Dear Readers,

It is now a well-documented fact that air pollution has a tremendous impact on human health. According to WHO data, 2.4 million people die every year from air pollution related causes. To minimize the impact of air pollution on human health, a multi-pronged collaborative approach is required which has substantial health benefits. There is a need to create networks that bring together researchers from diverse scientific disciplines such as air pollution measurement and modeling, medicine, biostatistics, epidemiology, atmospheric chemistry, basic sciences, and health policy to work together on such a multi-pronged approach. It is important to build research partnerships among institutions to develop and conduct research studies on health effects of air pollution to fill critical evidence gaps and implement capacity building exercises. CAPHER-India is one such joint initiative between IIT Delhi and All India Institute of Medical Sciences (AIIMS) for collaboration on air pollution and health effects research in India for devising multi-pronged strategies to minimize air pollution impact on health. Such collaboratives would help build a dedicated network of air pollution and health effects research in India by bringing together Indian researchers from diverse scientific disciplines to bring out policy level science driven solutions for addressing air pollution in India.

Best Regards

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Indian & International Cities- April 2023

Dhaka has the highest pollution levels

The graph above shows the daily average PM<sub>2.5</sub> for the month of April 2023. Amongst the major metros worldwide, Dhaka has shown the highest concentration of PM<sub>2.5</sub> followed by Delhi and Kolkata. In India, Delhi, Kolkata, and Mumbai, rank among the topmost polluted cities worldwide.

Delhi PM<sub>2.5</sub> (24 hr. daily average) Trend

Between April 2022 and April 2023, Delhi’s air quality improved significantly. Meteorological conditions have played an important role in cleaning the air this year. April recorded multiple western disturbances as
well surplus rain and strong winds. Meanwhile, PM$_{2.5}$ levels fell by 39.56 g/m$^3$ on average in April 2023 compared to April 2022. According to data shared by the Commission for Air Quality Management (CAQM), the first four months of 2023 was recorded as the second cleanest in the last eight years, only behind 2020 when the Covid-19 lockdown was in place in the country.

From Air pollution to Climate change, CERCA virtual Expert Monthly Talk series spotlights a range of contemporary issues while providing a platform for renowned speakers from around the world to share their knowledge and views.

Expert Talk delivered by Dr. Harshal Ramesh Salve on 21st April 2023

On 21st April 2023, Dr. Harshal Ramesh Salve delivered a talk on "Partnership and collaboration are keys for moving forward on air pollution and health effects research in India". In the talk, Dr. Salve discussed the detrimental effects of air pollution on public health in India, particularly in urban areas. He emphasized the importance of partnership and collaboration between different stakeholders to effectively address this issue. Dr. Salve also highlighted the need for improved data collection and analysis methods to gain a better understanding of the health effects of air pollution in India. Overall, the talk emphasized the urgent need for action to address air pollution and protect public health in India.

If you have missed this event, the link below will direct you to the recorded video.

Moving forward towards achieving key milestones under the AQAF initiative, the Air Quality Action Forum, Annual Conference, 2023, was successfully organized (in hybrid mode) in a two-day event on the 27th & 28th February 2023. Aligned to the Government of India’s vision on addressing air quality, the findings of the needs assessment were shared, and the modalities of the resources centre were discussed, underpinning AQAF to support the Government in the implementation of the National Clean Air Programme. The two-day event underscored the identified opportunities for strengthening air quality management in India.

The Arun Duggal Centre of Excellence for Research in Climate Change and Air Pollution (CERCA) at IIT Delhi is assisting UNEP in implementing activities envisaged under the AQAF. Along with the CERCA at IIT-Delhi, UNEP has successfully involved 100+ organizations under the aegis of the Air Quality Action Forum (AQAF). Therefore, CERCA is officially inviting the different stakeholders to join the AQAF as a Forum member to register and know more about its future activities.

A cross-sectional analysis of ambient fine particulate matter (PM2.5) exposure and haemoglobin levels in children aged under 5 years living in 36 countries


The study examined the PM$_{2.5}$ exposure association with anaemia and haemoglobin levels in children. The study used Demographic and Health Survey data, collected between 2010 and 2019, which included blood Hb measurements. Satellite-derived estimates of annual average PM$_{2.5}$ was the main exposure variable, which was linked to children’s area of residence. This study found that anaemia prevalence in children aged <5 years was 58% and country-level prevalence of anaemia ranged from 15.8% to 87.9%. PM$_{2.5}$ was associated with decreased haemoglobin levels and greater odds of anaemia. The adjusted model showed that a 10 μg/m$^3$ increase in annual PM$_{2.5}$ concentration was associated with greater odds of anaemia. Greater effects were observed in children from lower wealth index and rural areas.

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Trends in urban air pollution over the last two decades: A global perspective

Pierre Sicard, Evgenios Agathokleous, Susan C. Anenberg, Alessandra De Marco, Elena Paoletti, Vicent Calatayud

- The study used 20-year observationally constrained modelled data and ground-based observations covering 13,160 urban areas.
- It estimated the city-level trends of urban population exposure to O3, PM2.5, and NO2.
- Global PM2.5 exposure declined (−0.2 % year−1) with 65 % of cities showing rising levels.
- The annual NO2 mean concentrations increased at 71 % of cities (+ 0.4 % year−1) with 65 % of cities showing rising levels.
- Global exposure of urban population to O3 increased at 0.9 % year−1.
- Global exposure of urban population to PM2.5, NO2, and NOx showed a ten-fold cross-validation for exposure assessment at 100 m scale relative to the estimates with 1 km scale.

Climate changes could boost vector-borne, infectious diseases in India

With 80% of Goa’s population and economic activity concentrated in the talukas which are most vulnerable to flooding and sea level rise — the state’s climate change action plan seeks to underline the necessity of its implementation to lessen damaging impacts. It significantly highlights relaxation and adaptation strategies in various sectors.

Combined road noise, air pollution raises blood pressure: Research

A link between noisy road traffic with air pollutants and an increased chance of hypertension — a top risk factor for heart attack and stroke has been identified by University of the West of Scotland researchers. The study looked at the relationship between environmental quality and direct health impacts, monitoring traffic noise at different frequencies and registered hypertension cases in a number of locations in urban Glasgow. A significant correlation between noise, air pollution and hypertension was observed within high-traffic-flow residential areas.