision, and 10 nm is the new recommendation. It will become an EU Standard by 2024. ACTRIS is already adapted to 10 nm due to the current implementation phase.

- Accordingly, we recommend **following CEN and ACTRIS recommendations** and start measurements of the condensation particle counters (CPC) at 10 nm, but if the supersite is willing to provide data on nucleation mode PNC, complement the CPC with a nano-CPC to obtain by difference the 3-10 nm size.

- As for the UFPs, it is important to define what lower size limit is intended to be detected for the PNSD measurements. The proposal defines 10 nm or less, but this limit rules out 50% of the nucleation mode (<20nm) and we cannot rule out a priori that these finer UFPs have no effect on health. RI-URBANS showed that the existing supersites use lower size detection limits from 3 to 17 nm across urban Europe. Starting in one range or another can make a 20% difference in total UFP concentration, but >60% in the nucleation mode UFPs.

- Also, as for UFP, it is advisable to cite the CEN and ACTRIS method in the proposal so that they are at least followed for the PNSD measurement. Specifically, we refer

[3] https://www.en-standard.eu/pd-cen-ts-16976-2016-ambient-air-determination-of-the-particle-number-concentration-of-atmospheric-aerosol/

[4] https://www.actris.eu/sites/default/files/2021-06/Preliminary%20ACTRIS%20recommendations%20for%20aerosol%20in-situ%20measurements%20June%202021.pdf

[5] https://riurbans.eu/wp-content/uploads/2022/10/RI-URBANS_D1_D1_1.pdf

in this case to CEN/TS 17434:20206 for PNSD and ACTRIS[7] (2021). See RI-URBANS' PNSD section[8] that adapts and discusses these recommendations for the measurement of urban AQ.

- RI-URBANS recommends starting from 3 nm, at least, in order to independently assess the effect of nucleation mode (<20 nm) on health, and if this effect is not consistent, in future starting at 10 nm. However, CEN recommendations set the lower limit at 10 nm. ACTRIS recommends 10-800 nm. Only for sites with a focus on sub-10 nm particles, an additional instrument is considered. RI-URBANS recommendation is adding an additional instrument (nano-CPC, Particle Size Magnifier-PSM,...) to evaluate the concentrations of the nucleation mode particles. Thus, we recommend starting measurements with Mobility Particle Size Spectrometers (MPSS) and CPC from 10 nm, following CEN and ACTRIS recommendations, and adding an additional instrument to obtain the <10 nm fraction that will give a more complete picture of the nucleation mode fraction.

a) introduces the obligation of measuring **black carbon (BC)**

- BC measurements can be of great value for the study of the effects on health of specific combustion emission sources, at the same time these can be greatly affected by the mitigation measures and actions. It is closely related to the mass concentration of Elemental Carbon (EC), which is chemically determined. Commercial instruments are available but comparability of the BC measurement data from different sites is greatly affected by variability in the MAC (Mass Absorption Cross-Section) coefficient that shall be used to convert the absorption values into mass of BC, commonly designated as equivalent BC (eBC, RI-URBANS, 2022a and b). In terms of AQ, eBC and EC are meant to be tantamount. There is also a need for the adoption of a reference standard, a key objective of several metrology projects[9].

- BC mass concentration can be estimated using absorption photometers (aethalometer being the most common instrument) if the measurement is carried out online or by the specific CEN standard if Elemental Carbon (EC) is measured

[6] https://www.en-standard.eu/une-cen-ts-17434-2020-ambient-air-determination-of-the-particle-number-size-distribution-of-atmospheric-aerosol-using-a-mobility-particle-size-spectrometer-mpss-endorsed-by-asociacion-espa-ola-de-normalizacion-in-may-of-2020/

[7] https://www.actris-ecac.eu/actris-gaw-recommendation-documents.html, Preliminary ACTRIS recommendations for aerosol in-situ sampling, measurements, and analyses (V.3)

[8] https://riurbans.eu/wp-content/uploads/2022/10/RI-URBANS_D1_D1_1.pdf

[9] http://www.empirblackcarbon.com/news-and-events/

both online or off-line. We refer to the scientific literature for proper definition of eBC[10].

- Its measurement and maintenance are relatively simple. However, it is extremely relevant to define how to convert the absorption units/m3 (into µg/m3) provided by the instrument. The use of different types of MACs can give differences of up to 60% for the same measurement as demonstrated by numerous studies including ACTRIS[11]. ACTRIS is also addressing, together with Metrology Institutes in Europe, the definition of agreed standard for (e)BC.

- We recommend that a locally obtained MAC is used for each instrument and site, being obtained by in situ co-measuring EC and eBC. When this is not possible, then use the average ACTRIS MAC. However, discussion on the most suitable operation procedures for the determination of (e)BC would start from the recommendation from ACTRIS/RI-URBANS which will soon be published.

a) introduces the obligation of measuring **NH3:**

- Measurements of NH3 in urban and rural areas are considered of great interest, since this gaseous pollutant plays a key role in the formation of ammonium sulphate and nitrate, two important components of PM2.5. There are very few measurements of NH3 in urban environments and it is key to reduce its levels to abate urban PM2.5.

- Nevertheless, the NH3 measurements carried out with on-line instrumentation to obtain long time series have **relevant issues to solve** depending on the equipment.

- Commercial instruments are available for off-line and online determination of NH_3[12] but only the off-line technique has accepted standard operating procedures.

- Option for online NH3 standard technique and engage with the research community to define requirements and the most suited standard operating procedures also including inlet setup, calibration, and routine maintenance in order for datasets to be comparable would be desirable.

c) introduces the obligation of measuring arsenic, cadmium, nickel, total gaseous mercury, benzo(a)pyrene and the other polycyclic aromatic hydrocarbons and of the total deposition of arsenic, cadmium, mercury, nickel, benzo(a)pyrene and the other polycyclic aromatic hydrocarbons irrespective of concentration levels.

[10] Petzold et al., Atmos. Chem. Phys., 13, 8365–8379, 2013, https://doi.org/10.5194/acp-13-8365-2013

[11] Zanatta et al., Atmos. Envir., https://doi.org/10.1016/j.atmosenv.2016.09.035

[12] Marsailidh et al., 2022: https://amt.copernicus.org/preprints/amt-2022-107/amt-2022-107.pdf

- We do not see the need to perform gaseous Hg measurements to such an extent also taking into consideration the difficulties on its measurement. Neither to measure deposition of metals and PAHs in a urban background; in rural background these are already measured by EMEP.

- As a proposal some of these issues could be resolved with a greater interrelationship between DG Environment and DG Research to launch calls that might cover the study of the effect on health of pollutants, such as gaseous Hg, if that is the objective, or PAHs; this without affecting the high relevance of the creation of a European network of supersites.

- **Article 10.7** introduces the obligation of measuring **divalent mercury** at urban background locations and rural background locations. Again, as for article 10.6 c), we do not understand the justification to measure to such an extent as measuring divalent mercury is very complex as we are experiencing in Niembro station of EMEP AQ network, we will propose to reduce this obligation.

- **Article 10.8** states the coordination with the monitoring strategy and measurement programme of the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (**EMEP)**, the Aerosol, Clouds and Trace Gases Research Infrastructure (**ACTRIS**), and the monitoring of air pollution impacts undertaken under **Directive (EU) 2016/228**:

    - The role of EMEP and ACTRIS are not defined, we consider that their role should be defined in terms of tasks, budget associated and the sources of the budgets. It could be also relevant i to have an agreement between AQUILA and the EEA with EMEP and ACTRIS in this definition. It is clear that AQUILA have the role of Reference AQ Labs and they should pilot implementation of methods in supersites, but the role of ACTRIS and EMEP there should be defined.

    - We believe that ACTRIS and EMEP should have an important role in the creation of supersite networks, in terms of guiding to identify proper instrumentation, protocols, measurement certification criteria, and QA/QC and data management.

    - Clarification of what is meant by "monitoring of air pollution impacts undertaken under Directive (EU) 2016/2284". For example, air quality stations are not incorporated in our network for monitoring atmospheric pollution in ecosystems because it has not been considered appropriate for that purpose.

Article 11: Reference methods and data quality objectives

- It seems that this article refers only to measurements, when in fact there is also to modelling. The title should be corrected, perhaps by removing the word measurements or better by putting measurement and modelling in front of data quality. We propose to modify the article title by:

Article 11: Reference **measurements** methods and **measurement and modelling** data quality objectives

- **Article 11.1.** states that MMSS shall apply the reference methods included in Annex VI, we insist on the importance of including reference methods for all the new pollutants to be measure under this proposal so there is coherence between the data measured in all MMSS.

- We request the **incorporation of automatic equipment for PM measurement as a reference method**, in line with the requirement to report UTD and the requirements on information access data. In addition, its incorporation facilitates the significantly increasing the number of sampling points required by the new Directive. This reference method has been incorporated as a proposal for change in the text of Annex VI A.

- Article 11.2. air quality data is not defined, so we proposed to modify the paragraph by:

  2. **All a**ir quality data **(fixed and indicative measurements, modelling applications and objective estimations) used for air qualiy assessment** shall meet the data quality objectives laid down in Annex V.

- **ANNEX VI: Reference methods for assessment of concentrations in ambient air and deposition rates:**

  A. Reference methods for the assessment of concentrations of sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter (PM10 and PM2.5), lead, benzene, carbon monoxide, arsenic, cadmium, mercury, nickel, polycyclic aromatic hydrocarbons, ozone and other pollutants in ambient air and deposition rates

  - A reference method should be established for each pollutant with an obligation to measure. The Directive cannot set obligations and leave it to Member States to determine how to measure to meet these requirements p.e.: UFC, BC, OP,NH3.

  - Regarding the **reference methods for the sampling and measurement of PM10 and PM2,5**: The AAQ Directive proposal improves **access to information** and sets requirements for up to date data transmission and improved access to information for citizens. In order to provide this information for particulate matter it is necessary to use **automatic PM equipment**. Nonetheless, they are not included in the proposal as a reference methods, we propose to include them as follows:

    3. Reference method for the sampling and measurement of PM10 in ambient air

    The reference method for the sampling and measurement of PM_{10} is that described in EN12341:2014 'Ambient Air — Standard gravimetric measurement method for the determination of the PM_{10} or $PM_{2.5}$ mass concentration of suspended particulate matter' **or EN 16450:2017. "Ambient air - Automated measuring systems for the measurement of the concentration of particulate matter (PM10; PM2,5)**

    4. Reference method for the sampling and measurement of PM2.5 in ambient air

    The reference method for the sampling and measurement of PM2.5 is that described in EN12341:2014 'Ambient Air — Standard gravimetric measurement method for the determination of the PM10 or PM2.5

mass concentration of suspended particulate matter **or EN 16450:2017. "Ambient air - Automated measuring systems for the measurement of the concentration of particulate matter (PM10; PM2,5)**'

- It is important to mention that the new edition of the standard "EN 12341:2014 Ambient air. Standardised gravimetric measurement method for the determination of the mass concentration PM10 or PM2.5 of suspended particulate matter", has been included as a reference method in the new proposal for a Directive on the assessment of particulate matter. In its new edition, due to be published in 2023, the **regulatory Annex B** which lists the characteristics of other samplers than the reference ones, will disappear. This change could have an impact on the current consideration of **high volume samplers**, currently used mostly by Spanish networks for pollutants present in low concentrations (metals and BaP in particles, which have this standard as a reference for sampling). This change in the EN 12341 standard, referred to in the draft Directive, may have a very high technical and economic impact for some MMSS.

- Regarding the **reference method for the measurement of ozone in ambient air**: the UV photometry technique produces at some sampling points interferences with other pollutants and as for ozone there is a new obligation on air quality plans implementation in case of exceedance of the target value. We would like to confirm whether, in these specific cases, chemiluminescence, which does not seem to cause this problem, would be incorporated as a possible alternative method. It is understood that the demonstration of equivalence, as set out in the proposed Directive, is for all pollutants.

B. Demonstration of equivalence

- Regarding point 1:

1. A Member State may use any other method which it can demonstrate gives results equivalent to any of the reference methods referred to in Point A or, in the case of particulate matter, any other method which the Member State concerned can demonstrate displays a consistent relationship to the reference method. In that event, the results achieved by such other method must be corrected to produce results equivalent to those that would have been achieved by using the reference method.

Clarification is needed on:

- Why is a distinction made between particulate matter and other pollutants?
- In the case of the demonstration of equivalence for particulate matter, what is meant by "consistent relationship" to the reference method should be specified?
- 3. It should be defined and specified what is meant by "equivalent result". Do they refer to PM10 or to all pollutants?

- Regarding point 3:

  3. When assessing the acceptability of the report mentioned in point 2, the Commission will refer to its guidance on the demonstration of equivalence. Where Member States have been using interim factors to approximate equivalence, approximate equivalence shall be confirmed or amended with reference to that guidance

  Clarification is needed on:

  - Definition of interium factors and approximate equivalence.

- Regarding point 4:

  4. Member States shall ensure that whenever appropriate, the correction is also applied retroactively to past measurement data in order to achieve better data comparability

  Clarification is needed on:

  - clarification on retroactive application, from when, and the consequences of its application.

C. Standardisation and D. Mutual recognition of data

- Paragraphs 2 and 3 of point C are identical to the two paragraphs of point D. We believe that this could be a mistake and that they belong in paragraph D. In this case, they should be deleted from paragraph C.

E. Reference air quality modelling applications

- It is stated in this paragraph that in in the absence of a CEN standard on modelling quality objectives, Member States may choose the modelling applications they use. We believe that specific guidelines on the use of modelling applications may be developed by the Commission and should be indicated.

- **ANNEX V: Data quality objectives**

Maximum admissible uncertainties for ambient air quality assessment will pose a major challenge for compliance so we would like to **request a clarification on the basis** used for the uncertainty of measurements and modelling introduced in the new proposal.

A. Reference methods for the assessment of concentrations of sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter (PM10 and PM2.5), lead, benzene, carbon monoxide, arsenic, cadmium, mercury, nickel, polycyclic aromatic hydrocarbons, ozone and other pollutants in ambient air and deposition rates

A reference method should be established for each pollutant with an obligation to measure. The Directive cannot set obligations and leave it to Member States to determine how to measure to meet these requirements

A. Uncertainty of measurements and modelling for ambient air quality assessment

Tables 1 and 2

- **SO_2 is missing in the table 1** and there is a new annual limit value in the proposal.
- For **PM2,5 and PM10**: The uncertainties set out in points 1 and 2 of Annex V in table 1 for the methods of analysis of particulate matter are physically **impossible to meet** for the new levels of limit values or assessment thresholds, and this has been stated by the National Reference Laboratory, the Instituto de Salud Carlos III. These uncertainties are only feasible for the current limit values, and will have to be revised for the new limit values. Furthermore, iIt should be noted that by including the obligation to provide UTD data, automatic PM equipment must be used and their uncertainties are higher than gravimetric ones, so the difficulty to comply with these levels is even greater.
- There is no indication on how to calculate the uncertainties. We proposed to incorporate in the text of the DIR a **reference to the uncertainty calculation**, which could be based on the respective standards, or to have common guidelines so that the calculation of uncertainties between MMSS can be comparable.
- In relation to modelling uncertainties, we request a clarification on the source because our modelling experts consider that the expression of absolute values and ratios could be not appropriate, the current Directive approach of relative uncertainties in the form of % may be more appropiate.
- The **maximum uncertainty for modellin**g and objective estimation is computed as a maximum ratio of uncertainty times the maximum uncertainty of fixed measurements. This has two problems:
  - the source of values of the ratios are unknown (we do not know if they are based on the state of the art), and
  - it makes more complicated the computation of the maximum uncertainty of the modelling and objective estimation.

  It would be easier to assign directly relative values of the maximum uncertainty of the modelling and objective estimation (for pollutant and temporal scale –short term and long term-), and these values have to be based on scientific studies.

  Proposal: Substitution of the last columns (ratios) of tables 1 and 2 of Annex V by relative values of maximum uncertainty with absolute thresholds for very low concentrations. All these values must be based on scientific studies. The values for uncertainty must be used for computing the MQI in order to verify whether the models comply with the MQO.

  These percentages should be similar to those of the current Directive and independent of the measurement uncertainty. (*Imod ≠ Imed x Rmax)*

Paragraph 2

The percentages for uncertainty in the tables in this Section apply for all limit values (and the ozone target value) that are calculated by simple averaging of individual measurements such as hourly mean, daily mean or yearly mean values without considering the additional uncertainty for the calculation of the number of exceedances. The uncertainty shall be interpreted as being applicable in the region of the appropriate limit values (or ozone target value). The uncertainty calculation does not apply to AOT40 and values that include more than 1 year, more than 1 station (e.g. AEI) or more than 1 component. They are also not applicable for information

- It must be clarified when maximum relative or absolute uncertainty limits of measurements must be used. Regarding the sentence "The uncertainty shall be interpreted as being applicable in the region of the appropriate limit values (or ozone target value)" That means that uncertainty limits are only for concentrations close to the limit values. What happens when measurements are far from the limit values?

  Proposal:

  - To use only the maximum relative uncertainty limits of measurements and not the absolute values to be applicable for all range of concentrations but defining threshold uncertainty values for zero concentrations. These thresholds must be defined in the tables 1 and 2.
  - Another possible option to propose is to use a cutoff value for the measured concentration. That is, to evaluate the models only with measured concentration values higher than this cutoff.
  - Or better to apply both options at the same time.

Paragraph 3

The uncertainty of measurement data used for ambient air quality assessment shall not exceed either the absolute value or the relative value expressed in this Section.

- It is confusing that there are relative and absolute uncertainties at the same time.

Paragraph 4

The maximum uncertainty of modelling is set to the uncertainty for fixed measurements multiplied by the applicable maximum ratio. The modelling quality objective (i.e. a modelling quality indicator less or equal to 1) shall be verified at least at 90% of the available monitoring points, over the assessment area and period considered. At a given monitoring point, the modelling quality indicator shall be calculated as the ratio of the root mean square error(s) between modelling results and measurements over the square root of the quadratic sum(s) of the modelling and measurement uncertainties, over an entire assessment period. Note that the sum will reduce to a single value when annual means are considered. All fixed measurements meeting the data quality objectives (i.e. uncertainty of measurement and data coverage of measurement as specified in Sections A and B of this Annex, respectively) located in the modelling assessment area shall be used for the evaluation of uncertainty of modelling. Note that the maximum ratio shall be interpreted as being applicable over the entire concentration range.

- With regards to the compliance of the Modelling Quality Objective, it is somewhat confusing because it seems that the model uncertainty must not exceed the maximum uncertainty of fixed measurement (tables 1 and 2, Annex V) multiplied by

the maximum ratio of uncertainty of modelling. However, in other parts it is said that Modelling QI must not exceed MQO.

Proposal: We suggest to state clearly that the criteria for determining the validity of the model is that **MQI does not exceed MQO (MQI ≤ 1).**

- Concerning the definition of MQI, what are the data of the "the modelling and measurement uncertainties?", we understand that the values of maximum uncertainties of fixed measurements in the tables 1 and 2 of Annex V, section A must be used, but it is not clearly specified.

  Proposal: We suggest to state clearly that the values of maximum uncertainties of the tables of Annex V must be used for computing MQI.

- The sentece "All fixed measurements meeting the data quality objectives (i.e. uncertainty of measurement and data coverage of measurement as specified in Sections A and B of this Annex, respectively) located in the modelling assessment area shall be used for the evaluation of uncertainty of modelling" implies to use all type of stations. It would not be correct to use data, for example, from traffic stations with very small representativeness area (tens or few hundreds of square meters) to evaluate the performance of typical regional or national models, used for air quality assessment, which have and spatial resolution of 1x1 or 5x5 km2.

  Proposal: "All fixed measurements meeting the data quality objectives (i.e. uncertainty of measurement and data coverage of measurement as specified in Sections A and B of this Annex, respectively) **and having spatial representativeness similar or higher than the model resolution located in the modelling assessment area** shall be used for the evaluation of uncertainty of modelling"

Paragraph 5

For short-term mean concentrations, the maximum uncertainty of measurement data used to assess the modelling quality objective shall be the absolute uncertainty calculated using the relative value expressed in this Section, above the limit value and shall decrease linearly from the absolute value at the limit value, to a threshold at zero concentration13. Both the short-term and long-term modelling quality objectives shall be fulfilled.

- The computation of the MQI seems to be based on the values of maximum uncertainties of fixed measurements in the tables 1 and 2 of Annex V, section A. In annex V, it is described how to compute the maximum measurement uncertainties for computing the uncertainties of modelling and the MQI for all the concentration

[13] The threshold shall be set to 4, 3, 10, 3 and 5 ug/m^3 for PM_{10}, $PM_{2.5}$, O_3, NO_2 and SO_2, respectively and 0.5 mg/m^3 for CO. These values represent the state of knowledge and shall be regularly updated at least every 5 years, to reflect developments in the state-of-art.

ranges. The procedure is different depending on the pollutant (there 3 groups of pollutants), which is very messy to apply.

Proposal: We suggest to extend the use of the approach described for PM10, PM2.5, CO, NO2, SO2, O3 for short range concentrations to all the pollutants and for short and long term. It consists of "**the maximum uncertainty of measurement data used to assess the modelling quality objective shall be the absolute uncertainty calculated using the relative value expressed in this Section, above the limit value and shall decrease linearly from the absolute value at the limit value, to a threshold at zero concentration**". The thresholds for zero concentrations must be fixed by the measurement community.

Paragraph 6

For modelling of annual mean concentrations of $PM_{2.5}$, PM_{10}, and nitrogen dioxide the maximum uncertainty of measurement data used for assessing the modelling quality objective shall not exceed either the absolute value or the relative value expressed in this Section.

- SO2 for annual means is missing in the definition of the procedure for computing MQI.

  Proposal: To include SO2 for annual means in the description of the procedure for computing MQI

B. Data coverage of measurements for ambient air quality assessment

- The data coverage percentage of hourly and eight-hourly data is not meaningful for PM10 and PM2.5 with the proposed gravimetric reference method. If EN12341 is retained as the reference method for particulate matter, this reference should be removed and only 24-hour coverage should be retained.
- In Annex V, point B, point (3), it is reported that for the assessment of annual mean values, Member States may apply **random measurements** instead of continuous measurements if they can demonstrate to the Commission that the uncertainty, including the uncertainty due to random sampling, meets the quality objectives in the table and the time coverage is still larger than the minimum data coverage for indicative measurements. This exception was previously associated with particles, benzene and lead. From the table, it appears that the exception now applies to the hourly/8-hour/24-hour averages for the pollutants SO2, NO2/NOx, CO and O3 and not to the annual averages for PM, benzene and lead as before. We understand that it may be a mistake. In the event that it is not an error, we request that you allow us to continue using random measurements as stated in the current Directive.
- It would be desirable to study more possibilities for using **random measurements.**

- We understand that this table includes the temporal coverage and the aggregation criteria for the calculation of hourly, eight-hourly and daily values. For the case of fixed measurements the values are clear, the problem arises with the interpretation of indicative measurements. The table seems to set a minimum coverage of 50% of data for the calculation of daily and hourly averages (the case of O3 and CO is clarified with a call for 8-h mean, for the rest there is no indication). We consider that this point needs to be clarified in order to make the averages comparable, and in any case they should meet the same requirements as the fixed measurements, otherwise they would not be comparable.

Paragrah 5

- We propose to introduce the word minimum ahead of the 24-hour sampling because most VOCs and PAHs are found in very low concentrations, which makes it necessary to sample for more than 24 hours in order to detect their presence.

  We proposed a modification as follows:

  Minimum 24-hour sampling is required for the measurement of benzo(a)pyrene and other polycyclic aromatic hydrocarbons. Individual samples taken over a period of up to 1 month may be combined and analysed as a composite sample, provided the method ensures that the samples are stable for that period. The three congeners benzo(b)fluoranthene, benzo(j)fluoranthene, benzo(k)fluoranthene can be difficult to resolve analytically. In such cases, they can be reported as a sum together. Sampling must be spread evenly over the weekdays and the year. For the measurement of deposition rates monthly, or weekly, samples throughout the year are recommended.

FINLAND

FI written comments to Chapter I and II of the AQD proposal

17.2.2023

General comments

FI thanks the Commission for its proposal for a revision of Ambient Air Quality Directive. FI supports a gradual closer alignment of the EU air quality standards with the WHO air quality guideline values. However, at this point we will have to maintain a scrutiny reservation, since we do not have the Government position yet and all our comments and views are still preliminary. We will also send later our written comments concerning the relevant parts of the Annexes of Chapter II.

Chapter I: General provisions (Aricles 1-6)

Article 1 Objectives

- It is not quite clear for us what the term "intermediate" means in paragraph 2. Could we get some clarification on this?
- We would like to point out that no deadline is set for long-term objectives for ozone. Therefore it is mislieading and confusing to write in paragraph 2 that " the the directive sets long term objectives to be met by the year 2030. " Clarification would be needed on this aswell.

Article 4 Definitions

We have some initial comments and questions and we will come back to the definitions also later in discussions on the relevant articles.

(6) '$PM_{2.5}$' ~~shall mean~~ Ö means Õ particulate matter which passes through a size-selective inlet as defined in the reference method for the sampling and measurement of $PM_{2.5}$, EN 14907, with a 50 % efficiency cut-off at 2,5 µm aerodynamic diameter;

- We want to point out, that the standard EN 14907 is withdrawn and therefore the standard EN 12341 should be included in this definition.

(8) 'arsenic', 'cadmium', 'nickel' and 'benzo(a)pyrene' mean the total content of these elements and compounds in the PM_{10} fraction;

- Lead is missing from this definition.

(13) "black carbon" BC) means equivalent black carbon (eBC) derived from optical methods.

- On WPE meeting on 23.1.2023 we pointed out, why the definition of black carbon is different than in the directive of national emission reduction commitments (NEC Directive, (EU) 2016/2284)? On our opinion, the definitions for the same matter in different directives should be the same. According to our national experts on black carbon and air quality, we support the inclusion of a definition of black carbon that differs from the NEC Directive in to the new AQD. We also propose the following changes to the current definition of black carbon in the Commission proposal:

"black carbon" (BC) means ~~equivalent~~ black carbon ~~(eBC)~~ mass derived from optical methods or other suitable methods.

The reasoning for our proposal on the definition of Black Carbon:

The definition of black carbon is still evolving, and different terms and definitions are commonly used. The most commonly used definition for BC by Bond et al., (2013) defines BC based on its

origin (combustion process) and combination of unique properties (e.g. strong visible light absorption at 550 nm, refractory with vaporization temperature near 4000 K, aggregate morphology, and insolubility in water and common organic solvents). Also, different terms such as BC (black carbon), eBC (equivalent BC), EC (elemental carbon), rBC (refractory BC), or soot, are frequently used to BC depending on the used measurement methods. Recommendation by Petzold et al., (2013) states: "Equivalent black carbon (EBC) should be used instead of black carbon for data derived from optical absorption methods, together with a suitable MAC for the conversion of light absorption coefficient into mass concentration". Term EC is used for thermal methods, rBC is referring to results derived from methods based on laser induced incandescence and term soot is used in emission studies (Lack et al., 2014). In the recently published document "WHO global air quality guidelines. Particulate matter (PM2.5 and PM10), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide" term BC/EC has been used.

The current definition of black carbon in the Proposal uses the term "equivalent black carbon" and "eBC" and restricts BC measurement methods to only optical methods. We suggest to remove "equivalent" and "eBC" from the definition and to add "mass" and "or other suitable methods". We acknowledge that the optical methods are the state-of-the-art method at the moment. However, since other techniques are available and are rising, we feel the definition should not restrict the applied technique, also because no reference method is given in the Directive. We suggest to include "other suitable methods", as e.g. photoacoustic methods are already used in ambient air measurements, where the detection technique is not optic but rather based on measuring sound waves by a sensitive microphone. Other good techniques (such as thermal and laser based) also exists, and their use should not be restricted by the definition at this stage. Restrictive terminology "equivalent" and "eBC" should be removed from the definition at this state when the techniques are still evolving and it is not sure what are the techniques used in the future. We also propose to add "mass" in the definition to clarify the text as the data is converted to a mass result, which originally it is not. We also wish to point out, that data quality objectives together with guidance for suitable techniques are needed in the long term for BC measurements (and other new pollutants) to ascertain harmonized and comparable measurements within Europe.

References:

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WHO global air quality guidelines. Particulate matter (PM2.5 and PM10), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide;e. Geneva: World Health Organization., 2021.

(14) "ultrafine particles" (UFP) means the particle number concentrations in cm^3 for a size range with a lower limit of ≤ 10 nm and for a size range with no restriction on the upper limit.

- We think that in this definition the lower limit should be exact, in other words equal to 10. Otherwise, the data collected in different MS is not going to be comparable.

(21) "objective estimation" means an assessment method to obtain quantitative or qualitative information on the concentration or deposition level of a pollutant through expert judgement, which may include use of statistical tools, remote sensing, and in-situ sensors;

- We propose that also "emission inventory" is added in the definition. This would be in line with the wording of Article 7.2 stating that, " ….obtained from information from emission inventories and modelling to determine…" :

(26)(27) With regard to definition of limit value (26) and ozone target value (27) we would like to know, why is the text referring to given period /timeframe deleted from the definition of limit value but remained in the definition of ozone target value. Could the commission clarify this?

(26) ~~5.~~'limit value' ~~shall mean~~ ⌦ means ⌫ a level ⌦ which is not to be exceeded and which is ⌫ fixed on the basis of scientific knowledge, with the aim of avoiding, preventing or reducing harmful effects on human health ~~and/~~or the environment ~~as a whole, to be attained within a given period and not to be exceeded once attained~~;

(27) ~~9.~~' ⇨ ozone ⇦ target value' ~~shall mean~~ ⌦ means ⌫ a level fixed ⇨ on the basis of scientific knowledge, ⇦ with the aim of avoiding, preventing or reducing harmful effects ⇨ from ozone ⇦ on human health ~~and/~~or the environment ~~as a whole~~, to be ⌦ complied with ⌫ ~~attained~~ where possible over a given period;

Chapter II: Assessment of ambient air quality and deposition rates (Articles 7-11 and relevant Annexes)

- We note that "deposit rate" is added to the title of the chapter and that "deposit" is also added to the definition of "level". However, text concerning deposition rates cannot be found under this Chapter or Annexes. This should be clarified. Also, in the current legislation the deposition of arsenic, cadmium, mercury, nickel, and PAHs is required, and now when the directives are combined, it may be relevant to consider if lead deposition should be included, as it can be easily measured simultaneously with the other metals, and it is included in the same reference method (standard EN 15841) as the other metals.

Article 7: Assessment regime (and relevant Annex)

- We can preliminary support especially the simplification of the assessment thresholds under article 7.
- It should be clarified, which size fraction is meant for lead, nickel, arsenic, cadmium and benzo(a)pyrene? That is currently PM10 fraction. (Annex I and annex II)

Article 8: Assessment criteria (and relevant Annexes)

- We can preliminary support the proposed new requirement that in zones where limit values are exceeded both measurements and modelling should be used for the assessment, as it is very well known that point measurement alone cannot reliably capture the spatial distribution of concentration in these "hot-spot" areas. (Art 8.3).

- The high concentration measurement sites of UFP are very important, since they provide information related to different pollutant problems and environments, such as vehicular traffic, shipping and airports. Our preliminary view is that it would be important to have even more of these hot spots, since they are very useful for local air quality actions. Too sparse hot spot network would not give enough air quality data to capture the huge concentration variation in different microenvironments and to evaluate long term trends. (Art 8.7).
- Why are there no requirements to monitor black carbon in environments where concentrations are high? Our preliminary view is that BC should be added also under this monitoring requirement. WHO recommends the monitoring of UFP and BC due to health effects. BC would provide important additional information related to concentrations levels and trends caused by emissions from residential wood combustion, vehicular traffic and shipping. In the proposal there is only BC monitoring in rural and urban background supersites. It would be especially important to get BC information from hot spot sites. (Article 8.7, Annex VII)
- See also comments concerning supersites in Article 10.

Article 9: Sampling points (and relevant Annexes)

- Our preliminary view is that modelling or indicative measurements should not always be mandatory when reviewing the adequacy of sampling points under article 9. We think that objective methods such as expert evaluation should be enough, if the air pollutant levels are already well known, based on previous air quality measurements and/or modelling, and they provide enough information for expert evaluation. (Annex IV point D 9)

- Editorial comment concerning paragraph 1: For simplicity, it would make sense to list first all the gases and then the PM and its' fractions, and include ozone to the first sentence:

    - 1. The location of sampling points for the measurement of sulphur dioxide, nitrogen dioxide and oxides of nitrogen, >ozone, benzene, carbon monoxide,< particulate matter (PM_{10} and $PM_{2.5}$), lead, ~~>benzene, and carbon monoxide<~~ , arsenic, cadmium, nickel, benzo(a)pyrene in ambient air shall be determined in accordance with Annex IV.

    - ~~>The location of sampling points for the measurement of ozone shall be determined in accordance with Annex IV.<~~

- Editorial comment concerning paragraph 7: It would be advisable to clarify that the last sentence refers to sampling points with exceedances (rather than all sampling points including the ones with concentrations below limit value). Our suggestion:

    - 7. Sampling points at which exceedances of any limit value specified in Section 1 of Annex I were recorded within the previous 3 years shall not be relocated, unless a relocation is necessary due to special circumstances, including spatial development. Relocation of

>such< sampling points shall be done within their area of spatial representativeness and be based on modelling results.

Article 10: Monitoring supersites (and relevant Annexes)

- Our preliminary view is that monitoring new pollutants (black carbon, ultra-small particles and ammonia) is important. The WHO also recommends the monitoring of black carbon and ultrafine particles. Ammonia increases the formation of ultra-low particles and fine particles, which is why its monitoring is justified. We think that the monitoring new pollutants would promote the systematic collection of information related to the environmental and health impacts of these pollutants in the EU. However, we have some concerns about the details of the monitoring requirements, such as:

    - The exposure to pollutants is highest in urban areas. Therefore our preliminary view is that the minimum number of rural background supersites (1/100 000 km2) is too high for sparse populated and geographically large countries such as Finland. For example in Finland the proposal would lead to 3 rural supersites and 1 urban background supersite. Our preliminary view is that there should be more flexibility with regard to number of rural backgrounds. It could be for example cost-effective to divide the required measurements for rural background supersites between several rural background stations so that each station would not have to measure all pollutants. (Article 10)
    - Requirements to monitor metal concentrations and deposition annually in all rural and urban background supersites might be disproportionate where concentrations are very low. (Article 10.6). Furthermore requirement of monitoring oxidative potential of particles in urban background supersite is quite demanding in view there have not been a lot of measurements in Europe and mainly in campaigns. (Article 10.5)
    - Should lead (currently PM10 fraction) be also included in the monitoring? (Article 10.6)

Article 11: Reference measurement methods and data quality objectives (and relevant Annexes)

- We want to draw attention to the fact that the air quality data concerning the new pollutants (BC, Ammonia (NH3), UFP, particle size number distribution of UFP) would be almost entirely outside the scope of application of the data quality objectives in accordance with Annex V. They would only be subject to data coverage of measurements for ambient air quality assessment as specified in Annex V, paragraph B. Finland considers it important that, in the long term, the air quality data concerning these new pollutants would more broadly within the scope of the data quality objectives. This would be important in order for air quality data from different countries to be comparable.