

EPD announces air quality monitoring results in 2019

The Environmental Protection Department (EPD) announces today (January 20) the overview of Hong Kong's air quality in 2019. The annual average concentrations of five major air pollutants (including respirable suspended particulates (PM10), fine suspended particulates (PM2.5), nitrogen dioxide (NO2), sulphur dioxide (SO2) and ozone (O3) in 2019 are listed in Annex 1.

With the implementation of emission reduction measures and collaboration with the Guangdong province to improve regional air quality over the years, the overall air quality in Hong Kong has shown a discernible improvement. From 1999 to 2019, the concentrations of PM10, PM2.5, NO2 and SO2 in ambient air have reduced by 34 per cent to 80 per cent from their highest levels, while the roadside concentrations of the same pollutants have also reduced by 34 per cent to 82 per cent from their highest levels as well (as detailed in Annex 2). As for smog, the number of hours of reduced visibility in Hong Kong has also reduced by 70 per cent from the peak. Regarding regional air quality issue, the analysis of the satellite data from the Hong Kong University of Science and Technology shows that the PM2.5 level in the Pearl River Delta (PRD) region has improved significantly (as detailed in Annex 3).

Although roadside NO2 shows a significant declining trend, it is still at a high level. Its annual average concentration in 2019 is 80µg/m³, which is twice the Air Quality Objectives (AQOs) limit. Although commercial vehicles (including trucks, buses, minibuses, and taxis) account for only about 20 per cent of the total number of vehicles, they are the main source of roadside NO2 emissions, accounting for more than 90 per cent of the total emissions of all vehicles in Hong Kong. Therefore, commercial vehicles will continue to be the focus of the Government's efforts to improve roadside air quality.

The ambient ozone is still on a rise. An EPD spokesman said, "Ozone was a complicated air pollution issue as well as a regional issue. It was not directly emitted from pollution sources but formed through photochemical reaction between nitrogen oxides (NOx) and volatile organic compounds (VOCs) in the presence of sunlight. Apart from the high regional background ozone level, the rise in the ozone levels in recent years could be attributed to the reduction in local NOx emissions from vehicles (which led to less nitric oxide to react with and titrate ozone and hence less ozone consumption and higher ozone level in the ambient air), and indirectly resulted in the rise in the roadside and urban ozone levels."

Based on the experience in improving air pollution by some European countries and the United States, they also encounter the lag effect in ozone concentrations. Owing to complicated photochemical reactions, the smog problem and the reduction of NOx at the early stage will often lead to an increase in the levels of ozone. After continued emission reduction efforts, the ozone concentrations will start to decline. Regional collaboration is the

key point in improving ozone levels. The Hong Kong and Guangdong Governments have commenced the study on post-2020 regional air pollutant emission reduction targets and concentration levels, with a view to formulating emission reduction targets beyond 2020 and predicting the achievable air quality levels. To tackle ozone problem specifically, the Governments of Hong Kong, Guangdong and Macao will launch a 3-year joint study from 2020 to 2023 on "Photochemical Ozone Pollution in Greater Bay Area and Characterization of Regional and Super-Regional Transportation of Ozone", in order to better apprehend the origins of ozone precursors, the formation mechanism of ozone in the Greater Bay Area and its regional and super-regional transportation. In addition, the Hong Kong and Guangdong Governments are also adding the real-time VOCs monitoring in the regional air quality monitoring network by stages. The Government is also planning to install Light Detection and Ranging (LIDAR) system to measure real-time vertical and three-dimensional distribution of the concentrations of ozone and particulates, as well as wind profile at higher altitudes for tracking transportation of pollutants over Hong Kong, with a view to devising policies to tackle ozone pollution.

The Environment Bureau (ENB) released "A Clean Air Plan for Hong Kong" in 2013 to implement a wide range of measures on local pollution sources covering land and sea transport as well as power plants, including phasing out some 80,000 pre-Euro IV diesel commercial vehicles; strengthening the control of emissions of liquefied petroleum gas and petrol vehicles; tightening the vehicle emission standards; progressively tightening the emissions of power plants; and requiring vessels to use cleaner fuels.

"In addition to the policies implemented, the Government will continue to launch various air quality improvement measures to reduce local emissions, including reducing vehicle emissions, promoting the use of electric vehicles, reducing emissions of marine vessels and controlling the emissions of power plants (as detailed in Annex 4). We are in the progress of reviewing the AQOs. Upon its completion, we will update 'A Clean Air Plan for Hong Kong' to work out the long-term plans to further improve Hong Kong's air quality," the spokesman added.