



Module: 7.1

Basic Competency - NIST Handbook 44

Overview and Scope

This module sets standards for basic competency for inspection and testing of devices used in commercial trade as covered in Handbook 44 Introduction, Section 1.10 General Code, and Appendices. The module also covers the range of devices regulated under weights and measures regulations, the legal basis for those regulations, and the NTEP Evaluation program.

Prerequisites

None

Learning Objectives

1 Scope and Legal Basis of Commercial Device Regulation

An official or service agent should understand the wide scope of device control regulations and the scope and legal basis for official actions. To demonstrate this, the person can:

- 1.1 List some of the wide variety of commercial devices under weights and measure jurisdiction.
- 1.2 Name the document that contains the specifications, tolerances, and other technical requirements applicable to commercial weighing and measuring devices, i.e. NIST Handbook 44, and explain its legal status.
- 1.3 Describe the enforcement powers granted to the director to deal with devices that are incorrect or inaccurate.
- 1.4 Describe the enforcement tools available to the inspector to deal with devices that are incorrect or inaccurate.
- 1.5 Explain the purpose for each of the main parts of the metrological control system for devices, i.e. type approval, initial verification and subsequent verification, and the work of registered service agents.
- 1.6 Describe the organization of the device inspection program in the jurisdiction and where the individual fits into the chain of responsibility.

2 Basic Organization and Fundamental Considerations of NIST Handbook 44

An official or service agent should understand the purpose and organization of Handbook 44, and understand the fundamental considerations used throughout the document. To demonstrate this, the person can:

- 2.1 Describe how Handbook 44 is organized and the system of paragraph designations.

- 2.2 Locate definitions of terms used in Handbook 44.
- 2.3 Explain the theory of tolerances and the use of adjustments.
- 2.4 Describe the basic requirements for standards used to enforce Handbook 44.
- 2.5 Discuss the difference between inspection and testing and the importance of each.
- 2.6 Explain the difference between being accurate and being correct.
- 2.7 Describe the various types of official "seals" and tags used by inspectors and by service agents, and explain what each seal or tag does or signifies.
- 2.8 Apply the rules for reading indications and rounding of numerical values.

3 Units and Systems of Measurement and General Tables of Units of Measurement

An official or service agent should understand the organization and use of units of measurement in both the metric (SI) system and the customary system. To demonstrate this, the person can:

- 3.1 Classify various units of measure in the two major units systems, Customary and Metric.
- 3.2 Describe how units are subdivided, either in decimal fractions or binary fractions.
- 3.3 Know how to find conversion factors between measurement units, and be capable of converting measurement values from one unit to another while retaining the significant figures in the value.

4 Certification, Use, and Care of Field Standards

An official or service agent should understand the legal connection between the physical standards employed in the work and national standards and how this connection is maintained. The person should also understand how to use and care for physical standards. To demonstrate this, the person can:

- 4.1 Define the principle of traceability and explain how this relates to the legal work of weights and measures.
- 4.2 Interpret information on a report of test for standards.
- 4.3 Recognize that physical standards must be recertified if damaged or if there are other reasons to suspect the standard may be compromised.
- 4.4 Explain the process to evaluate suitability of physical standards for use in an inspection under Handbook 44.
- 4.5 Demonstrate how to use test weights, test measures, and other types of standards and how to care for them when not in use.

5 Handbook 44 - General Code:

An official or service agent should be able to apply the provisions of the Handbook 44 General Code. To demonstrate this, the person can:

- 5.1 Explain each of the Application Section paragraphs of the General Code, particularly the sections dealing with the terms "retroactive" and "non-retroactive" as they are used in Handbook 44.
- 5.2 Define the term "commercial" as it relates to the legal scope of commercial device regulation and interpret, for common instances, whether a device is being used commercially.
- 5.3 Restate and apply each of the Specification paragraphs in the General Code.
- 5.4 Discuss each of the Notes paragraphs in the General Code.
- 5.5 Explain and apply the Tolerances paragraphs in the General Code, particularly the application of acceptance and maintenance tolerances.
- 5.6 Restate and apply each of the User Requirements in the General Code.

6 Type Approval and NTEP

An official or service agent should understand the type approval process within the jurisdiction and its relationship to the NCWM National Type Evaluation Program. To demonstrate this, the person can:

- 6.1 Explain how type approval is used in the device regulation program in the jurisdiction.
- 6.2 Discuss the NCWM NTEP Program and how it is used in the jurisdiction.
- 6.3 Restate what a Certificate of Conformance is and what it represents.
- 6.4 Describe how a Certificate of Conformance is formatted and the kinds of information provided on it.
- 6.5 Explain the meaning of the terms "active", "inactive" and "withdrawn" in respect to a Certificate of Conformance.
- 6.6 Demonstrate where to find a Certificate of Conformance for a device.

Contributors:

1/6/2016 Initial Draft - Ross Andersen; 5/23/2016 Editorial - Ross Andersen; 11/3/2016 - Editorial