Development of Environment and Health Studies in China

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With the rapid economic development, environmental and health problems are receiving historical attention in China. This study provides a review of the latest development in studies of environment and health in this country, with a focus on the health impacts of pollutions from air, water and soil. Meanwhile, detailed examples of research results from the authors have been provided.

The results of air quality of a total of 80 out of 471 cities (17.2%) surveyed in 2010 were found worse than the level of class II according to Chinese national standards. The discharges from the increasing number of automobiles were attributed as one of the main factors causing the deterioration of air quality in major cities of China. The slightly decreased use of coal in China during recent years has helped to stabilize and even slightly reduce the concentrations of PM10 and SO2 in major cities. However, between 2007 and 2010, a total of 16 out of 31 capital cities in China showed an increase of NO2 concentrations in air. It has been found that air pollution in China is related to respiratory diseases and cardio-cerebral vascular diseases, and has effects on the immune system functioning and carcinogenic effects. The rapid economic development and increase of population have also led to water pollution in rivers, lakes and groundwater. During 1996-2006, there were a total of 271 recorded major water pollution accidents, with a population of more than 7 million affected. Water pollution has been found related to several diseases, such as hepatitis, typhoid, dysentery, and cholera. About 20% of arable land in china was found contaminated with pollutants including heavy metals such as As, Pb, Cd, Cu and Ni. These areas are mainly located in mining sites and around factories. While the relationships between environment and health are complicated, environmental pollution in China has caused health problems including serious accidents, which remain to be better understood.

Since the end of the last century, the research team of the authors have proposed a model for the assessment of risks of child deaths and the causes of birth defects. This model has extended the factors from the single-level of genetic and direct environmental factors to three levels of factors including direct, family and social factors. It has been revealed that there are associations between the rate of neural tube defects (NTDs) and the level of persistent organic pollutants (POPs) in indoor air and placental tissues. Meanwhile, geographical areas with high incidences of NTDs were found related to the distributions of geological faults and coal mines. Such results have provided evidences of potential new factors causing NTDs besides the widely known factor of lack of folic acids. The results are helpful for the improvement of environmental management for the prevention of NTDs.