

快报

民居CO中毒事件气象条件分析及数值模拟

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摘要 应用伯努利原理和CFD应用软件FLUENT,

对影响北方民居通风排烟和CO中毒事件的气象因子进行分析和数值模拟,

研究基于气象条件的CO中毒事件预警方法。结果表明:影响民居通风排烟的气象条件主要有风速、气温

(室内外温度差)、变压和相对湿度等。风速是影响通风排烟和CO中毒的主要气象因素;在弱风条件下,室内外温度差和气压的变化对通风排烟也有重要影响。在上述工作基础上,

建立了民居通风排烟气象指数的计算方法和基于气象条件的CO中毒事件预警方法,

经检验表明该方法对中毒事件有一定的预警能力。

关键词 [居民CO中毒](#) [气象条件](#) [数值模拟](#) [预警检验](#)

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Meteorological factors of carbon monoxide poisoning accident in vernacular dwelling and its numerical simulation

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Abstract Based on the Bernoulli principle and computational fluid dynamics (FLUENT) software, the meteorological factors influencing ventilation, smoke emission of vernacular dwelling and leading to carbon monoxide poisoning accident were analyzed in the north areas of China, and numerical simulation was employed in order to discuss the early warning method of carbon monoxide poisoning accident in terms of meteorological factors. The results indicate that the main meteorological conditions influencing ventilation and smoke emission of vernacular dwelling in the north areas of China include wind speed, air temperature (difference between the indoor and outdoor air temperature), air pressure and relative humidity. Wind speed is the main factor affecting ventilation, smoke emission and carbon monoxide poisoning accident of vernacular dwelling, furthermore, the change of air pressure and the difference between the indoor and outdoor air temperatures are also important when wind speed is very weak. Based on the above-mentioned, the calculation method on meteorological index of ventilation and smoke emission in vernacular dwelling is established and early warning method of carbon monoxide poisoning accident in terms of meteorological conditions is set up. The effect of early warning method is better after testing.

Key words [Carbon monoxide poisoning accident](#); [Meteorological factor](#) [Numerical simulation](#) [Early-warning](#)

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