



Standard Guide for Proficiency Testing by Interlaboratory Comparisons¹

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INTRODUCTION

Proficiency testing is the use of interlaboratory test comparisons to determine the performance of individual laboratories for specific tests and to monitor the consistency and comparability of a laboratory's test data.

Interlaboratory test comparisons are conducted for a number of other purposes including:

- (1) Check the consistency and comparability of data for individual testing personnel;
- (2) Assist in maintaining the calibration of instrumentation;
- (3) Establish the effectiveness and comparability of new test methods;
- (4) Achieve commercial improvement;
- (5) Assist in determining reasons for interlaboratory differences;
- (6) Determine the precision of a test method—often known as interlaboratory studies (see Practice E 691), collaborative trials, or round-robins; and
- (7) Assign values to certified reference materials (CRMs).

Participation in proficiency testing programs provides laboratories with an objective means of assessing and demonstrating the reliability of the data they are producing. Although there are several types of proficiency testing programs, they all share the common feature of the comparison of test results obtained by two or more laboratories.

One of the main uses of proficiency testing programs is to assess laboratories' ability to perform tests competently. It thus supplements laboratories' own internal quality control procedures by providing an additional external evaluation of their testing capability. These activities also complement the technique of on-site laboratory assessment by technical specialists usually used by laboratory accrediting bodies. Confidence that a testing or calibration laboratory consistently obtains reliable results is of major importance to users of laboratory services. Users seeking such an assurance may undertake their own evaluation or may use the evaluation of other bodies.

Bodies assessing the technical competence of testing laboratories normally require or expect satisfactory participation in proficiency testing as evidence of a laboratory's ability to produce reliable test results, except where proficiency testing is inappropriate. However, it is emphasized that a major distinction exists between:

- (1) The evaluation of the competence of a laboratory by the assessment of its total operation against pre-determined requirements, and
- (2) The examination of the results of a laboratory's participation in proficiency testing which may only be considered as giving information about the technical competence of the testing laboratory at a single point of time under the specific conditions of the test for tests involved in a particular proficiency testing program.

1. Scope

1.1 While there are a number of uses for interlaboratory tests, and variations in their design and implementation, it is

still possible to specify the essential principles that need to be considered when organizing such tests. Part A of this guide defines those principles and describes the factors that should be taken into account in the organization and conduct of proficiency testing programs.

1.2 This guide also covers how laboratory accrediting bodies, which assess technical competence of testing laboratories, should select and use proficiency testing programs (refer to Part B).

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