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**Practical Guidelines for Using Tracer Gases for the  
Evaluation of Ventilation Systems.**

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Abstract  
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## Practical Guidelines for Using Tracer Gases for the Evaluation of Ventilation Systems

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Over the years there has been significant advance in the development of experimental methods and analysis for the use of tracer gases in the evaluation of ventilation systems. As a rule, these advances have been in the direction of greater complexity and more sophisticated data analysis methods. Most of these advances are difficult for buildings researchers to understand, not to mention the confusion they have created for practitioners. This paper will attempt to return to basics and give guidelines for the practical application of tracer gas methods for the evaluation of building ventilation systems. Methods which can be applied in a period of several hours without the use of sophisticated equipment will be emphasized. Simple but accurate data analysis methods will be presented including how to analyze data when equilibrium or steady state is not obtained. The guidelines will include: simple methods to inject tracer into a building and obtain good mixing, methods to gather integral tracer gas samples, strategies for selecting the location of injection, the location of sampling, the time interval between samples, the duration of the test and the selection of appropriate analysis methods. Examples will be given from the author's experience in evaluating commercial and industrial facilities.

