

## Air Quality Expert Group

# Membership details

Last updated: February 2022

## Chair

### **Professor Alastair Lewis**

University of York, National Centre for Atmospheric Science

#### **Specialism**

Atmospheric chemistry, composition, and environmental technology.

#### **Research interests**

Experimental observations of air pollution and measurement science; transport of photo-oxidants, volatile organic compounds, composition of aerosols and particulate matter; emissions of gases and persistent organic pollutants, air pollution sensors.

Professor Lewis is the Deputy Director of the National Centre for Atmospheric Science (NCAS).

## Members

### **Dr Jo Barnes**

University of the West of England, Air Quality Management and Resource Centre

#### **Specialism**

Air Quality Management and Policy

#### **Research interests**

Urban air pollution, particularly road traffic-related, helping to understand and raise awareness of the health and environmental justice issues relating to local air pollution, and other urban stressors, to shape and influence policies that improve public health in towns and cities globally.

### **Dr Sean Beevers**

Imperial College London, Environmental Research Group, School of Public Health

### **Specialism**

Atmospheric modelling for policy development and human health.

### **Research interests**

To develop advanced human exposure models to better understand the association between air pollution and health. To develop policies to reduce the impacts of air pollution and to investigate the interaction between air quality and climate change policy.

## **Professor David Carruthers**

Cambridge Environmental Research Consultants

### **Specialism**

Modelling small scale atmospheric flows and local air pollution; urban air quality.

### **Research interests**

Airflow, turbulence, dispersion and chemical processes within the atmospheric boundary layer with a focus on complex environments including urban areas and inhomogeneous terrain; modelling, forecasting and assessment of air quality and micro-climate in these complex environments; developing parameterisations of complex atmospheric processes for application to practical operational systems.

## **Professor David Carslaw**

Ricardo Energy and Environment and University of York

### **Specialism**

Transport as a source of air pollution, dispersion modelling, emissions inventories and mobile monitoring.

### **Research interests**

Quantification primary nitrogen dioxide emissions from road traffic using ambient measurement data; the development of source apportionment approaches for urban air pollution and work to characterise the seasonal cycles of key atmospheric species.

## **Dr Chris Dore**

Aether Ltd

### **Specialism**

Air pollutant and greenhouse gas emissions, the Convention on Long-Range Transboundary Air Pollution, pollutant deposition to vegetated surfaces.

## **Research interests**

Estimating air pollutant emissions and projections, the development/improvement of emissions methodologies, quantification of the impact of policies and measures.

Governance and development of air quality science within the CLRTAP and the resulting legislation and target setting.

Air pollutant deposition to vegetated surfaces.

## **Dr Gary Fuller**

King's College London

### **Specialism**

Urban air pollution measurement and the investigation of sources and trends.

### **Research interests**

Analysis of sources, trends and changes in urban air pollution. Much of this research focuses on the source apportionment of PM concentrations including the impacts of PM arising from sources that are not currently represented well in emissions inventories including volcanoes, waste management facilities, construction and wood burning. I also work with toxicologists, clinicians and epidemiologists promoting the best use of air pollution measurements in health studies.

## **Professor Roy Harrison, OBE**

University of Birmingham

### **Specialism**

Emissions characterisation (particularly for particulate matter), atmospheric chemical and physical processes, human exposure.

### **Research interests**

The use of chemical composition and molecular markers to infer the sources of airborne particulate matter; links between urban and ambient particulate matter and health-particle metrics; characterisation of secondary organic aerosol; source apportionment of airborne particulate matter; composition, sources and properties of the organic component of urban airborne particulate matter; diesel particle emissions and their behaviour in the atmosphere; airborne nanoparticles, polycyclic aromatic hydrocarbons; air quality in the less developed world cities.

## **Professor Mat Heal**

University of Edinburgh

### **Specialism**

Atmospheric chemistry, particularly in relation to boundary layer composition and chemical processes and impacts of air quality on health.

### **Research interests**

The measurement and modelling of small-scale spatial and temporal variations in urban air pollution for estimating human exposure; high-resolution regional-scale modelling of atmospheric chemistry, to understand current and potential future impacts on atmospheric composition and on human health burdens; measurement of the concentrations and surface fluxes of volatile organic compounds from terrestrial ecosystems.

## **Dr Ben Marner**

Air Quality Consultants Ltd.

### **Specialism**

Air quality assessment in the development control process.

### **Research interests**

Assessing the air quality impacts from new developments within the development-control framework, with specific respect to human health and ecological habitats. Consideration of residential, commercial, infrastructure, and industrial emissions sources. Devising evidence-based assessment methods for industry-wide use, including emissions models and empirical predictive concentration models. Particularly interested in modelling road traffic, airport and energy plant emissions.

## **Dr Maria Val Martin**

University of Sheffield

### **Specialism**

Atmosphere-biosphere-climate interactions; earth system modeling and earth observations

### **Research interests**

Atmospheric composition; air pollution, climate change mitigation; understanding complex interactions between atmospheric chemistry, climate, land surface and biosphere; use of land-based CO<sub>2</sub> removal strategies; high-performance Earth System modelling with observations of air pollution from field experiments to satellite sensors.

## **Dr Eiko Nemitz**

UK Centre for Ecology & Hydrology (UKCEH)

### **Specialism**

Measurement and modelling of surface-atmosphere exchange

### **Research interests**

Measurement and modelling of emission and deposition of a wide range of reactive gases (ammonia, NO<sub>x</sub>, VOCs, ozone, CO, O<sub>3</sub>, SO<sub>2</sub>), aerosols and greenhouse gases (CO<sub>2</sub>, N<sub>2</sub>O, CH<sub>4</sub>). Top-down verification of emission inventories. Online measurements of aerosol composition and source apportionment.

## **Emeritus Professor Claire Reeves**

University of East Anglia

### **Specialism**

Atmospheric gas phase chemistry, modelling and interpretation of field data

### **Research interests**

Tropospheric chemistry from remote clean atmospheres to polluted urban environments. Long term trends in tropospheric oxidants. Atmospheric budgets of halogenated compounds that are ozone depleting and greenhouse gases. Impact of biogenic emissions, in particular isoprene. Impact of meteorology on air quality, including boundary layer processes and long range transport of pollutants. Interventions to change public behaviour to reduce emissions and exposure.

## **Ad-hoc members**

### **Dr James Allan**

University of Manchester and National Centre for Atmospheric Science

### **Specialism**

In situ atmospheric aerosol measurements

### **Research interests**

Online measurements of aerosol composition, in particular using aerosol mass spectrometry, chemical ionisation mass spectrometry and single particle soot photometry.

Application of multivariate techniques such as positive matrix factorisation for receptor modelling. Measurement and modelling of black carbon microphysical and optical properties.

## **Professor Nicola Carslaw**

University of York

### **Specialism**

Indoor air quality, indoor air modelling, chemical transformations indoors

### **Research interests**

Current research focuses on the indoor air pollution that results from cleaning, cooking, emissions from materials (e.g. furnishings and building materials) and from other emissions associated with human occupants (e.g. from skin and breath). Detailed chemical models are used to understand the chemical transformations that occur following these emissions and the implications of these for human health.

## **Dr Andy Dengel**

BRE (Building Research Establishment)

### **Specialism**

Indoor air quality.

### **Research interests**

Andy Dengel is Director of Environment in the Assurance Division at BRE. Having gained a PhD and postdoctoral research experience in chemistry, he spent the first 15 years of his career working in and managing contract analytical laboratories. Since joining BRE in 2006 he has led the IAQ and IEQ teams, and in 2008 also assumed overall responsibility for BRE HVAC Engineering, Lighting and Air Pollution teams.

Andy leads BRE's testing, research, advisory and consultancy activities regarding the physical monitoring of indoor environments, including POE work and reactive response to problems encountered in occupied buildings. This has included participation in collaborative research projects for the BRE Trust, NHBC Foundation, Innovate UK (e.g. MATIN, 2013-15) and EU FP7 (e.g. ECO-SEE, 2013-17). He contributed to the 2020 RCPCH/RCP report "*The inside story: Health effects of indoor air quality on children and young people*". Through this applied research work Andy has continued to publish in the academic literature.

## **Dr Sani Dimitroulopoulou**

UK Health Security Agency

## **Professor Matthew Fisher**

Imperial College London

### **Specialism**

Emerging pathogenic fungi

### **Research interests**

Using an evolutionary framework to investigate the biological and environmental factors that are driving emerging fungal diseases across human, wildlife and plant species. Focused on developing genomic, epidemiological and experimental models to uncover the factors driving emerging infections, and to attempt to develop new methods of diagnosis and control.

## **Professor David Fowler**

Formerly UK Centre for Ecology and Hydrology (UKCEH)

### **Specialism**

Surface – atmosphere exchange processes, atmospheric composition.

### **Research interests**

Measurement and modelling surface –atmosphere exchange of pollutant gases, aerosols and greenhouse gases. Synthesis and analysis of trends and budgets of pollutants at country scales, effects of pollutants on ecosystems, nitrogen and sulphur biogeochemistry and global cycles.

## **Professor Rajat Gupta**

Oxford Brookes University

### **Specialism**

Ventilation and indoor air quality in new-builds and retrofits.

### **Research Interests**

Observation and intervention based empirical studies on measuring indoor air quality and human exposure in homes and work places in relation to energy use, heating and use of chemicals. He was Co-Investigator of a meta-study on indoor air quality and energy implications of domestic mechanical ventilation with heat recovery systems (MVHR). Monitoring campaign to measure indoor air quality and human exposure for one year

before and one year after the deep energy retrofit of a 1950s medium-rise block of flats in Norfolk.

## **Dr Miranda Loh**

Institute of Occupational Medicine

### **Specialism**

Air pollution exposure assessment

### **Research interests**

Dr. Loh has expertise in methods for exposure assessment in epidemiology and risk studies. She has experience with both environmental and biological monitoring and exposure modelling. She also works with air pollution and other environmental sensors for personal exposure monitoring. Areas of interest include: air pollution exposures, especially personal level exposures, and indoor and outdoor air pollution; effectiveness of facemasks in protecting against particles; exposure reduction interventions; and risks of Covid-19 environmental transmission in the workplace.

## **Dr Sarah Moller**

National Centre for Atmospheric Science, University of York

### **Specialism**

Air pollution science-policy, knowledge exchange, air pollution measurements for tracking /identifying change.

### **Research Interests**

Knowledge exchange to benefit science and policy; use of systems approaches for air pollution issues, particularly in the policy context; use of air pollution monitoring data to more effectively support policy development, evaluation and solutions thinking.

## **Professor Anil Namdeo**

Northumbria University

### **Specialism**

Air Quality Management

### **Research Interests**

Monitoring, modelling and management of air quality. Environmental justice. Personal exposure to air pollution; more specifically of vulnerable and disadvantaged groups (including BAME). Air quality in developing countries.



## **Ex Officio member for the Central Management and Control Unit of the automatic urban and rural networks**

### **Dr Richard Maggs**

Practice Manager for the ambient air quality team at Bureau Veritas. He gained his PhD from Imperial College in 1996 having studied the impacts of air quality on agricultural crops in Pakistan, and having worked with the Punjab EPA to set up a number of pollution monitoring networks. After completion of his studies, Richard continued at Imperial College in the field of air quality where he researched the impacts of diesel particulates on lung-function at the National Heart & Lung Institute; the impacts of traffic management schemes on personal exposure to pollutants; and undertook a review on the critical loads of pollutants in relation to ecosystem changes in upland habitats. He specialises in the management of air quality networks and is current Project Director for the Central Management and Co-ordination Unit (CMCU) of the UK Automatic Urban and Rural Network. He has previously advised the Secretary of State on the efficacy of local authority action plans under the UK Local Air Quality Management regime.

## **Ex Officio member for the National Atmospheric Emissions Inventory**

### **Dr Tim Murrells, Ricardo Energy & Environment**

#### **Specialism**

Emission inventories and projections of air pollutants and greenhouse gases, specialising in emissions from transport sources and application of emission inventories in air pollution models. Tim is the technical lead of the UK's National Atmospheric Emissions Inventory programme

#### **Research interests**

Development and verification of emission inventories, emission projections and control technologies, vehicle emissions and the impacts of alternative fuels and technologies, technical support on transport and air quality policies, atmospheric and combustion chemistry.

## **Ex Officio member for the National Physical Laboratory**

### **Dr Nick Martin**

#### **Specialism**

Science Area Leader, Air Quality and Aerosol Metrology Group. Scientific work within BEIS's National Measurement System, and associated EMRP/EMPIR projects. Expertise in the development of documentary standard methods through convenorship/membership of CEN TC264 WG11 (Diffusive samplers), WG12 (Reference instruments) and WG42 (Air Quality Sensors).

#### **Research interests**

Development/validation of diffusive and pumped samplers for measurements of nitrogen dioxide (QA/QC for Defra's LAQM and UUNN), ammonia and volatile organic compounds (including benzene), application of "low cost" sensors, and the type testing of instrumentation in accordance with MCERTS certification scheme.

## **Ex Officio member for Quality Assurance and Quality Control of the automatic urban network (AURN), and information dissemination (UK-AIR)**

### **Paul Willis**

Business Manager for the Air Quality Measurements team at Ricardo Energy & Environment. He has an MA in Natural Sciences from Cambridge and has worked for over 20 years in Air Quality, initially at Warren Spring Laboratory and then at Ricardo-AEA. Paul has a background in atmospheric chemistry, and extensive knowledge of both air quality policy and the practical aspects of air quality monitoring, data analysis and reporting.

Paul provides technical guidance for many projects including UK Air Quality Compliance reporting, and QA/QC of local or national air quality monitoring. Paul's particular interests include working closely with Public Health experts to develop air quality forecasts and alerts, and educational projects to inspire our next generation of young scientists.

## **Assessors and observers**

AQEG meetings are regularly attended by assessors and observers representing Defra, the Devolved Administrations in addition to other Government departments and committees.