MEMORANDUM

TO: Joint Committee on Drinking Water Additives - System Components

FROM: France Lemieux, Chair of the Joint Committee

DATE: May 9, 2022

SUBJECT: Proposed revision to NSF/ANSI/CAN 61 – *Drinking Water System Components – Health Effects* (61i163r1)

Revision 1 of NSF/ANSI 61, issue 163 is being forwarded to the Joint Committee for consideration. Please review the proposal and **submit your ballot by May 30, 2022** via the NSF Online Workspace <www.standards.nsf.org>.

Please review all ballot materials. When adding comments, please identify the section number/name for your comment and add all comments under one comment number where 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 revision will add language to reflect the requirements for well packing media in Section 7.

Background

In 2021 a task group was formed to consider the development of a test protocol in NSF/ANSI/CAN 61 specifically for well packing materials. The group reviewed the normalization factor that takes into account the geometry of the well and the 24-hr testing time to better reflect how well packing materials are used in the field. Please refer to the update provided at the recent DWA-SC JC meeting (December 2, 2021) and the issue paper (DWA-61-2021-1) under the 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:

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Chair, Joint Committee on Drinking Water Additives - System Components
c/o Monica Leslie
Joint Committee Secretariat
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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/CAN Standard
for Drinking Water Additives –

Drinking Water System Components – Health Effects

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7 Process media

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7.2 Definitions

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7.2.16 regeneration: The periodic restoration of an adsorptive media (excluding activated carbon) back to useable form by employing a chemical regenerant to displace contaminants removed during the treatment process.

7.2.17 spent media: Media that has been in service and is no longer able to produce a desired effluent quality.

7.2.18 well packing material: Media placed in the anulus between the borehole and the screen or casing of a drinking water well. The media functions as a filter to keep fines from entering a well and improves the well hydraulic efficiency. It is typically used in wells completed in unconsolidated formations. The well packing material can also act as a formation stabilizer to maintain the integrity of the borehole for either completion or for the life of well.

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7.5 Extraction procedures

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7.5.3 Conditioning (backwashing)

POE system media receive conditioning as specified in Section 7.5.5.4.

7.5.3.1 Filtration, ~~and~~ adsorption, and well packing media

Wetted filtration, ~~or~~ adsorption, and well packing media (excluding diatomaceous earth, perlite, and PAC products, and other media of < 0.25 mm diameter) shall be placed in a conditioning chamber (a glass column with a minimum inner diameter of 2 in). The amount of media conditioned shall be sufficient to meet or exceed its specific weight per volume ratio (see Table 7.2) and to generate sufficient exposure water to complete the selected analyses. Reagent water shall be directed slowly upward through the conditioning system until the entire amount of media is flooded. The media shall then be backwashed at a flow rate that fluidizes the media or attains sufficient transport velocities to remove extraneous particulate matter; the maximum wetted media expansion rates for various process media products are indicated in Table 7.3. Filtration, ~~and~~ adsorption, and well packing media shall be subjected to the prescribed backwash for 30 ± 2 min.

7.5.3.2 Diatomaceous earth, perlite, PAC, and other process media

Diatomaceous earth, perlite, PAC, and all other process media with functions other than filtration or adsorption shall not be conditioned unless the manufacturer's use instructions stipulate a specific conditioning protocol.

7.5.3.3 Special postconditioning procedures for sand and anthracite products

Upon completion of the backwash, 1% to 1.5% of the sand or anthracite column (by height) shall be scraped away and discarded.

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7.5.5 Exposure protocols

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7.5.5.4 POE system media

POE system media shall be exposed at a weight to volume ratio greater than or equal to the maximum value recommended by the manufacturer for the ratio of the weight of media (as shipped) per unit void volume (UVV) of a POE system.

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7.5.5.5 Well packing media

Immediately after completion of conditioning, the media sample shall be exposed in an appropriately sized vessel. The amount of media exposed per volume of exposure water (see Section 7.5.4.1) shall be sufficient to meet or exceed its specific weight per volume ratio found in Table 7.2 and to generate sufficient exposure water to complete the selected analyses. The contents of the vessel shall be mixed to ensure that the entire sample is in contact with the exposure water. The vessel shall be sealed with polytetrafluoroethylene (PTFE). The sample shall be exposed for three consecutive 24-h periods at 23 ± 2 °C (73 ± 4 °F), with exposure water decanted and discarded after the first and second 24-h periods, and exposure water decanted and collected for analysis after the third 24-h period. The weight-to-volume ratio shall be recorded at the time of exposure and shall represent the evaluation dose.

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7.7 Normalization

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7.7.7 Well packing media

The concentration reported by the laboratory shall be normalized with the following equation:

$$\text{normalized contaminant concentration} = \text{laboratory contaminant concentration} \times \frac{\text{media mass}_f\ (\text{mg})}{V_{F(\text{statistic})}} \times \frac{V_L}{\text{media mass}_L\ (\text{mg})} \times \frac{V_{F(\text{static})}}{V_{F(\text{flowing})}}$$

Where:

$media\ mass_F$	= mass of product under field
V_L	= volume of exposure water used during laboratory exposures conditions
$media\ mass_L$	= mass of product exposed during laboratory exposures
$V_{F(static)}$	= volume of water to which the product is exposed under static conditions
$V_{F(flowing)}$	= minimum volume of water to which the product is exposed in the field under flowing conditions during a period of time equivalent to the laboratory evaluation

7.7.7.1 Assumptions for residential wells

Normalization factors for contaminants shall be calculated based on the following assumptions for residential wells (≤ 5 in diameter well casings):

— daily flow for a residential well is 681 L (180 gal) of water;

— screen and adjacent well packing material are 6.1 m (20 ft) in total linear feet, independent of total bore hole depth; and

— bore hole anulus surrounding the well casing has an average radius of 5.1 cm (2 in).

7.7.7.2 Assumptions for municipal and community wells

Normalization factors for contaminants shall be calculated based on the following assumptions for municipal and community wells (> 5 in diameter well casings):

— minimum daily flow for a well is 204,400 L (54,000 gal) of water, based on a pumping flow of 284 L (75 gal) per minute, and the pump operating 12 h per day;

— screen and adjacent well packing material are 6.1 m (20 ft) in total linear feet, independent of total bore hole depth; and

— bore hole anulus surrounding the well casing has an average radius of 7.6 cm (3 in).