ANSI/AWWA **F111-25**

(First Edition)

AWWA Standard

Ultraviolet Disinfection Systems for Wastewater Effluent

Effective date: Feb. 1, 2026.
First edition approved by Board of Directors Oct. 13, 2025.
Approved by American National Standards Institute Oct. 27, 2025.

American Water Works Association

Approved American National Standard ANSI

STANDARD Since 1881

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ISBN-13, print: 978-1-64717-296-1

ISBN-13, electronic: 978-1-61300-816-4

DOI: http://dx.doi.org/10.12999/AWWA.F111.25

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Foreword

This foreword is for information only and is not a part of ANSI/AWWA F111.*

I. Introduction

I.A. *Background*. Ultraviolet (UV) disinfection systems have gained increased acceptance for use in wastewater treatment plants.

I.B. *History*. The need for a standard addressing UV disinfection systems for wastewater was recognized by the American Water Works Association (AWWA) in October 2015. The Standards Committee on Ultraviolet Disinfection was appointed for the task of standardization, and three months later, a subcommittee was formed to develop a standard. This first edition was approved by the AWWA Board of Directors on Oct. 13, 2025.

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). AWWA and the Association of State Drinking Water Administrators (ASDWA) joined later.

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. Specific policies of the state or local agency.

2. Four standards developed under the direction of NSF[‡]: NSF/ANSI/CAN[§] 60, Drinking Water Treatment Chemicals—Health Effects; NSF/ANSI/CAN 61, Drinking Water System Components—Health Effects; NSF/ANSI/CAN 372, Drinking Water System Components—Lead Content; and NSF/ANSI/CAN 600, Health Effects Evaluation and Criteria for Chemicals in Drinking Water.

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* American National Standards Institute, 1180 Avenue of the Americas, 10th Floor, New York, NY 10036.

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

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

§ Standards Council of Canada, 55 Metcalfe Street, Suite 600, Ottawa, ON K1P 6L5 Canada.

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3. 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/CAN 61. Individual states or local agencies have authority to accept or accredit certification organizations within their jurisdiction. Accreditation of certification organizations may vary from jurisdiction to jurisdiction.

NSF/ANSI/CAN 600 (which formerly appeared in NSF/ANSI/CAN 60 and 61 as Annex A, "Toxicology Review and Evaluation Procedures") 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 NSF/ANSI/CAN 600 procedures may not always be identical, depending on the certifier.

ANSI/AWWA F111 does not address additives requirements. Users of this standard should consult the appropriate state 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.

II. Special Issues. There are no special issues.

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 application being considered.

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

1. Standard used—that is, ANSI/AWWA F111, Ultraviolet Disinfection Systems for Wastewater Effluent, of latest revision.
2. Equipment requirements (Sec. 4.1).
3. Request for validation status and/or an executive summary of the validation report (Sec. 4.3.4.3).

[¶] Both publications available from National Academies Press, 500 Fifth Street, NW, Washington, DC 20001.

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4. Details of federal, state, provincial, territorial, and local requirements (Sec. 4.4.1).

5. Request for factory test results (Sec. 5.1.1.2).

6. Request for shop inspection by the purchaser (Sec. 5.1.1.3).

7. Request for onsite field representative (Sec. 5.2.2).

8. Request for a supplier check of equipment for correct installation and function (Sec. 5.2.3).

9. Request for the required number of training materials (Sec. 5.2.5.2).

10. Specify acceptance testing time requirements (Sec. 5.2.6).

11. Request storage requirements (Sec. 6.2.3).

III.B. *Laying Length.* There is not a standard laying length for UV disinfection systems; therefore, interchangeability among various manufacturers may not be possible without modification to the existing system. The purchaser is cautioned to obtain laying length from the manufacturers for verification prior to purchase (Sec. 4.4.1).

III.C. *Testing.* This standard requires the manufacturer to have third-party validation testing conducted on a fully assembled system. If the purchaser desires an additional validation test be conducted on the installed, fully assembled system, this requirement should be required in the purchase documents (Sec. 4.6).

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

IV. Major Revisions. This is the first edition of this standard.

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

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AWWA Standard

Ultraviolet Disinfection Systems for Wastewater Effluent

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard sets the minimum requirements for UV disinfection systems and equipment elements used for disinfection of wastewater treatment plant effluent. It describes the minimum requirements for materials, design, testing, installation, operation, and maintenance of equipment needed for ultraviolet disinfection of wastewater effluent. Equipment and elements covered under this standard include UV reactors and related appurtenances.

Sec. 1.2 Purpose

The purpose of this standard is to provide a minimum set of requirements for UV systems for wastewater treatment. This standard is intended to assist with the design, procurement, installation, and commissioning of UV disinfection systems.

Sec. 1.3 Application

This standard can be referenced for design, procurement, installation, and commissioning of UV disinfection equipment used in wastewater treatment.

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