

## 重庆主城区春季典型天气的大气颗粒物浓度变化分析

### Concentration analysis of atmospheric particulate matter under typical spring weather condition in Chongqing

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中文关键词: [颗粒物](#) [质量浓度](#) [数浓度](#) [β射线法](#) [震荡天平法](#)

英文关键词: [particulate matter](#) [mass concentration](#) [number concentration](#) [β-ray method](#) [oscillation balance method](#)

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中文摘要:

选取重庆大气超级站2010年春季典型天气时段的颗粒物实时监测数据, 将β射线法和震荡天平法(TEOM)的PM<sub>10</sub>监测值进行了对比, 分析了PM<sub>10</sub>、PM<sub>2.5</sub>和PM<sub>1</sub>质量浓度百分比关系及10 μm以下颗粒物数浓度随粒径大小的分布规律。结果表明, β射线法与TEOM法的PM<sub>10</sub>监测结果基本一致, β射线法比TEOM法监测值平均偏低5.4%; PM<sub>2.5</sub>、PM<sub>1</sub>和PM<sub>0.5</sub>的数浓度均占PM<sub>10</sub>数浓度的98%以上; PM<sub>0.25</sub>数浓度占PM<sub>10</sub>数浓度的平均比例为34.9%, 占PM<sub>1</sub>数浓度的平均比例为35.1%; TEOM法监测的PM<sub>2.5</sub>占PM<sub>10</sub>日均质量浓度平均比例为51.2%; β射线法监测的PM<sub>2.5</sub>占PM<sub>10</sub>日均质量浓度平均比例为56.9%, PM<sub>1</sub>占PM<sub>10</sub>平均比例为30.9%。

英文摘要:

Using the real-time monitoring data of atmospheric particulate matter under typical weather at the atmosphere observation super station of Chongqing in spring 2010, a comparison of PM<sub>10</sub> monitoring data from two methods: β-ray absorption and micro-libration (TEOM) was made. Then concentration correlation of PM<sub>10</sub>, PM<sub>2.5</sub> and PM<sub>1</sub> was analyzed, and the number concentration as a function of distribution of particles smaller than 10 μm was investigated. The results showed that PM<sub>10</sub> monitoring data from two methods-β-ray absorption and TEOM were in well agreement, and the former was 5.4% lower than TEOM. Number concentration of PM<sub>2.5</sub>, PM<sub>1</sub> and PM<sub>0.5</sub> accounted for more than 98% of PM<sub>10</sub>. Average number concentration of PM<sub>0.25</sub> accounted for 34.9% of PM<sub>10</sub> and accounted for 35.1% of PM<sub>1</sub>. 24 hours' average mass concentration of PM<sub>2.5</sub> accounted for 51.2% of PM<sub>10</sub> monitored by TEOM. By β-ray absorption method, 24 hours' average mass concentration of PM<sub>2.5</sub> and PM<sub>1</sub> accounted for 56.9% and 30.9% of PM<sub>10</sub>, respectively.

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