

The greatest concern over DDT exposure in China arose since the early 1990s for the rising breast cancer incidence, and the cause still remains to be elucidated. An extensive survey of DDT background in agricultural soils, covered the entire region of China, was conducted. DDT at concentrations greater than 100 ng/g (the China's Farmland Environmental Quality Evaluation Standards for Edible Agricultural Products) was found to impact 42.3 million Chinese population. Considering the geographical differences with diverse DDT contributions and different diet products and habits, the average daily dietary intake was modeled and estimated to be 0.34  $\mu\text{g/kg}$  p,p'-DDE (the main bioactive constituent in DDT). Population attributable fraction derived from a case-control study from 78 women with breast cancer and 72 controls was used to assess the DDT exposure risk to breast cancer. Based on the estimated population attributable fraction with a median value of 0.6% (IQR 0.23-2.11%), the excess annual breast cancer incidence rate attributable to p,p'-DDE exposure averaged  $0.06 \times 10^{-5}$  with significant spatial variations varying from  $0.00021 \times 10^{-5}$  to  $11.05 \times 10^{-5}$  in Chinese females. Exposure to DDT is a contributor to breast cancer, but the overall limited relative risk and population attributable fraction imply confounding factors for breast cancer in Chinese females. Exposure risk in a regional scale helps understand the cause and prevention of breast cancer. Our mapping and modeling method could be used to assess other environmental carcinogens and related cancer diseases