

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

In the last few days, the national media hosted a discussion on an **alleged association between airborne particulate pollution (PM) and the spread of COVID-19**. 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.**

The President, the Board of Directors 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.

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