

Rethinking the Air Quality Health Index: Harmonizing Health Protection and Climate Mitigation

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Abstract : Hong Kong has practiced a risk-based Air Quality Health Index (AQHI) system that sums hospitalization risks associated with short-term exposure to air pollutants. As an air pollution risk communication tool, it informs the public about the current air quality, anchoring around the World Health Organization's (WHO) 2005 Air Quality Guidelines (AQGs). Given the WHO's recent update in 2021, assessing how Hong Kong's air quality risk communication can be enhanced using these updated guidelines is essential. Hong Kong's AQHI is limited by solely focusing on short-term health risks, which could lead the public to underestimate cumulative health impacts. Therefore, we propose the introduction of a composite AQHI that reports both long-term and short-term health risks. Additionally, the WHO interim targets will be considered as anchor points for various health risk categories. Furthermore, with the increasing ozone levels in Hong Kong and Southern China due to improved NOx mitigation measures, it has been a challenging task in balancing health protection against climate mitigation. However, our findings present a promising outlook. Despite the rise in ozone levels, the combined health risks in Hong Kong and Guang-dong have seen a decline, largely due to reductions in NO2 and PM concentrations, both having significant health implications. By shifting from a concentration-based approach to a health risk-based system like the AQHI, our study highlights the prospective of harmonizing health protection and climate mitigation goals. This health-focused framework suggests that rigorous NOx controls can effectively serve both objectives in parallel.

Keywords : air quality management, air quality health index, health risk management, air pollution

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