TO: Joint Committee on Drinking Water Treatment Units

FROM: Dr. Robert Powitz, Chair of the Joint Committee

DATE: November 30, 2023

SUBJECT: Proposed revisions to NSF/ANSI 42: *Drinking Water Treatment Units – Aesthetic Effects* (42i132r1)

Revision 1 of NSF/ANSI 42 issue 132 is being forwarded to the Joint Committee for consideration. Please review the proposal and **submit your ballot by December 21, 2023** via the NSF Online Workspace <www.standards.nsf.org>.

Please review all ballot materials. When adding comments, please include the section number applicable to your comment and add all comments under one comment number whenever possible. If you need additional space, please use the attached blank comment template in the reference documents and upload online via the browse function.

Purpose

The proposed revisions permit the use of synthetic water that meets the criteria in Section 7.3.2.6.1, Chloramine reduction test water.

Background

An issue paper (DWTU-2023-19) noted that Section 7.3.2.3.2, Monochloramine analysis, uses an example in a requirement that suggests synthetic water is permissible: "When significant changes to the challenge water chemistry occur (e.g., change from municipal to synthetic water), revalidation of the selected monochloramine method shall be performed."

However, Section 7.3.2.6.1, Chloramine reduction test water, does not explicitly state the type of source water allowed.

For clarity and consistency, this ballot adds language to permit the use of synthetic water that meets the test water criteria in Section 7.3.2.6.1.

Please refer to the chloramine test water issue paper (DWTU-2023-19) under Referenced Items for additional background information.

If you have any questions about the technical content of the ballot, you may contact me in care of:

Dr. Robert Powitz
Chair, Joint Committee on Drinking Water Treatment Units
c/o Monica Milla
NSF Joint Committee Secretariat
(734) 214-6223
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[Note: The recommended changes to the standard which include the current text of the relevant section(s) indicate deletions by use of ~~strikeout~~ and additions by gray highlighting. Rationale statements are in *italics* and only used to add clarity; these statements will NOT be in the finished publication.]

NSF/ANSI 42:

Drinking Water Treatment Units – Aesthetic Effects

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7.3 Chemical reduction testing

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7.3.2 Chloramine reduction testing

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7.3.2.6 Influent challenge

7.3.2.6.1 Chloramine reduction test water

A water supply (municipal, well, RO/DI, or any combination of these) with parameters adjusted to ~~with~~ the following ~~specific~~ characteristics shall be used:

pH	9.0 ± 0.25
temperature	20 ± 3 °C (68 ± 5 °F)
TDS	200 to 500 mg/L
hardness	< 170 mg/L as $CaCO_3$
turbidity	< 1 NTU
TOC (total organic carbon)	> 1.0 mg/L [a]
organic nitrogen [b]	< 0.2 mg/L [c]
chloramine (analyzed as specified in Section 7.3.2.3)	2.7 to 3.3 mg/L monochloramine (measured as Cl_2/L) [d]

[a] If naturally present in source water at adequate concentration. Adjustment of TOC is given in Section 7.3.2.6.4.

[b] Measured as the difference between Kjeldahl nitrogen and ammonia nitrogen.

[c] This requirement may be waived if the test water used during analytical validation (Section 7.3.2.3.2) contains organic nitrogen > 0.2 mg/L.

[d] Monochloramine NH_2Cl (CAS #10599-90-3)

NOTE — mg/L monochloramine (as mg Cl_2/L) = mg/L NH_2Cl × 1.4.

The water characteristics shall be adjusted using the procedures in this section. In addition, the test water shall be prefiltered through a particulate reduction filter rated to the Class I requirements of NSF/ANSI 42.

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7.3.2.3 Analytical methods

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7.3.2.3.2 Monochloramine analysis

Analyses for monochloramine reduction testing shall be performed in accordance with either the DPD Ferrous Titrimetric Method (4500-Cl F) or the DPD Colorimetric Method (4500-Cl G) in *Standard Methods*.[4] The method used for monochloramine analysis shall be validated for the challenge water used (see Section 7.3.2.5). A challenge water sample shall be split for analysis by both the selected method and the HPLC Method defined in Annex N-1. A minimum of seven analyses shall be generated from the split sample using both the selected analytical method and the HPLC method. The monochloramine results from both methods shall be compared using a Student's *t* test, and no significant difference shall be observed at the 95% confidence level. Subsequent monochloramine analysis shall be according to the selected method after successful validation.

When significant changes to the challenge water chemistry occur (e.g., change from municipal to synthetic water), revalidation of the selected monochloramine method shall be performed.

NOTE — As an alternative, the HPLC method in Annex N-1 may be used for all monochloramine analyses.

***Rationale*: Provides clarifying language to explicitly permit the use of synthetic water that meets the chloramine reduction test water criteria in Section 7.3.2.6.1.**