



Hong Kong College of Paediatricians  
香港兒科醫學院  
(Incorporated in Hong Kong with Limited Liability)



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Dear Mr Pang,

**Response to the newly proposed Air Quality Health Index in Hong Kong**

We are pleased to learn that the Environmental Protection Department (EPD) is going to revise the current air pollution index (API) which has been in place for many years. This reflects the Government's recognition of the important impact of air quality on health. The Hong Kong College of Paediatricians, being a professional body on health and an advocate for children, has the following comments and suggestions for your consideration in devising a new Air Quality Health Index (AQHI).

**1. Inclusion of measurement of fine particulate matter  $\leq 2.5$  micron (PM<sub>2.5</sub>)**

Fine particles in the PM<sub>2.5</sub> size range are able to travel deeply into the respiratory tract. Scientific studies have linked increases in daily PM<sub>2.5</sub> exposure with increased respiratory and cardiovascular hospital admissions, emergency department visits and deaths. In particular, there has been substantial evidence showing the harmful effect of PM<sub>2.5</sub> in children both at local and international level. (1-4) Measurement of PM<sub>2.5</sub> is therefore vital in our air quality health index and hence should be made available in all air pollutant monitoring stations in Hong Kong.

On the other hand, larger particular matters  $\leq 10$  micron (PM<sub>10</sub>) measurements provide a better estimate of health risk during dust storms from China. However, even in areas such as Beijing which is affected by dust storms to a far greater extent than Hong Kong, monitoring of PM<sub>2.5</sub> is advocated.

## **2. Inclusion of roadside air pollutants level in the AQHI**

Roadside air pollutant levels, especially for NO<sub>2</sub> at roadside monitoring stations, are usually much higher than those measured at general (roof top) stations due to the “canyon effect” of buildings in Hong Kong. Roadside measurements more truly reflect exposure on site. In Hong Kong, about 20% of 650 primary schools are situated close to a main road. (5) Thus traffic related air pollution represents a major health threat to many school children. Monitoring and warning of the public with roadside AQHI should be considered as mandatory until we are certain that there is good air quality in residential and school localities.

## **3. The at risk group is not just confined to elderly and young children under 5 years old**

Only young children under 5 years old were considered as one of the vulnerable groups in the risk model. However, children are vulnerable to environmental pollution from foetal to adolescent stage when tissues and organs are rapidly growing, developing and differentiating until they mature to adulthood. Children’s behaviour also increases their personal exposure to air pollutants as they spend more time in outdoor activities than adults. This is especially true for adolescents who have more independent activities than young children. (6-7) It is important for the public to be aware that older children and adolescents are also vulnerable to the effect of air pollutants.

## **4. Inclusion of mortality as health outcome in the risk model**

Linking air pollution to health outcomes (rather than air quality standards), for example, visits to general practitioners, hospital admission or mortality is certainly more desirable for communicating risk to the public. It will be even better if the model can incorporate not just hospital admissions but also mortality. There were important local studies showing the effect of ambient air pollutants on mortality in our population. (8-9) In addition, the excessive risk of mortality was not confined to adults and elderly as shown by a recent Korean birth cohort study. (10)

## **5. Ensure easy understanding and interpretation of the index by the public**

The background of the current API, as shown in the EPD website, is not difficult to understand. It provides a single index which shows the additive effect of all 4 air pollutants and additionally, sub-indices for each pollutant which can reflect the daily effect of individual pollutants. It may allow the public to take measures in situations even when only one air pollutant exceed the AQO which should already have harmful effect. The major drawback is that it is anchored to the outdated HK Air Quality

Objectives. In the newly proposed AQHI, the effect of all 4 air pollutants are combined, but alert may not be triggered when any one pollutant exceeds the safe level. Moreover, we as medical professionals have difficulty to understand the statistical modeling with the underlying assumptions of the new AQHI. Likewise we would expect that the general public may also have difficulty understanding and interpreting the index.

Improving air quality is a specific objective stated in the 2013 Policy Address. With an effective monitoring system and multiple intervention measures, we hope that we can enjoy a healthier environment in the near future.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Sik Nin Wong', written in a cursive style.

Dr Wong Sik Nin  
President  
Hong Kong College of Paediatricians

cc Mr Elmer Wan, Chief Executive Officer, Hong Kong Academy of Medicine  
Ms Camellia Chau, Senior Manager, Hong Kong Academy of Medicine

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