

International Comparisons of Primary Gas Standards

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The role of a primary gas standard is to provide a chemical standard with an accurately known composition traceable to the International System of Units that can be used for value assignment of other gas mixtures similar in composition, including atmospheric samples. The NIST participates in many key comparisons of primary gas standards coordinated by the Bureau International des Poids et Mesures Consultative Committee on Amount of Substance and is also involved in a continuous program of bilateral comparisons with the Netherlands Measurement Institute. Most of the key comparisons are associated with the Mutual Recognition Arrangement, originating within the International Committee for Weights and Measures, and signed by more than 40 national metrology institutions. The bilateral comparisons between the NIST and the Netherlands Measurement Institute serve to establish traceability between Europe and the United States. They also are used as a means to independently verify the NIST primary gas standards. This poster presents an overview of the various programs that involve international comparisons of primary gas standards and results of the various comparisons for several gas species from several national metrology institutions.