



# Standard Guide for Qualification of Laboratory Analysts for the Analysis of Nuclear Fuel Cycle Materials<sup>1</sup>

This standard is issued under the fixed designation C1297; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This guide covers the qualification of analysts to perform chemical analysis or physical measurements of nuclear fuel cycle materials. The guidance is general in that it is applicable to all analytical methods, but must be applied method by method. Also, the guidance is general in that it may be applied to initial qualification or requalification.

1.2 The guidance is provided in the following sections:

|                              | Section |
|------------------------------|---------|
| Qualification Considerations | 4       |
| Demonstration Process        | 5       |
| Statistical Tests            | 6       |

1.3 This standard does not apply to maintaining qualification during routine use of a method. Maintaining qualification is included in Guide C1210.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

## 2. Referenced Documents

### 2.1 ASTM Standards:<sup>2</sup>

C1009 Guide for Establishing and Maintaining a Quality Assurance Program for Analytical Laboratories Within the Nuclear Industry

C1068 Guide for Qualification of Measurement Methods by a Laboratory Within the Nuclear Industry

C1128 Guide for Preparation of Working Reference Materials for Use in Analysis of Nuclear Fuel Cycle Materials

C1156 Guide for Establishing Calibration for a Measurement Method Used to Analyze Nuclear Fuel Cycle Materials

<sup>1</sup> This guide is under the jurisdiction of ASTM Committee C26 on Nuclear Fuel Cycle and is the direct responsibility of Subcommittee C26.08 on Quality Assurance, Statistical Applications, and Reference Materials.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

C1210 Guide for Establishing a Measurement System Quality Control Program for Analytical Chemistry Laboratories Within the Nuclear Industry

C1215 Guide for Preparing and Interpreting Precision and Bias Statements in Test Method Standards Used in the Nuclear Industry

### 2.2 ISO Standard:

ISO Guide 30 Terms and Definitions Used in Connection with Reference Materials<sup>3</sup>

## 3. Significance and Use

3.1 This is one of a series of guides designed to provide guidance for implementing activities that meet the requirements of a sound laboratory quality assurance program. The first of these, Guide C1009, is an umbrella guide that provides general criteria for ensuring the quality of analytical laboratory data. Other guides provide expanded criteria in various areas affecting quality, producing a comprehensive set of criteria for controlling data quality. The approach to ensuring the quality of analytical measurements described in these guides is depicted in Fig. 1.

3.2 The training and qualification of analysts is one of the elements of laboratory quality assurance presented in Guide C1009, which provides some general criteria regarding qualification. This guide expands on those criteria to provide more comprehensive guidance for qualifying analysts. As indicated in Guide C1009, the qualification process can vary in approach; this guide provides one such approach.

3.3 This guide describes an approach to analyst qualification that is designed to be used in conjunction with a rigorous program for the qualification and control of the analytical measurement system. This requires an existing data base which defines the characteristics (precision and bias) of the system in routine use. The initial development of this data base is described in Guide C1068. The process described here is intended only to qualify analysts when such a data base exists and the method is in control.

3.4 The qualification activities described in this guide assume that the analyst is already proficient in general laboratory

<sup>3</sup> Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.