

`New Normal' of COVID-19: Need of New Environmental Standards

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
I am pleased to present before you this issue of Current World Environment. I thank all the contributors of this issue. It is timely completed with the all support from the reviewers, authors and the office staff. This issue has a variety of papers covering atmospheric ammonia, water quality, zero waste method of sustainability, remote sensing use in environmental monitoring and air quality etc.

Air pollution and poor urban air quality have been the major concerns of everyone. Most of air pollution is contributed by the anthropogenic activities which are responsible for the present global warming and climate change.¹ During the COVID-19 lockdown when all the fossil fuel driven activities are shut, a drastic reduction in gaseous as well as particulate pollutants has been reported worldwide.^{2,3} According to a report, New Delhi has experienced around 34% reduction in atmospheric PM_{2.5} concentrations due to which the AQI is improved by 37%.⁴ There is a reduction in CO and other pollutants as well. However, the O₃ concentrations have been reported increasing in NCR Delhi. The increase in O₃ has been attributed to reduction in destruction of O₃ due to lesser NO. Also, due to ban on plastic burning and sealing of tire oil units, there is a reduction in HCl and chlorine emissions which has also reduced quenching of O₃.⁵ This pattern of O₃ spikes has also been reported before the lockdown (during May 2019), immediately after the steps taken by the Graded Response Action Plan (GRAP) of the Environmental Pollution Control Authority (EPCA). It is to mention that before the lockdown, the GRAP actions have been helpful in bringing down the pollution level in NCR Delhi.⁶ The major cities have experienced a significant improvement in the air quality. The NO_x air quality index (AQI) of Delhi, Mumbai, Ahmedabad and Pune improved by 63%, 57%, 36% and 55% respectively.⁷ Similar reducing patterns of NO₂ have been reported worldwide. Barcelona

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showed a 50% decrease in NO₂ concentrations in 2020 as compared to the previous year.⁸ In China, the NO₂ is decreased from 10-30%.⁹ Also, there is a drop in CO₂ level at Mauna Loa as reported in March 2020 as compared to the March 2019. Overall, a 24% drop in CO₂ emissions from major sources is expected in 2020¹⁰ (SPECRTEUM news, 2020).

During COVID-19, the 'New Normal' scenario analysis suggests that we need to attempt the following new steps in order to achieve good air quality with higher confidence in predicting possible health impacts-

Need to Redefine Particulate Standards

The 'New Normal' scenario of COVID-19 has given us an opportunity to observe minimum values of criteria pollutants such as NO₂, SO₂, PM_{2.5}, PM₁₀, O₃ etc. These are the background values of the pollutants during the lockdown when there is no fossil fuel activity is allowed. These values will serve the purpose of baseline data of the region and its subregions. The problem of violation of National Ambient Air Quality Standards (NAAQS) norms especially in case of particulate matter, will be resolved by using these background ambient concentrations. At present, due to high soil-dust influence, values of particulate matter are often noticed above prescribed NAAQS levels.¹¹ For example, the 24 hrs NAAQS limit for PM₁₀ is 100 µg/m³ but the average is reported as 251 µg/m³ while that of NAAQS limit is 60 µg/m³ but the recorded average is 129 µg/m³ in the NCR¹². The recorded values are most of the time crossing the prescribed levels because of dusty ambient conditions of the region¹³. The dust contributing to fine particles is primarily a mixture of suspended soil, road dust, carbon soot and other particulate matter.¹⁴ The natural dust which is prevailing for centuries in this region, is less harmful to the human health. The natural soil-dust is highly rich in CaCO₃ in India which has been found a significant scavenger of atmospheric SO₂.¹⁵⁻¹⁶ According to CPCB, the lockdown has cut of 50% in particulate matter.¹⁷ Even after considering the crude figures of half reduction, the 'New Normal' values of PM₁₀ and PM_{2.5} are higher than the defined in NAAQS. Therefore, slightly higher limit as compared to the present NAAQS values can be defined for particulates.

Need Separate Particulate Standards for North India

Since, the influence of crustal dust in northern India is higher than south India due to proximity of Thar desert,¹³ the particulate standards can be set different for northern states including the Punjab, Delhi, Rajasthan, Uttar Pradesh, Bihar, Madhya Pradesh and Gujrat while for other states including hilly and coastal states, a different set of values of PM₁₀ and PM_{2.5} can be defined primarily based on pandemic baseline values.

Need to Include New Pollutants

Some new parameters can be included in the criteria pollutants list for example, Cl₂/HCl measurements in most of the urban areas in developing countries can provide the impact on air quality due to plastic burning and pyrolysis factory emissions. Mercury metal is also reported in air¹⁸ which can also be included in the list of NAAQSs.

Need to differentiate Particulate Type

While doing the new exercise, beside reporting mass concentrations, the particulate matter can be reported into three categories e.g. PM_{2.5(M)} for metallic content, PM_{2.5(C)} for its carbon content and PM_{2.5(O)} for its organic content as suggested by Kulshrestha.¹⁴ This will be helping in providing realistic alert about possible health effects to the citizens. This will also help in controlling the industrial emissions from different sectors after the pandemic is over.¹⁹ We should not forget that the controlling air pollution is the key to climate change.

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