Causation mechanism and risk management of urban haze related to coal combustion and vehicle emission base on fault tree approach

W. Huang*1, Y. Qian2

1Dongguan University of Technology, China
2South China University of Technology, China

Abstract

Haze weather characterized by PM$_{2.5}$ has become a serious environmental pollution problem in China, which can affect the air quality and human health. Coal combustion and vehicle emission may be critical factors of PM$_{2.5}$. It is significant to figure out the pollutant sources and causation mechanism of urban haze to indicate directions and support theoretical basis for the atmospheric pollution prevention and control. Based on a new perspective of systematic methodology, the fault tree analysis (FTA) approach is employed and investigated for the causation mechanism analysis and risk management of urban haze related to coal combustion and vehicle emission in this work. All of the important risk factors are discussed and identified by using this deductive FTA method. The qualitative and quantitative assessments based on the minimal cut sets, the structure, probability and critical importance degree analysis of those risk factors in the fault tree system are also carried out based on Beijing and Guangzhou city. The study may provide a new scientific and effective tool/strategy for the causation mechanism analysis and risk management of haze pollution in China.