TO: Joint Committee on Wastewater Technology

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

DATE: October 2, 2023

SUBJECT: Proposed revision to NSF/ANSI 385 - *Disinfection Mechanics* (385i5r1)

Revision 1 of NSF/ANSI 385, issue 16 is being forwarded to the Joint Committee for consideration. Please review the proposal and **submit your ballot by October 23, 2023** via the NSF Online Workspace <https://standards.nsf.org/home>.

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

This ballot will make revisions regarding ozone loss evaluation in NSF/ANSI 385.

Background

An issue paper submitted notes that in NSF/ANSI 385, Section 8.6.2 contains language to measure ozone loss, but no pass/fail criteria is included, and recommends inclusion of such criteria.

This issue paper was presented at the 2019 WWT JC meeting, and a motion to send the paper to the WWT Task group on NSF/ANSI 385 was approved. The Task Group met multiple times to review language, eventually agreeing that loss evaluation was in fact not necessary as any ozone loss would have a negligible effect as the systems are installed outdoors.

The group decided to remove the ozone loss evaluation from the standard and include an informative note regarding ozone safety. Similar language in the ozone section of NSF/ANSI/CAN 50 – Recreational Water Facilities was used as a starting point for this included language.

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

Robert W. Powitz, PhD, MPH, RS, DLAAS
Chair, Joint Committee on Wastewater Technology
c/o Joint Committee Secretariat
Jason Snider
NSF
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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 grey highlighting. Rationale Statements are in *italics* and only used to add clarity; these statements will NOT be in the finished publication.]

NSF/ANSI Standard
For Wastewater Technology –

Disinfection Mechanics

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8 Ozone disinfection devices

8.1 Scope

This section establishes the requirements for devices used to diffuse controlled amounts of ozone into the effluent of secondary treated wastewater for the purposes of disinfecting wastewater.

8.2 Model series classification

Ozone disinfection devices within a manufacturer's model series shall be classified according to the performance testing and evaluation of the most representative model within the series. The series shall be comprised of ozone disinfection devices proportionally similar in design, construction, and materials, and proportionally equivalent in dimension, to the rate of ozone generation.

Ozone disinfection devices shall be tested with the contact chamber size which provides the greatest challenge in meeting the performance criteria in this standard. The manufacturer shall present reasonable documentation describing why the chosen size is the most challenging. The manufacturer shall provide specifications regarding minimum and maximum acceptable water levels to be maintained in the contact chamber in addition to any important ratios which are to be maintained during operation such as diameter-to-depth ratios, perimeter-to-depth, or volume-to-depth. Performance testing and evaluation of other model sizes within the series are not necessary, provided that the dimensions, hydraulics, mixing, and other applicable design characteristics are proportionally similar to the evaluated system.

8.3 Design and construction

All ozone disinfection devices shall comply with the requirements of Sections 8.3 through 8.5.

NOTE- - For ozone systems intended for indoor use, OSHA regulations should be followed. Ozone is considered toxic above certain concentrations in air. If the ozone concentration in the water exceeds the equilibrium state, the excess ozone will be emitted into the air. The Occupational Safety and Health Administration (OSHA) has set a short-term exposure limit of 0.3 ppm (0.6 mg/m^3) and long-term exposure limit 0.1 ppm (0.2 mg/m^3) time weighted average, over 8 h/d, 5 d/wk.

When the equipment is located in an enclosed room, consideration should be given to having adequate exhaust in case of ozone releases. The exhaust system should provide a minimum of three air changes

per hour to comply with the OSHA limits. In addition, an ambient air ozone monitor should be installed. Ozonation systems, which operate under vacuum, should not present a danger of ozone leaks into the treatment room.

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8.6 Performance testing and evaluation

Performance testing and evaluation of ozone disinfection devices shall consist of the following procedures:

— life test (see Section 8.6.1); and
— microbiological organism deactivation test (see Section 8.6.1.2); ~~and~~
~~— ozone loss test (see Section 8.6.3)~~.

Rationale – note the ozone loss test moved from 8.6.3 to 8.6.2 due to another section being removed.

These tests shall be conducted on one ozone disinfection device.

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~~**8.6.2 Ozone loss evaluation**~~

~~The test setup shall simulate an ozone disinfection device installed between a treatment device and a pump vault in accordance with the manufacturer's installation instructions. An ozone detector shall be installed near the inlet to the ozone disinfection device to detect ozone gas feeding back into the treatment device. A second ozone detector shall be installed near the discharge of the contact chamber to monitor ozone discharge through the outlet of the contact chamber. The detectors shall be mounted above and within~~
~~0.3 m (1 ft) in all directions of the invert of the pipe. In the event of multiple inlets or outlets, all inlets and outlets shall be monitored for ozone loss. Readings from the detectors shall be measured and recorded on three separate days evenly spaced throughout the life test (one day during the 1st, 14th, and 26th week of testing).~~

~~The ozone loss evaluation shall be conducted simultaneously with the ozone disinfection test and microbiological organism deactivation test. All data collected during this test shall be included in the final report and will not be used as criteria for the performance evaluation~~.

Rationale: The WWT Task Group on 385 determined the loss evaluation testing was not needed and elected to strike this section while including informative language in 8.3.

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