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**EMISSION MEASUREMENT CENTER  
GUIDELINE DOCUMENT**

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**EFFECT OF SILICA GEL ON CO<sub>2</sub> MEASUREMENTS**

**INTRODUCTION**

In order to protect the instrument analyzer, silica gel is often used to remove moisture from the gas stream before carbon dioxide (CO<sub>2</sub>) is measured. The purpose of this document is to provide information about the effect of silica gel on CO<sub>2</sub> measurements and how to minimize CO<sub>2</sub> measurement errors.

**SUMMARY**

Silica gel initially removes CO<sub>2</sub>, but rapidly reaches saturation as graphically shown in Figure 1. At the 200-ppm CO<sub>2</sub> level, it takes 2 minutes to reach 96 percent saturation. At the 1.88- to 2.8-percent CO<sub>2</sub> level, it takes 2 minutes to reach about 97 percent saturation.

**CONCLUSION**

If silica gel is used to remove moisture from a sample gas stream for the purpose of measuring CO<sub>2</sub>, it is recommended that CO<sub>2</sub> measurements be taken 2 minutes after beginning sampling.

**REFERENCE**

1. Carbon Dioxide Losses in Silica Gel, EPA Memorandum from Candace B. Sorrell to Roger T. Shigehara, April 13, 1988.

