EFCA Newsletter

European Federation of Clean Air and Environmental Protection Associations

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Editorial

Greetings

by Gordana Pehnec, EFCA President

The end of 2024 marks an important event related to air quality: the revised Ambient Air Quality Directive was put in force on 10 December 2024[1] The Directive 2024/2881/EC of the European Parliament and of the Council on ambient air quality and cleaner air for Europe (recast) merges the previous Directives 2004/107/EC and 2008/50/EC into one, improves the current legislation framework, and aligns EU air quality standards more closely with the recommendations of the World Health Organization (WHO). It updates ambient air quality standards for a total of twelve air pollutants (sulphur dioxide, nitrogen dioxide, particulate matter PM_{10}, and $PM_{2.5}$, ozone, benzene, carbon monoxide, lead, arsenic, cadmium, nickel, and benzo(a)pyrene), with most of the current air quality standards getting lower, especially those related to PM_{10}, $PM_{2.5}$ and NO_2. Furthermore, it consists of a series of new measures to ensure healthier air, including the measure that people suffering from health damages due to air pollution have the right to be compensated in case of a violation of EU air quality rules.

Furthermore, the Directive sets an obligation to Member States to measure pollutants of emerging concern, such as ultrafine particles, black carbon and elemental carbon, as well as ammonia and the oxidative potential of particulate matter. Monitoring supersites will be established at both rural background and urban background locations to support a scientific understanding of their effects

on human health and the environment, as recommended by the WHO. At these sites, detailed measurements of fine particulate matter should be made to better understand the origin and impacts of $PM_{2.5,}$ and, therefore, to develop appropriate policies.

In the future, the Commission will regularly review the scientific evidence related to air pollutants, their effects on human health and the environment, as well as the corresponding direct and indirect healthcare costs associated with air pollution, socioeconomic impacts, environmental costs, and behavioural, fiscal and technological developments. The review will include the further alignment of air quality standards with the most recent WHO Air Quality Guidelines and the latest scientific information, as well as cover additional air pollutants. The first review should be done by the end of 2030.

The need to include emerging pollutants such as ultrafine particles and black carbon in the Ambient Air Quality Directive has been emphasized for many years by the scientific community. The important role had EFCA's Ultra Fine Particles (UFP) Symposia, which since 2007 gathered scientists and professionals with the goal to collect recent findings and improve the knowledge on UFP, their interactions with air quality and climate, monitoring results, as well as health and impact assessments.

The last, 9th UFP Symposium, organized in cooperation of EFCA, KIT, GUS and CEEES in Brussel 3-4 July 2024, presented the most recent scientific progress and successfully improved the dialogue with policy and rule makers in Europe. EFCA Executive Committee members were very active, co-opening the event, chairing the sessions and preparing the policy development presentation. In the linked EFCA Assembly meeting the new member from Greece joint EFCA.

On this occasion, I would like to express our warm welcome to the new member of EFCA and I'm looking forward to future cooperation!

To all EFCA members, including especially youngest one, I wish a **Merry Christmas, pleasant holidays and a happy and successful 2025!**

[1] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L_202402881

News from EFCA

New EFCA member

by Gordana Pehnec, EFCA president

After the UFP Symposium in Brussels, the 35th EFCA Assembly meeting was organized in hybrid mode on 5th July. Dr Konstantinos Eleftheriadis, Research Director of the Institute of Nuclear and Radiological Science & Technology, Energy & Safety, which is part of the National Centre for Scientific Research (N.C.S.R.) "Demokritos", Greece, attended the meeting. Dr Eleftheriadis expressed the intention to join EFCA as an associate member. Based on his request, voting was carried out and the Institute was accepted as a new member of EFCA.

10th Annual Meeting of TFTEI 17th October 2024

by Andrzej Jagusiewicz

The 10th Annual Meeting of TFTEI*, techno-scientific body of the UNECE Air Convention, organized by CITEPA** was held in Paris on 17th of October 2024.

The meeting was preceded by a two-day Workshop on Best Available Techniques (BAT) under the Air Convention focused on the needs of EECCA and WB*** countries, to promote BAT implementation in those countries. The workshop was organised by the UNECE Secretariat in Geneva and partly sponsored by UNEP.

The TFTEI agenda was primarily devoted to the priority issues, in the work plan 2024-2025, adopted by the Executive Body and mainly related to the review/revision of the 2012 Amended Gothenburg Protocol (AGP) and addressed the activities, carried out, in progress and/or planned of the Task Force, in line with its revised mandate.

To initiate the discussion on the techno-scientific topics, three presentations were delivered: on preliminary results of the so-called 'Technological Pathway' developed by the TFTEI/CITEPA experts for EECCA and WB countries, on policy options to revise the AGP, including the associated Technical Annexes and on challenging TFTEI with ultra fine particles (UfPs) issues. The latter was prepared and presented by Andrzej Jagusiewicz, Honorary EFCA President. Important presentations were also delivered on the importance of considering methane emission reductions, black carbon (ultrafine particle per excellence) measurement and INCITE**** initiative as a new mechanism to promote technical innovation under the EU IED Directive*****.

In my presentation, I underlined the integrating role of ultrafine particles in synergy action for air protection and climate change mitigation, present policy dilemma to establish a related metrics and the role of TFTEI during its revision tasks to support EFCA efforts on the subject. I proudly noted the progress in getting a full „citizenship" by UfPs during our traditional symposia on the subject, held in Brussels, referring to the conclusions by the EU representatives (Parliament and the Commission), who attended the last one.

Apart a good audience, I had a chance to be listened by the key persons responsible for the AGP revision, namely Mr Till Spranger, the Chair of the Working Group on Strategies and Review and Mme Kimber Scavo, the Chair of the Executive Body, the Co-chairs of the Task Force Mme Cecilia Camporeale and Mr Jean-Guy Bartaire and of course the Convention's UNECE secretariat.

On the next day, I attended the event of the 63rd anniversary of CITEPA, upon invitation by its President, Mr Jean-Guy Bartaire, reinforcing EFCA ties with the French air protection community.

*Task Force on Techno-Economic Issues
**Le Centre interprofessionnel technique d'études de la pollution atmosphérique
***East Europe, Caucasus and Central Asia, West Balkans
****International Centre for Industrial Transformation and Emissions
*****Industrial Emission Directive

44th session of the Executive Body to the Air Convention was held in Geneva, 9-12 December 2024

by Andrzej Jagusiewicz

Just when the Convention had its 45th anniversary, the Honorary President of EFCA, Dr Andrzej Jagusiewicz attended the session. The most important agenda items were review of the implementation of the 2024–2025 workplan, in the context of its sufficiency and usefulness to the revision of the Amended Gothenburg Protocol, and detailed discussion on the draft plan for such a

procedure agreed previously by the Working Group on Strategies and Review (WGSR). The latter contained the work and activities ongoing (vide the workplan as above) or required, to enable Parties to make decisions on various aspects of the negotiations.

Moreover, the Executive Body considered in depth the expert document finalized at the informal Leuven meeting held from 21 to 24 October 2024 for a potential revision of technical annexes, including preferences of non-Parties to the Convention, in the case of EECCA* and WB countries**. The document is of great interest to EFCA as it will direct the work of TFTEI with whom our Federation closely cooperates.

It's also worth mentioning that Executive Body gave due attention to an informal document "Policy brief on potential targets to reduce risks for health and ecosystems", which calls for a reduction of 50 % in the premature death rate over the period 2015-2040, prepared by the Task Force on Integrated Assessment Modelling and the Centre for Integrated Assessment Modelling (version 5 of November 2024).

After thorough and detailed discussion, the Executive Body took the following main decision:

- adopted the plan for the revision of the Amended Gothenburg Protocol, based on its draft prepared by the WGSR, but updated considering the session. In particular, the plan will allow to structure the work of the task forces (e.g. TFTEI) in 2025
- recommended to follow the advice from the informal Leuven meeting to consider the role of technical annexes and to distinguish between their role for different countries e.g. EU, EECCA, WB etc.

The incoming 63rd session of WGSR, to be held in Geneva from 26 to 28 Mai 2025 will start the real negotiations and should cover, inter alia, the next steps for methane, the technical annexes, and policy guidance related to the scenario modeling.

The Executive Body also highlighted the newly released Prospectus – "A guide to the scientific and technical work under the Convention" prepared by the Forum for International Cooperation on Air Pollution (FICAP), covering ozone and PM.

Finally, EB took also one important, let's say political, decision: to allocate the remaining funds of 306,000 USD from EMEP, from the funding to MSC-East paused in 2023, to support the work on the revision of the Gothenburg Protocol by the Center for Integrated Assessment Modeling and the Center for Emissions Inventories and Projections in equal amounts. The Executive Body elected its new Chair Mne Dominique Pritula, Senior Policy Adviser, from Canada.

Short Summary of the EFCA Symposium on Ultrafine Particles – Brussels July 3rd-4th, 2024

by Harald Saathoff, KIT & UFP organizing committee

Fifty-two experts from 12 different countries participated in the 9th symposium on ultrafine particles (UFP) to discuss UFP sources, ambient UFP measurements, urban UFP, UFP toxicity and epidemiology, and UFP related policy in 12 sessions. The symposium ended with an interactive discussion on the way forward with UFP research.

The symposium started with an impulse statement by a member of the European parliament on improving legislation on ultrafine particles. Then a keynote lecture followed showing first evidence for new particle formation in the upper tropical troposphere and its role for climate.

A first session focused on UFP sources including the role of particulate filters, UFP source attribution, and non-exhaust emissions. Filtration of soot can contribute substantially to reduce global warming and therefore retrofitting of existing Diesel engines with filters can be useful. Primary emissions of UFP from power plants and ships contribute substantially to UFP numbers while new particle formation has a large potential but still requires better quantification. It is possible to create a European-wide UFP model supported by mobile measurements. Studies on tire and brake wear for new electric cars and new brake systems show strong emissions of UFP with a diameter of 10 nm especially for higher brake temperatures. However, also on car emission reductions systems are developed. The second session of UFP sources showed the severe impact of biomass combustion for urban and residential areas, the role of UFP in transporting polycyclic aromatic compounds, the domination of take-off UFP emissions at airports, and the relative importance of NOx, NH_3, SO_2 and organic gases as precursors for secondary UFP.

The session on urban UFP showed the relative contributions of new particle formation and traffic emissions, the progress to study the impact of fibers on lung cells, the potential of bottom-up modelling to quantify particle emissions, and the development of metrics to measure emissions by urban transport.

The second keynote lecture showed that black carbon particles can reach fetal organs even at low concentrations, clean air is related to longevity, vitamin K2 may lower the impact of air pollution on premature aging, and further improving EU air quality will further improve public health.

The session on health effects of UFP showed associations between long-term exposure to high particle numbers and the prevalence of high blood pressure as well as myocardial infarction, only minor effects on barrier and cell membrane integrity for UFP exposure on primary cell respiratory mucosa models but no evidence for severe acute cytotoxicity or genotoxicity, significant associations of long term UFP exposure with natural cause and lung cancer mortality, that aviation UFP have a positive association with cough for children. Furthermore, it was shown that early life exposure to UFPs may induce developmental programming of kidney disease, early life ultrafine carbon nanoparticles exposure in mice has significant neurodevelopmental impact, prenatal or pre-plus postnatal exposure to UFP results in a significantly attenuated inflammatory response of adult mouse lung to UF carbon black, and the potential impact of UFP exposure during pregnancy on asthma susceptibility of mice.

The third keynote discussed short-term and long-term health effects of ultrafine particles with both experimental and epidemiological studies showing evidence for short-term health effects while studies on long-term health effects are only emerging.

In the poster session eight posters showed that worldwide all smokers emit 30,000 tons of nicotine into the atmosphere, that PM_1 consistently shows a higher PAH contribution in the city of Zagreb compared to PM_{10}, that low-cost sensors and organic carbon components are useful for UFP source apportionment, that secondary organic compounds of biogenic origin dominate $PM_{2.5}$ in the cites of Karlsruhe, Stuttgart, and Munich, the impact of particulate matter emissions of aircraft manufacturing, the ice nucleating properties of meteoric smoke particles, the growth and loss processes of UFP in Rotterdam .

The fourth keynote lecture explained the recent revision of EU clean air rules, the Ambient Air Quality Directive (AAQD), making it now mandatory for the member states to monitor UFP.

The last session discussed the potential expansion of UFP monitoring capabilities with respect to the new AAQD and an integrating action for cleaner air and climate protection with focus on ultrafine particles e.g. discussing the “one atmosphere” perspective to transform the “air convention” into a global treaty (exploring the FICAP as a platform).

The potential way forward for the UFP symposium and UFP research was discussed in an interactive

session resulting in 86% of the participants being happy with the outcome.

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https://publikationen.bibliothek.kit.edu/1000172643

News from EFCA Members

CAPPA Professional seminar: Determination of pollutants in air, water, and soil by specific analytical techniques, 9-15 June 2024, Greece

by Ranka Godec and Gordana Pehnec; CAPPA

Every two years since 2000, the Croatian Air Pollution Prevention Association (CAPPA) organizes professional workshops and seminars abroad, but due to the COVID-19 pandemic, between 2018 and 2024 we had to make a pause. The purpose of these seminars is to introduce CAPPA members with new knowledge on specific techniques for determination of pollutants in water, air and soil and to establish collaboration with scientist and professionals in the field of environmental protection. This year, the 11th CAPPA seminar "Determination of pollutants in air, water and soil by specific analytical techniques" was organized in cooperation with the National Center for Scientific Research (N.C.S.R.) "Demokritos" Institute of Nuclear and Radiological Science & Technology, Energy & Safety. It was held from 9 to 15 June 2024 in Thessaloniki, Athens and Patras, Greece. There were 25 Croatian participants from five institutions (Institute for Medical Research and Occupational Health, Croatian Meteorological and Hydrological Service, Ekonerg, Faculty of Agriculture-University of Zagreb, University of Applied Sciences Velika Gorica) including three national reference laboratories for air quality monitoring. The organizer of the seminar from Croatia was Ranka Godec, the president of CAPPA. Dr Konstantinos Eleftheriadis, Research Director of N.C.S.R. "Demokritos" Institute of Nuclear and Radiological Science & Technology, Energy & Safety in Athens, was our host and organized a visit to the key institutions in the field of air quality research in Greece: Aristotle University of Thessaloniki, N.C.S.R. "Demokritos" Institute of Nuclear and Radiological Science & Technology, Energy & Safety, and Institute of Chemical Engineering Sciences, Foundation for Research and Technology HELLAS - FORTH/ICE-HT, Greece. Among the participants was also Dr Gordana Pehnec, the new EFCA president and CAPPA representative in the EFCA.
Following the seminar program, CAPPA participants first visited the Aristotle University of Thessaloniki – Faculty of Engineering - School of Spatial Planning and Development Engineering. The Department of Spatial Planning and Development Engineering is responsible for all environmental topics within the Institute, including air quality. On the next day a visit to N.C.S.R. "Demokritos" Institute of Nuclear and Radiological Science & Technology, Energy & Safety in Athens was organized. The Institute has a key role in atmospheric research, including air quality measurements and modelling, atmospheric physics and chemistry. It is also one of the members of ACTRIS. As part of the visit, Croatian reference laboratories for air quality monitoring presented their activities to their Greek colleagues. The contact was established with the Institute of Chemical Engineering Sciences, Foundation for Research and Technology HELLAS - FORTH/ICE-HT in Patras, which is also one of the ACTRIS members.

CAPPA members also visited the DEM-Athens air quality station located northeast of Athens, on the slope of Mount Hemetus at an altitude of 270 m, which is representative for urban background aerosol atmospheric conditions. On 13th of June, a visit to Helmos measuring station above Kalavrita, 2314 m above sea level, was organized. The station is positioned to monitor free tropospheric aerosol, among other things, for climate change studies. Measurements at such a high altitude require high education, specific tools and knowledge, while the measurements provide extremely valuable information about the chemistry and physics of the atmosphere on a global scale.

Dr Konstantinos Eleftheriadis was with CAPPA participants along most of the days of the visit. This seminar enabled Croatian and Greece experts and scientists to present their experience in the field of air quality and exchange opinions about several important issues. New contacts established among the experts during the visit will be useful in future work on the prevention of the impact of air pollution on human health and the environment. Furthermore, future cooperation between N.C.S.R. "Demokritos" and CAPPA, as well as potential membership in EFCA was discussed and encouraged.

News from PIGE: EU Presidency from Poland

by Andrzej Jagusiewicz, past president of EFCA

„On the 1st of January 2025 Poland will take for the second time the EU Presidency. The first time it was in the second half of 2011 when the Chair of the negotiation processes on cleaner air under the UNECE Air Convention and the EU Working Party on International Environmental Problems was EFCA Honorary President Andrzej Jagusiewicz. His main tasks were inter alia to lead the process to amend the Gothenburg Protocol. The latter was finally amended in 2012.

Now his successor is Mr. Krzysztof Olendrzynski, recognised international expert, working for more than decade in the Air Convention's secretariat and today representing the Polish Ministry of Climate and Environment. And again, his main task is inter alia to revise the Amended Gothenburg Protocol. In case our readers have any ideas or suggestions for the process you may contact him directly at krzysztof.olendrzynski@klimat.gov.pl.

Krzysztof Olendrzynski, the Polish Chair on the left and in the middle Emilia Konopka-Górna from the Polish Ministry at the EB meeting.

New President of PIGE

by Andrzej Jagusiewicz, past president of EFCA

During the General Assembly of PIGE held on 23 rd May 2024, a new President has been elected, Mr. Dariusz Gronek, a well-known expert on hydrotechniques. He replaced Mr. Krzysztof Zareba, serving as President for the last 16 years.

Cercl' Air
Schweizerische Gesellschaft der Lufthygiene-Fachleute
Société suisse des responsables de l'hygiène de l'air
Società svizzera dei responsabili della protezione dell'aria

Cercl'Air Newsletters

Cercl'Air publishes three newsletters per year. They contain the highlights on air pollution control in Switzerland and the cantons. Links to them you find under Newsletter - Cercl'Air (cerclair.ch)

News about Air Quality

European Environment Agency

EEA Published: Uppsala has cleanest city air in Europe

EEA, 29. August 2024

European Environment Agency's (EEA) updated European city air quality viewer shows that people in Uppsala and Umeå, Sweden, and Faro, Portugal, can enjoy the cleanest city air in Europe. Three out of four Europeans live in urban areas and most of them are exposed to unsafe levels of air pollution. Improving air quality to levels recommended by the World Health Organization (WHO) could significantly reduce premature deaths caused by air pollution.

The EEA's European city air quality viewer ranks 375 cities from the cleanest to the most polluted based on average levels of fine particulate matter (PM2.5). The data was collected from over 500 monitoring stations at urban locations across EEA member countries over the past two calendar years, 2022 and 2023.

The viewer shows that only 13 European cities had average fine particulate concentrations that were below the World Health Organization's (WHO) health-based guideline level of 5 micrograms per cubic meter of air (5 µg/m3). These cities include four northern capitals: Reykjavik, Tallinn, Stockholm and Helsinki.

The European Green Deal's zero pollution action plan sets a 2030 target of reducing premature deaths caused by fine particulate matter by at least 55%, compared with 2005 levels, and a long-term goal of no significant health impacts by 2050. Earlier this year, the EU institutions reached an agreement on a proposal to update the ambient air quality directives with the aim to align the EU air quality standards closer to the WHO's guideline levels and help deliver on the objectives of the zero-pollution action plan.

The European city air quality viewer provides an indication on the typical air quality in European cities over the past two years. The viewer focuses on long-term concentrations of PM2.5, as it is the air pollutant with the highest negative health impacts. Later this year, the EEA will publish an analysis on the impacts of air pollution on ecosystems and human health. This includes estimates on deaths and ill health that can be attributed to poor air quality. .

Explore the European city air quality viewer

Link: https://www.eea.europa.eu/en/topics/in-depth/air-pollution/european-city-air-quality-viewer

EEA Published: Why Europe needs to stay the course to sustainability in a changing world

EEA 16. December 2024

The stakes could not be higher. Climate change is not a distant or theoretical threat — it is here. The past two years have been a stark reminder of this reality, with 2023 clocking in as the hottest year on record, only soon to be surpassed by 2024. From unprecedented flooding in Valencia and central Europe to droughts across southern Europe, the warning signs are clear: we must act now. Beyond the human suffering — which has no price — all

these events show that the cost of inaction far greater than the cost of acting now.

Link: Editorial — Why Europe needs to stay the course to sustainability in a changing world | European Environment Agency's home page

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EASN Conference, Thessaloniki

EASN, 10th Oktober 2024

During the European Aviation Science Network EASN conference 2024 in Thessaloniki, GUS members and Fraunhofer ICT present together the Life Cycle Assessment (LCA) activities within the programs Clean Sky and Clean Aviation. The life cycle assessment is a powerful tool for evaluating the ecological footprint far beyond CO2 and NOx reduction. Fraunhofer ICT

CLEAN AVIATION

Clean Sky published final Technology Evaluator report

CAJU, Brussels, 25th November 2024

The Final Technology Evaluator report reflects the technological achievements of ten years of technology research and innovation, performed under the Clean Sky 2 programme (2014-2024). The report assesses the environmental benefits in terms of CO2, NOx, and noise reduction, stemming from the CS2 technological achievements, at three levels:

At mission level, integrating the main CS2 technologies into various aircraft concepts representative of the whole civil aviation market (from commuters to long range aircraft, including rotorcraft and business jets).

At airport level, to evaluate the ground level pollution and noise impact on citizens for those concepts.

At fleet level by forecasting air traffic growth, virtually introducing those new aircraft concepts with improved performance into the market, in order to evaluate the potential reductions in aviation emissions worldwide and to estimate what fleet replacement could be achievable by 2050.

The final report presents the key results and takeaways from this Technology Evaluation.

The technical annex provides a more detailed examination of the aircraft concepts and associated CS2 technologies, along with a comprehensive description of the various assumptions, scenarios, and model specifications.

https://www.clean-aviation.eu

Calendar

Clean Aviation Annual Forum, 18-19 March 2025, Brussels
Clean Aviation Annual Forum to explore together disruptive pathways toward cleaner and more competitive aviation.
Link: Clean Aviation Annual Forum 2025 | Clean Aviation

63rd Session of the Working Group on Strategies and Review, 26-28 May 2025, Geneva

28th ETH Nanoparticles Conference, 16.-19. June 2025, ETH Zurich, Switzerland

We are happy to invite you to the 28th edition of the ETH Nanoparticle Conference (NPC-25). We will meet again in Zurich in person in the historic ETH building, just above the old town of Zurich. The NPC-25 is organized as a 3-day event from Tuesday June 17 to Thursday June 19, 2025.
The conference will be held under the auspices of the ETH Zurich, Federal Office for the Environment (FOEN) and the Swiss Chemical Society (SCS). All contributions will be included in the conference archive, which is an impressive record of the conference history with contributions from the past 27 NPC editions.

The Environmental Radioactivity & Aerosol Technology for Atmospheric and Climate Impact Laboratory (ENRACT) of the **N.C.S.R Demokritos** is a host of the 9th Greek Metrology Conference, 20-21 June 2025, Athens, Greece. The Conference this time focuses on Environmental Protection, Air Quality and Climate Change. Abstract submission deadline is 25 January 2025. More at: https://www.greekmetrology.gr/conferences/9th-metrology-conference/

International Conference and the 14th Croatian Scientific and Professional Meeting, "Air Protection 2025" at the picturesque Hotel Kolovare in Zadar, October 22 to 25, 2025. The conference is being organized by the **Croatian Air Pollution Protection Association (CAPPA)** in partnership with the Institute for Medical Research and Occupational Health (IMI), the Croatian Meteorological and Hydrological Service (DHMZ), and the European Federation of Clean Air and Environmental Protection Associations (EFCA). First Announcement and the Call for Abstracts: www.zastitazraka.imi.hr, deadline for abstract submissions is May 2, 2025. www.huzz.hr

45th Session of the Executive Body to the Air Convention, 8-11 December 2025, Geneva

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