Author's response to reviews

Title: Meta-analysis of adverse health effects due to air pollution in Chinese populations

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Version: 2 Date: 24 October 2012

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Air quality in China has been degrading due to fast economic growth in the past decades. Evidence on health effects of air pollution in the country has been cumulating in both English and Chinese literatures. The magnitudes of the effects are comparable if not higher than those from other parts of the world. Pooled up estimates of air pollution health effects are important drivers of environmental risk communications and political willingness. However in China, there is a lack of review studies to provide such estimates and so health impact assessments could not be done properly.

In this paper we pooled up the risk estimates of adverse effects of four classical air pollutants in Mainland China, Hong Kong and Taiwan and firstly showed that the higher the annual PM10 and NO2 level, the lower was the excess risk of mortality in a meta-regression analysis. This finding is important to the understanding of the differences of the effect sizes across regions, which remain unexplained to date in the literature. This pattern indicates that the concentration response relationships were leveling off in the downward direction rather than purely linear. Similar pattern of inverse association has been observed in a cross-sectional study of lung function and exposure to indoor PM2.5 concentration. This inverse relationship could be related to a saturation mechanism occurring at lower exposure levels where both irreversible and reversible processes may simultaneously exist.

I should be grateful for your kind consideration for our paper. This will be an important paper supporting our ongoing update of a risk communication online platform for China (http://hedleyindex.sph.hku.hk).