ANSI/AWWA C670-15
(Revision of ANSI/AWWA C670-09)

American Water Works Association

Dedicated to the World's Most Important Resource®

AWWA Standard

Online Chlorine Analyzer Operation and Maintenance

Effective date: Oct. 1, 2015.
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AWWA Standard

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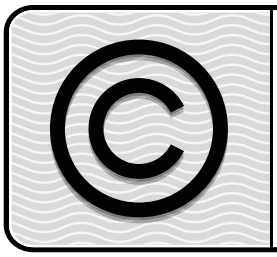

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Committee Personnel

The AWWA Standards Committee on Online Monitoring, which reviewed and approved this standard, had the following personnel at the time of approval:

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Contents

All AWWA standards follow the general format indicated subsequently. Some variations from this format may be found in a particular standard.

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Foreword

This foreword is for information only and is not a part of ANSI/AWWA C670.*

I. Introduction.

I.A. *Background.* This standard describes online chlorine analyzer operation and maintenance (O&M) when the online chlorine analyzer is used in the treatment and monitoring of municipal water supplies or in the treatment of municipal wastewater.

I.B. *History.* The first scientific approach to the use of chlorine in water treatment was conducted between 1917 and 1920 by Wolman and Enslow. Their determination of chlorine absorption in water demonstrated the use of the orthotolidine test for chlorine residuals. The chlorination breakpoint phenomenon was discovered in 1939 and revealed the speciation of free available and combined chlorine residuals. The amperometric method of measuring total chlorine residuals was introduced in 1942 and was followed by an amperometric method of measuring free chlorine, monochloramine, and dichloramine in 1951. Colorimetric methods of determining chlorine residuals were established in 1949.

The AWWA Standards Council approved the formation of a committee to create a standard for online chlorine analyzer operation and maintenance during its March 2006 meeting. A chair for the new Online Monitoring Committee was selected in August 2006, and the committee held its first meeting at the Water Quality and Technology Conference in Denver, Colorado, in November 2006.

The first edition of ANSI/AWWA Standard C670 was approved by the AWWA Board of Directors on June 14, 2009.

This edition was approved on June 7, 2015.

I.C. *Acceptance.* In May 1985, the US Environmental Protection Agency (USEPA) entered into a cooperative agreement with a consortium led by NSF International (NSF) to develop voluntary third-party consensus standards and a certification program for direct and indirect drinking water additives. Other members of the original consortium included the Water Research Foundation (formerly AwwaRF) and the Conference of State Health and Environmental Managers (COSHEM). The American Water Works Association (AWWA) and the Association of State Drinking Water Administrators (ASDWA) joined later.

* American National Standards Institute, 25 West 43rd Street, Fourth Floor, New York, NY 10036.

In the United States, authority to regulate products for use in, or in contact with, drinking water rests with individual states.* Local agencies may choose to impose requirements more stringent than those required by the state. To evaluate the health effects of products and drinking water additives from such products, state and local agencies may use various references, including

1. An advisory program formerly administered by USEPA, Office of Drinking Water, discontinued on Apr. 7, 1990.
2. Specific policies of the state or local agency.
3. Two standards developed under the direction of NSF†: NSF/ANSI‡ 60, Drinking Water Treatment Chemicals—Health Effects, and NSF/ANSI 61, Drinking Water System Components—Health Effects.
4. Other references, including AWWA standards, *Food Chemicals Codex*, *Water Chemicals Codex*,§ and other standards considered appropriate by the state or local agency.

Various certification organizations may be involved in certifying products in accordance with NSF/ANSI 61. Individual states or local agencies have authority to accept or accredit certification organizations within their jurisdictions. Accreditation of certification organizations may vary from jurisdiction to jurisdiction.

Annex A, "Toxicology Review and Evaluation Procedures," to NSF/ANSI 61 does not stipulate a maximum allowable level (MAL) of a contaminant for substances not regulated by a USEPA final maximum contaminant level (MCL). The MALs of an unspecified list of "unregulated contaminants" are based on toxicity testing guidelines (noncarcinogens) and risk characterization methodology (carcinogens). Use of Annex A procedures may not always be identical, depending on the certifier.

ANSI/AWWA C670 does not address additives requirements. Users of this standard should consult the appropriate state, provincial, or local agency having jurisdiction in order to

1. Determine additives requirements, including applicable standards.
2. Determine the status of certifications by parties offering to certify products for contact with, or treatment of, drinking water.
3. Determine current information on product certification.

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* Persons outside the United States should contact the appropriate authority having jurisdiction.

† NSF International, 789 North Dixboro Road, Ann Arbor, MI 48105.

‡ American National Standards Institute, 25 West 43rd Street, Fourth Floor, New York, NY 10036.

§ Both publications available from National Academy of Sciences, 500 Fifth Street, NW, Washington, DC 20001.

II. Special Issues.

II.A. *Information on the Application of This Standard.* The online chlorine analyzer chosen for a particular application depends most on the water characteristics at the point of sampling and the reason for sampling (regulatory compliance, process control, or other). The initial selection and purchasing of an online chlorine analyzer are beyond the scope of this standard. However, as an analyzer is operated and maintained, attention should be paid to whether the water characteristics are within the range of water temperature, pH, and other parameters in which the analyzer is designed to operate.

III. Use of This Standard. It is the responsibility of the user of an AWWA standard to determine that the products described in that standard are suitable for use in the particular application being considered.

III.A. *Purchaser Options and Alternatives.* The following information should be provided by the purchaser:

1. Standard used—that is, ANSI/AWWA C670, Online Chlorine Analyzer Operation and Maintenance, of latest revision.

III.B. *Modification to Standard.* Any modification of the provisions, definitions, or terminology in this standard must be provided by the purchaser.

IV. Major Revisions.

1. Modifications were made to conform to AWWA standard wording.
2. Section 2 was updated to list only those documents referenced in the standard per AWWA guidelines, and a reference to USEPA Method 334 was added.
3. The definitions for potable water, wastewater, and reclaimed water were added to Section 3 per AWWA guidelines.
4. A reference to USEPA Method 334 was added to Sec. 4.6.5, Sampling method, and Sec. 5.1, Instrument verification, to be consistent with current regulations.
5. A new appendix A was added to include important reference material that is not referenced in the standard and was deleted from Section 2 of the standard.

V. Comments. If you have any comments or questions about this standard, please call AWWA Engineering and Technical Services at 303.794.7711, FAX at 303.795.7603; write to the department at 6666 West Quincy Avenue, Denver, CO 80235-3098; or email at standards@awwa.org.

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AWWA Standard

Online Chlorine Analyzer Operation and Maintenance

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard describes online chlorine analyzer operation and maintenance (O&M) when the online chlorine analyzer is used in the treatment and monitoring of potable water, reclaimed water, or wastewater.

Sec. 1.2 Purpose

Continuous chlorine residual monitoring is used for two primary purposes: process control and regulatory compliance. Process control implies that the reason for testing the chlorine content of water is primarily to determine how well a process is working (e.g., how consistent the chlorine residual is in effluent from a flash mixer, how much chlorine is removed from disinfected water, etc.), to control chlorine feed equipment, and to ensure appropriate chlorination of the final product. The rate of ammonia application may be controlled by the residual from the chlorine analyzer to maintain an acceptable chloramine speciation. Process control may also imply analyzing residual chlorine content in distribution or transmission systems. A sudden decrease in measured chlorine residual may be indicative of malfunctioning equipment, system failure, groundwater intrusion, or introduction of some chlorine-consuming contaminants.