EFCA

European Federation of Clean Air and Environmental Protection Associations

Ultra fine Particles (UfPs) issues when revising AGP –challenging TFTEI

Andrzej Jagusiewicz Honorary President of EFCA

ww.efca.net
info@efca.net

10 th Annual TFTEI meeting, 17 October 2024
Paris, France

EFCA

European Federation of Clean Air and Environmental Protection Associations

DNA of EFCA and its committments:

- EFCA works on an evidence-based approach to development of policies and measures and suport their implementation>focus on UfPs (size less than or equal to 0.1 μm or 100 nm)
- EFCA develops the quantitative evidence on independent adverse health effects from UfPs (still insufficient) via series of symposia in Brussels; the last was held from 3-4 July 2024
- EFCA is committed to promote a "ONE-ATMOSPHERE" approach to the framing of air/climate protection policies, which allows multiple benefits and to the setting of s standard/metric of UfPs
- EFCA is for legal parity and symetry in action between the UNFCCC and the UNECE Air Convention noting that

❖ Global climate community underestimates so called Non CO2 Green-House Gases (NCGG) or Short-Lived Climate Pollutants (SLCPs), which are both climate forcers and air pollutants (methane, nitrous oxide, fluorocarbons, black carbon (BC) and organic aerosols and tropospheric ozone) while

❖ Regional air protection community, dispate their own efforts to reduce emissions of ozone precursors and methane, calls for global methane reductions to further reduce ground-level ozone in the region

Ultrafines Particles as integrating element

- Wide range of sources and substances, including all SLCPs
  - Natural sources (sea spray, smoke…)
  - Process or end of life release of industrial, medical materials and cosmetic components
  - By-products: mainly combustion particles, wear of machinery, roads and tyres and food preparation (cooking)
  - Secondary pollutants (aerosols): formed from photochemical reactions of primary emissions of SO_2 , NO_x, ammonia and VOC
- Effects at all scales through indoor and ambient exposure
  - Local (smog)>respiratory and cardiovascular systems
  - Regional> reduced ecosystem function leading to less effective ecosystem services
  - Global on climate system>global warming from direct forcing role in cloud formation (aerosols) and BC deposition
- The most aggressive sources>transport of all kinds (exhausts from vehicles, ships and aircraft)

Why ultrafines particles as Policy target (1)

- UfPs especially from vehicle exhaust are associated with cardiovascular morbidity and mortality by multiple mechanisms
- Cognitive decline may be associated with UfP pollution, but more evidence needed
- UfPs has a significant climate impact, new particle formation generates half of the cloud condensation nuclei in the atmosphere
- Highly oxidized organic compounds from the biosphere have substantial influence on particle formation and growth
- Particles filters are considered as a substantial success with significant positive health effects especially in abatement of Diesel engine emissions
- Some modern gasoline engines emit more particles than Diesel engines with filters (higher EURO standard higher PNC>Particle Number Concentration)
- Aircraft and shipping are significant sources with distinctive forms of UfPs and specific toxicity profiles
- Non-combustion sources, material from abrasion of road surfaces, tyres, brakes and lubricating oil and cosmetics are also significant

Why ultrafines particles as Policy target (2)

- UfPs make up little of the mass in conventional measures of both PM_{10} and $PM_{2.5}$ but has a high number density expressed as Particle Number Concentration (PNC) and a high active surface area>what basis for any metric?
- Many sources are already subject to emission control (primary pollutants responsible for secondary UfPs or recent guidelines on shipping emissions) but
- Many other sources are not enough controlled (solid-fuel burning and SCIs>Code of good practice of 2019 only) or weakly (aircraft>Sustainable Aviation Fuel-SAF by 2030) or not at all (cooking)
- Necessary to keep more pressure on already regulated sources (ECE>negotiation of AGP and Revision of EU Rules>Ambient Air Quality Directive-AAQD and National Emission Committments Diective-NEC) and extend controls on unregulated ones, where technology exists (DPF retrofit for construction machinery or accelerate SAF without S like for shipping)
- Impose thermal performance of building >zero emission

What is on the table as policy proposal

- UfPs are recognised as a major health risk factor by WHO but the quantitative evidence on independent adverse health effects from these pollutants is still insufficient>no standard but
- WHO global air quality guidelines of 2021 include Good practice statements about BC/Elemental Carbon-EC and UfPs (4)>a first step calling inter alia for:

- ❑ Taking masures to reduce BC/EC emissions and where appropriate, develop standards or targets for their ambient concentrations (up to 50 % of the $PM_{2,5}$ is attributed to the sum of elemental and organic carbon.
- ❑ Distinguishing between low (<1000) and high (>10000) PNC to guide decisions on the priorities of UfP source emission control

- EU Rules-related AAQD:

- ❑ Intermediate 2030 air quality standards>10 instead of 25 μg/m3 per year and stricter pollution index
- ❑ Other air quality metrics, including more refined average exposure obligations>target 75% reduction in mortality by 2050
- ❑ Monitoring pollutants of emerging concern>ultrafine particles, black carbon, ammonia (establishing of supersites on urban areas-1 per 10 mln inhabitants and of rural stations-1 per 100.000 km2)

TFTEI as main actor to mitigate UfPs

- At its last session held from 27-31 May 2024, the WGSR has developed a draft Work Plan for the revision of the AGP, including timing and sequence of agreed negotiation items.
- The Work Plan aims to integrate climate, energy and air pollution policies (also outside ECE), considers to develop other metrics like condensable PM and BC and give attention to methane as global precursor of ground-level ozone
- Taking into account the necessary activities that are required to fulfill the Work Plan (if adopted), TFTEI has a potential to contribute to:

❑ *National emission (reduction) commitments (NECs)*

❑ *Potential revisions of technical annexes (their scope and level of ambition) and guidelines*

❑ *How to deliver further reductions of black carbon emissions*

❑ *Whether and how to address methane emissions, including options to cntrol it in the Protocol*

Note: important for TFTEI is to participate in a general discussion on the scope and the mandatory or voluntary nature of technical annexes (good knowledge of the needs of non-Parties>EECCA)

What EFCA would expect from TFTEI

- Areas where anticipated action can be taken now (draft Work Plan by WGSR to be accepted by EB in December 2024 only)
  - Upon request from WGSR strengthening current measures and take further measures to reduce emissions of $PM_{2,5}$, including BC/EC following MFTR scenario (technical annexes, new guidelines and updated existing guidances, where appropriate)
  - When revising/developping targets, standards and guidelines be guided by WHO good practices and EU Rules (AAQD) with respect to UfPs, provided WGSR agreed
  - When designing new mitigation measures regardless their mandatory or recommandatory nature consider where they also reduce UfPs emissions in order to gather extra evidence
  - Using as much as possible the wording „ultrafine particles", where appropriate as reducing PM reduces in general also its ultrafine fraction of less than 0.1 µm
  - Fully harmonizing EU and ECE efforts to deliver new air protection regime.

Some conclusions of more general nature

- Advocate a „ONE ATMOSHERE" approach/perspective leading to transform the Air Convention into a global treaty (FICAP) while leaving to the UN regions elaboration of control instruments for region-specific pollutants, ncluding targets on UfPs e.g. BC/EC
- UfPs have finally been recognozed at the last EFCA/KIT (Karlsruhe Institute of Technology) symposium in Brussels by the representatives of the European Parliament (co-opening) and the European Commission (keynote presentation)>SNOW BALL
- Undertake early and strong action (MFTR) on Short-Lived Climate Pollutants (SLCPs) – which are both climate forcers and air pollutants under both UNFCCC and UNECE Air Convention
- All incoming COPs (COP 29 th in Baku) should accelerate systemic transformations needed in every thematic areas to fulfill the Paris agreement
- Revision of the Amended Gothenburg Protocol with strong ERCs based on MFTR, including methane and at least BC by end of 2026
- Setting of BC standard with the WHO Air Quality Guidelines
- General implementation of Sustainable Development Strategies (SDS) and its 17 goals as a way to achieve the target of the Paris

EFCA

European Federation of Clean Air and Environmental Protection Associations

The integration of Climate and Air Protection policies creates prospects for delivering SDGs and vice versa (***before world-wide e-mobility***)

Thank you for your attention

www.efca.net

andrzejjagusiewicz@yahoo.com