

2009年3月济南一次严重CO中毒事件气象条件分析

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Meteorological conditions causing CO poisoning event in March 2009 in Ji' nan, Shandong province

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摘要 2009年3月14—19日济南市发生严重CO中毒事件, 中毒人数达78例, 中毒患者绝大部分出现在15日夜间至16日早晨, 具有暴发性特征。对中毒事件发生期间的天气形势、气团性质和气象要素等进行了分析。结果表明: 此次CO中毒事件发生在一次冷空气过后天气异常转暖的过程中; 气团干暖、中低层大气层结稳定; 气温呈明显大幅持续升温, 气压呈现大幅持续下降等特征; 弱风速时段与中毒人数的激增时段相吻合。分析影响此次事件的不良气象条件主要有: 500 hPa暖脊的东移发展, 引导我国西北地区干燥暖气团东移控制济南地区, 造成本地的气温、气压剧烈变化, 导致空气密度显著降低, 使济南较长时间处在低密度气团中, 严重影响室内的自然通风和烟囱的抽吸效应, 造成室内CO积聚引发中毒事件; 夜间在弱风速与低密度气团对室内通风、烟囱抽吸效应产生的双重负面作用, 是引发中毒人数激增的主重要原因。

关键词: CO中毒事件 气象要素 环流背景 济南

Abstract: A serious CO poisoning event happened on March 14-19, 2009 in Ji' nan, Shandong province. 78 people were poisoned in this event and the symptom of most sufferers appear during the night of March 15 to the early morning of March 16, and it is fulminant. Weather conditions, air mass property and meteorological elements were analyzed during this CO poisoning event. The results indicate that after a cold air process, it turns abnormally to warm, then the poisoning event happens. The air mass is dry and warm, and atmospheric stratification in the middle and low layers is stable. Air temperature increases obviously and air pressure descends. The period of weak wind speed is coincident with the period that the poisoned people increase sharply. The meteorological conditions causing this event are various. Warm ridge in 500 hPa moves to the east and develops, and then it controls Ji' nan region with the northwest dry air mass. Thus, the local air temperature and air pressure change strongly, and air density depresses significantly. It influences the natural ventilation of room and the pumping effect of chimney and results in CO poisoning event. The weak wind and low density air mass are the main reasons increasing poisoned people rapidly in night.

Keywords:

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