Effects of Nitrogen Dioxide and Carbon Monoxide on the Determination of Sulfur Dioxide by Flue Gas Analyzer

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Abstract: Reference materials of SO2, NO2 and CO were used to study the effects of different concentrations of NO2 and CO on the determination value of SO2 by flue gas analyzer with electrochemical sensors and UV differential optical absorption spectroscopy (DOAS). Results showed that SO2 was affected more greatly by NO2 than CO using the method of electrochemical sensors. The electrolytic reaction of NO2 was the primary factor causing the lower concentration of SO2. SO2 with the concentration of 0–300 mg/m3 was affected greatly by NO2, and the determination value was unreliable. The determination error of SO2, with the concentration higher than 1500 mg/m3, was about 2%, and the test value was more accurate. The method of UV DOAS could improve the determination reliability of concentration of SO2 greatly when NO2 coexisted.

Keywords: Nitrogen dioxide; Sulfur dioxide; Flue gas analyzer; Disturbance