



**American Water Works
Association**

The Authoritative Resource for Safe Drinking WaterSM

ANSI/AWWA C653-03
(Revision of ANSI/AWWA C653-97)

AWWA Standard

Disinfection of Water Treatment Plants



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Foreword

This foreword is for information only and is not a part of AWWA C653.

I. Introduction.

I.A. *Background.* This standard describes methods of disinfecting new treatment facilities before they are placed in service; existing treatment facilities before they are returned to service after being subjected to contamination from construction or inspection; and existing treatment facilities that, under normal operation, continue to demonstrate the presence of coliform bacteria in the plant effluent. Because of the complexity and diversity of treatment plants, the formulation of firm rules for disinfection is not practicable. Nevertheless, principles described in this standard do apply generally and must be followed to enable proper disinfection of treatment plant facilities. Several alternative disinfection procedures are provided for those parts of the treatment plant generally referred to as conveyance facilities (such as pipes) and storage facilities (such as basins tanks, clearwells, and so forth). NOTE: Disinfection is required for all portions of the facility that are downstream from the filter influent or that are downstream from the first point of disinfectant application in the treatment process when the water is disinfected prior to filtration. That part of the treatment facility handling raw water need not be disinfected but should be thoroughly cleaned as described in Sec. 4.1.

I.B. *History.* The first edition of ANSI/AWWA C653 was approved by the AWWA Board of Directors on Jan. 25, 1987. The second edition of ANSI/AWWA C653 was approved by the AWWA Board of Directors on Feb. 2, 1997. This edition was approved Jan. 19, 2003.

II. Special Issues.

II.A. *Alternative Disinfection Procedures.* The utility should decide which of the alternative disinfection procedures is most suitable for a given situation. Choice of the procedure used should include consideration of the availability of materials and equipment for the disinfection operation, the training of personnel to perform the disinfection, and safety considerations. For example, gas chlorination should be used only where properly designed and constructed equipment is available; makeshift equipment is not acceptable when liquid chlorine cylinders are used. Spray equipment should be used inside tanks or enclosures only when thorough ventilation is assured or when appropriate protection for personnel is provided. If a procedure is

selected that requires the disposal of highly chlorinated water, then thorough consideration should be given to the impact on the environment. If there is any question that the discharge of chlorinated waste may cause damage to aquatic life, wildlife, human health, physical installations, or other downstream water uses of any type, then a reducing agent should be applied to water being disposed of to thoroughly neutralize the chlorine residual remaining in the water. (See appendix A for neutralizing chemicals.)

III. Use of This Standard. AWWA has no responsibility for the suitability or compatibility of the provisions of this standard to any intended application by any user. Accordingly, each user of this standard is responsible for determining that the standard's provisions are suitable for and compatible with that user's intended application.

III.A. Purchaser Options and Alternatives. The following items should be covered in the purchaser's specifications:

1. Standard used—that is, ANSI/AWWA C653, Standard for Disinfection of Water Treatment Plants, of latest revision.
2. Form of chlorine to be used (Sec. 4.3).
3. Method of chlorination of piping (Sec. 4.4.1).
4. Precautions for disposal of chlorinated water (Sec. 4.4.4.4).
5. Bacteriological evaluation and method to be used (Sec. 5.1).
6. Redisinfection, if it is to be required (Sec. 5.1).

III.B. Modification to Standard. Any modification to the provisions, definitions, or terminology in this standard must be provided in the purchaser's specifications.

IV. Major Revisions. Major revisions made to the standard in this edition include the following:

1. The format has been changed to AWWA standard style.

V. Comments. If you have any comments or questions about this standard, please call the AWWA Volunteer and Technical Support Group, (303) 794-7711 ext. 6285, FAX (303) 795-7603, or write to the group at 6666 West Quincy Avenue, Denver, CO 80235-3098.



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AWWA Standard

Disinfection of Water Treatment Plants

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard describes chlorination materials, procedures, and requirements for disinfection of new treatment facilities and existing water treatment facilities temporarily taken out of service for cleaning, inspection, maintenance, painting, repair, or any other activity that might lead to contamination of water. Typically, these units include filter basins, filter media, clearwells, pump suction wells, and all associated piping and appurtenances located downstream from the filter influent or from the first point of application of disinfectant in the treatment process if process disinfection is initiated upstream of the filters. The disinfection method employed is surface contact with a high-strength chlorine solution for a specific time period. Proof that disinfection has been accomplished is provided by the results of bacteriological sampling and testing that show the absence of coliform organisms.