Information on the relationship between air pollution and the spread of COVID-19

In the last few days, the national media in Italy hosted a discussion on an alleged association between airborne particulate pollution (PM) and the spread of COVID-19. This hypothesis had a wide echo on the media and social networks and aroused a lot of interest, placing attention on a relevant scientific issue on which many researchers in Italy and abroad are currently working.

The Italian Aerosol Society (IAS), founded in 2008 and member of the European Aerosol Assembly (EAA), includes among its members about 150 experts on atmospheric particulate matter coming from the academy, research bodies, regional and provincial agencies for the environmental protection as well as from the private sector. IAS intends to express an opinion on the current knowledge about the interaction between PM pollution and the spread of COVID-19. This knowledge is still very limited and this requires the utmost caution in interpreting the available data.

It is well known that exposure to high PM concentrations induces susceptibility to some chronic respiratory and cardiovascular diseases and that this condition can worsen the health conditions of the infected subjects. High PM concentrations are frequently observed in northern Italy, especially in the Po valley, during the winter period. Nevertheless, no effect of greater susceptibility to contagion to COVID-19 due to exposure to atmospheric aerosol has been demonstrated so far.

It has been hypothesized that atmospheric particulate matter can act as a "carrier" substrate for the transport of the virus, resulting into an increased rate of infection. However, the carrier hypothesis is not supported by the knowledge currently available, just as the life span of the virus on the surfaces and the factors that influence it are not yet fully understood. It is possible that specific meteorological conditions, characterizing northern Italy in late winter, such as low temperatures and high relative humidity, may create an environment that favours the survival of the virus. These conditions, which generally coincide with a situation of intense atmospheric stability, is also normally accompanied by secondary aerosol formation and by an increase of PM concentration at surface level. The covariance between conditions of reduced atmospheric circulation, formation of secondary aerosol, accumulation of PM near the ground and spread of the virus must not, however, be mistaken for a cause-effect relationship. In the case of complex systems, such as the one we are dealing with, the interpretation of simple correlations (i.e. that between two time series) does not necessarily indicate a cause-effect relationship.

Similarly, great caution should be exercised, for example, in comparing data and trends from different geographical areas of the country and in mixing situations where there is an outbreak with situations where the outbreak is not present and where different policies have been enforced for containment of the spread of COVID-19 at different times. The monitoring period available for the epidemiological investigation is still too limited to draw scientifically solid conclusions in relation to the many factors that influence the growth rate of the infection.

The President, the Steering Committee of the IAS and all the signatory Members are unanimous in evaluating as partial and premature the claim of a causal relationship between the number of PM threshold exceedances and the contagions from COVID-19, and in believing that a possible effect of PM pollution on COVID-19 infection remains - in the current state of knowledge - a hypothesis that must be carefully evaluated with extensive and in-depth investigations. Consequently, in the signatories’ opinion, the proposal for restrictive measures to contain pollution as a means of combating contagion is, in the current state of knowledge, unjustified, even if there is no doubt
that the reduction of anthropogenic emissions, if maintained for a long period, have beneficial effects on air quality and climate and therefore on public health.

We take this opportunity to underline the importance of respecting the distances between people as a priority and, in general, the rules included in the Decrees and Ordinances.

The opinions reported here are to be considered personal to the signatories and do not represent the official positions of the bodies in which they are working.

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