EFCA

European Federation of Clean Air and Environmental Protection Associations

Integrating action for cleaner air and climate protection with focus on ultrafine patricles (UfPs)

Andrzej Jagusiewicz and Thomas Reichert

Past-Presidents of EFCA

ww.efca.net, „info@efca.net

Symposium on Ultrafine Particles-Air Quality and Climate

July 3-4 2024 Brussels, Belgium

EFCA

European Federation of Clean Air and Environmental Protection Associations

- EFCA is a European environmental association of civil society bodies working on voluntary agreement with mission: „to help to achieve policies and measures that will protect the environment, climate and human health in Europe against the effects of pollution while fostering sustainable development
- EFCA works on an evidence-based approach to development of policies and measures and support their implementation>focus on UfPs (size less than or equal to 0.1 µm or 100 nm)
- EFCA is committed to promote a "ONE-ATMOSPHERE" approach to the framing of air/climate protection policies and to the standard/metric of UfPs
- EFCA is active as an observer at UN and EU fora

EFCA

European Federation of Clean Air and Environmental Protection Associations

Why and what to integrate at global level

- „ONE ATMOSPHERE" perspective improves decision-making on all atmospheric issues and allows multiple benefits to be better secured
- Integrating climate and air pollution policy-making reduces the costs of achieving targets for both climate and air pollution, but
- Climate community under the UNFCCC 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 and aerosols, mainly organic and tropospheric ozone) and contribute significantly to climate change while
- Air Protection community under the UNECE Air Convention (LRTAP), despite 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
- Note: UNFCCC is a global while LRTAPC only regional treaty

EFCA

European Federation of Clean Air and Environmental Protection Associations

Ultrafine 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 , NOx, ammonia and VOC
  - Effects at all scales through indoor and ambient exposure
- Short-Lived Climate Pollutants (SLCPs), which are both climate forcers and air pollutants (methane, nitrous oxide, fluorocarbons, black carbon and aerosols, mainly organic
- 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 ultrafine 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)
- 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 ultrafine 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-concentration (expressed as 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 (residential heating>only guidelines) or not at all (aircraft or cooking)
- Necessary to keep more pressure on already regulated sources (ECE>AGP and EU>IED or NEC) and extend controls on unregulated ones, where technology exists (DPF retrofit for construction machinery or S content of aviation fuels like for shipping)
- Take opportunities for exposure reduction in physical planning (bikes paths/pedestrian areas) and building control (thermal performance>zero emission)
- WHO air quality guideline for annual fine particulate matter ($PM_{2.5}$) exposure lowered from 10 to 5 μg m^{-3} but UfPs still in the waiting room, including BC as additional indicator to protect our health

What we are calling for as policy proposal

- UfPs recognised as a major health risk factor>WHO Guidance!
- Evidence demands policy response>implementation of Good practice statements in WHO Guidance about BC/EC and UfPs>a first step
- Areas where action can be taken now
  - Strengthening current measures and take further measures to reduce emissions of BC/EC by developing standards/targets for their ceilings and ambient concentrations (NEC and CAFE Directives, PM 2.5, NO2 ….)
  - Revising current policy instrument>the ECE Amended Gothenburg Protocol (possible emission reduction commitments on BC and CH_4) under the Air Convention
  - Harmonizing EU and ECE efforts
- Future development built on evidence to set air quality standards
  - Assessment of current research (insufficiency in quantification of ambient UfPs by their concentration (PNC), monitoring and source apportionments)
  - Policy oriented future research (existing pollution control measures lead or not to a reduction in UFP and in order to gather enough evidence to set UfP metric expressed in PNC???)

EFCA European Federation of Clean Air and Environmental Protection Associations

What is going on at UNECE>AGP

- At its last session held from 27-31 May 2024, the WGSR has developed a draft Plan for the revision of the AGP, including timing and sequence of agreed negotiation items.
- The Plan aims to integrate climate, energy and air pollution policies (also outside ECE), considers to develop other metrics like condensable PM and Black Carbon (BC) and give attention to methane as global precursor of ground-level ozone
- Taking into account the necessary activities that will be required to fulfil the Plan a sequential prioritization of further steps and relevant decisions has been proposed as follows:
  - *scope, indicator(s) and impact assessment method for an overarching target(s), including type of reduction scenarios,*
  - *base and target years and other specifics for the negotiation of possible emission reduction commitments (ERCs);*
  - *whether and how to include methane and elaborate options to address it in the Protocol,*
  - *to start a general discussion on the scope and the mandatory or voluntary nature of technical annexes (needs of non-Parties)*
- 6 sessions of WGSR and 3 sessions of EB ending in December 2026

EFCA

European Federation of Clean Air and Environmental Protection Associations

Conclusions to make effective our policy proposal

- 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, including targets on UfPs e.g. BC
- Further development of microsensors democratizing the civic movement to combat UFPs will make pressure on air protection policies, but it's needed to
- Undertake early and strong action (MFTR) on Short-Lived Climate Pollutants (SLCPs) – which are both climate forcers and air pollutants under UNFCCC and UNECE Air Convention
- All incoming COPs should accelerate systemic transformations needed in every thematic areas to fulfil 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 and its 17 goals (SDGs) as a way to achieve the target of the Paris Agreement and ECE and EU air pollution regulation

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
thomas.reichert@ict.fraunhofer.de