**NIAM activity on PM2.5**

As one of our first activities in NIAM we would like to look at how countries are addressing PM2.5 pollution, including how they model it, how they assess the health impacts, and how this feeds into policy. As a first step we are gathering information on current work in this area towards organisation of a virtual meeting in November.

If you are interested in participating please register your interest with an e.mail to [h.apsimon@imperial.ac.uk](mailto:h.apsimon@imperial.ac.uk). And if you are already working in this area we shall be grateful if you can also send a response to the questions below which will help us in planning a focus on this topic.

1. **Modelling PM2.5**

If you model PM2.5 concentrations in your country:-

1. Do you use GAINS, or independent modelling- in which case please give brief details.

**We use primarily the CHIMERE chemistry-transport model co-developped by INERIS and CNRS**

1. What distance scales do you cover- e.g. European, national, city: and with what spatial and temporal resolution?

**Europe (e.g. CAMS and LRTAP model intercomparison within Eurodelta), National (Prevair forecasting system and scenario analysis in support of the French Ministry of Environment). The same model is also implemented at French regional scale (NUTS3)**

1. What components of PM2.5 do you include- e.g. primary PM2.5, secondary inorganic aerosol, secondary organic aerosol, natural dust etc?

**All of those**

1. What emissions data do you use e.g. a national inventory. Are there particular sources you think are uncertain, missing, or would like to discuss?

**Officially reported emissions (LRTAP/NECD), also corresponding to the bottom-up national emission inventory. Work is ongoing to improve in particular condensable in the residential sector.**

1. Have you undertaken validation of your model against measurements, and if so what measurements do you have available to use

**Regulatory measurement (reported within EEA AQ e-reporting, both up to date for real time and validated) as well as chemical speciation from EMEP sites and urban supersites**

1. What do you think are the most important uncertainties or aspects of PM2.5 modelling that you would like to discuss

**Secondary inorganics is still a big topic, natural sources such as dust are also uncertain, UFP is also a concern.**

1. **Assessing health impacts**

The health impacts of PM2.5 are a major driver to reduce air pollution.

1. We are interested in how you use data on concentrations of PM2.5, either modelled or measured or both, to assess human exposure and health impacts?

**PM2.5 concentration are mapped onto population density to derive exposure. Concentrations can be obtained directly from the model for scenario analyses, or fused with in situ data to cope with model representativity limitations.**

1. If you undertake such assessments of health impacts of PM2.5, do you follow WHO guidance and base this on total mass of PM2.5, or do you focus on particular components and/or differentiate relative toxicity?

**Health impact are derived with AlphaRiskPoll (M. Holland) therefore using HRAPIE/WHO guidance.**

1. What health impacts do you consider e.g. mortality, asthma etc; and what risk coefficients do you use?  
   **Mortality, (whole population, adults, infants), bronchitis (adults, children), respiratory and cardiovascular hospital admissions, RADs, asthma symptoms (children, lost working days => all HRAPIE response functions; in the framework of work for ETC/ATNI with Mike Holland addition of sensitivity analysis for stroke and non-fatal myocardial infarction (Swedish response functions) and updated response function for chronic mortality response function from Chen and Hoek (2020) (1.08 per 10µg/m3)**
2. Do you assess the economic costs of health impacts, and if so what do you include e.g. life years lost, hospital/medical costs, loss in productivity/working days lost etc.?  
   **We assess the cost of all these health impacts based on market cost WTP data**
3. **Policy applications**

We are also interested in the application of your work, particularly as input to development of policy.

1. How do you relate your work to environmental goals e.g. compliance with regulations, or comparison with WHO guidelines?

**Application mainly regards comparing national emission scenarios, comparing the benefit of different strategies**

1. **Publications**

Have you published your work, in which case please give references is available?

<https://www.sciencedirect.com/science/article/pii/S1462901115000507?casa_token=Nv_4E7FC4XEAAAAA:w6VIN4iN9igr1WJald0-qdgRb3YFK_cFOHxLs4iQIw-5svYcbUQYDm2Jwz1DPL7pwLn5URfy17A>

<https://www.sciencedirect.com/science/article/pii/S2590162119300358>

1. **Questions**

Are there particular aspects of questions that you would like NIAM to address on PM2.5, including at the virtual meetings proposed for November.

Please e.mail your response to Helen ApSimon: h.apsimon@imperial.ac.uk