USEPA Approved Method to Demonstrate Purity of Scrubbed Instrument Air

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The most fundamental function of instrument air purifiers is to remove moisture from the air supply; dry the resultant air sample and to filter particulates ranging in size from 0.01 to 1.0 micron. To use instrument air as a reference gas for quality assurance tests, the Part 75 Emissions Monitoring Technical Questions and Answers Question 9.10 in reference to 40 CFR 75, Appendix A, Sections 2.13 and 5.2.4 requires that the facility document that the conditioned gas will not contain concentrations of gases that interfere with the O_2 gas readings in the scrubbed instrument air. The most prevalent and impactful O_2 interferents are NO_X (NO and NO_2), CO_2, CO, H_2O and aliphatic alkane hydrocarbons (methane, ethane, propane etc.). Except for the hydrocarbons the interferent gas concentration would need to be at 1,000,000 parts per million (ppm) to significantly affect the O_2 concentration. For purposes of this QA procedure an annual QA test will be performed where O_2 gas will be flowed through both the CO and NO_X analyzers to demonstrate that the concentrations of those two respective interferents are insignificant. The resultant reports retrieved from the DAHS will be maintained and saved for audit purposes. Based on the fundamental operation of the system, if the system is working within the manufacturer design specifications, it is presumed that the concentration of H_2O is not present in any significant concentration to impact O_2 readings.

To annually confirm that the remaining compounds, especially the hydrocarbons are not present in concentrations significantly above normal ambient conditions for the region, the facility will have the air surrounding the instrument air compressor tested for a nominal cost by certified ambient air specialists from an industry leading company like SGS North American, Inc. The general sampling procedure would be as follows:

1. The facility will contact SGS and provide general information which would include location, number of requested samples, timing, etc.
2. SGS will place a cannister on order to be delivered to the site. The site will be responsible for acquiring the samples based on the instructions provided. Sampling typically takes a week.
3. The facility will ship the samples back to the respective SGS lab for analysis. The typical turnaround time for results is 7 business days; rush services are available if needed.
4. An electronic report is created and provided to the site.

The final report will be saved and maintained for future audits. Furthermore, the facility will note reasonable steps to be taken to limit compressor exposure to potential hydrocarbon sources (trucks, forklifts, welding torches, etc.), primarily during testing.

Finally, the QA/QC plan for the plant per 40 CFR 75, Appendix B, will follow the routine maintenance recommended by the manufacturer and the previously mentioned quality control procedures for the instrument air equipment to ensure that the instrument air continues to be thoroughly cleaned.