TO: Joint Committee on Biosafety Cabinetry

FROM: Robert W. Powitz, Chairperson of the Joint Committee

DATE: April 17, 2024

SUBJECT: Proposed revision to NSF/ANSI 49 – *Biosafety Cabinetry: Design, Construction, Performance and Field Certification* (49i191ar1)

Revision 1 of NSF/ANSI 49 issue 191a is being forwarded to the BSC Joint Committee for balloting. Please review the changes proposed to this standard and **submit your ballot by May 8, 2024** via the NSF Online Workspace <www.standards.nsf.org>.

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 upload a word or pdf version of your comments online via the browse function.

Purpose

The purpose of this ballot is to affirm revised language related to the location of the control plates of the performance testing in the product and personnel protection test in N-1 of Standard 49.

Background

Issue paper **BSC-2023-17 – Personnel Protection Test Method** highlights the possibility of limited space in front of the support tray with certain cabinets configurations. This can result in slanted trays, possible blocked airflow, and this is not indicative of a cabinet under normal operating conditions. The proponent contends that the language should be updated to accommodate more flexibility with the control plate placement to encourage more typical operating conditions, and more consistent results.

This issue paper was presented during the 2023 JC Face-to-Face meeting in June 2023, including a part A and B. This is part A of that issue paper and was motioned to have language developed by the issue proponent and an NSF content expert prior to sending to the JC as an approval ballot.

This revision 1 language reflects that language and is presented here for your consideration.

Public Health Impact

The proposed changes have no negative impact on public health.

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

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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 *red italics* and only used to add clarity; these statements will NOT be in the finished publication.]

NSF/ANSI International Standard for Biosafety Cabinetry —

Normative Annex 1
(formerly Annex A)

Performance tests

N-1.6.3 Personnel protection test (system challenged with 1 × 108 to 8 × 108 B. subtilis spores in 5 min).

N-1.6.3.1 Method

a) The cabinet shall be operated at the manufacturer's recommended nominal set points ± 2 ft/min (0.01 m/s).

b) A nebulizer containing up to 55 mL of spore suspension (5 × 108 to 8 × 108/mL) shall be centered between sidewalls of the cabinet. The horizontal spray axis shall be placed 14 in (360 mm) above the work surface; the opening of the nebulizer shall be 4 in (100 mm) behind the sash. The spray axis shall be parallel to the work surface and directed toward the sash (see Figure 15).

c) The cylinder shall be placed at the cabinet center. The axis of the cylinder shall be 2.75 in (70 mm) above the work surface. Around the cylinder, four AGI-30s shall be positioned with the sampling inlets 2.5 in (64 mm) outside the cabinet front. Two AGI-30s shall be placed so that their inlet axes are 6 in (150 mm) apart and in a horizontal plane tangent to the top of the cylinder. Two AGI-30s shall be positioned so that their inlet axes are 2 in (51 mm) apart and lie in a horizontal plane 1 in (25 mm) below the cylinder. As a positive control, an agar plate shall be placed under ~~the center of the cylinder, and supported a minimum of 0.50 in (13 mm) above or below~~ the work surface or front intake grill, ~~to~~ in a manner that minimizes ~~minimize~~ the obstruction of airflow into the grill (see Figures 16 and 17).

N-1.6.4 Product protection test (system challenged by 1 × 106 to 8 × 106 B. subtilis spores in 5 min.)

N-1.6.4.1 Method

a) The cabinet shall be operated at the nominal set point velocities within ± 3 ft/min (± 0.015 m/s).

b) Cover the work surface with open agar plates 100 × 15 mm with the cylinder at the midpoint (see Figure 18).

c) Position the horizontal spray axis of the nebulizer containing 55 mL of 5 × 106 to 8 × 106 spores/mL at the level of the top edge of the work opening, and center it between the two sides of the cabinet, with the opening of the nebulizer 4 in (100 mm) outside the sash. The spray axis shall be parallel to the work surface and directed toward the open front of the cabinet.

d) A 2.5-in (64-mm) OD cylinder, with closed ends, shall be placed in the center of the cabinet. The cylinder shall be positioned in the cabinet so that one end butts against the back wall of the total work area, the other end extends at least 6 in (150 mm) into the room through the front opening of the cabinet, and the axis of the cylinder is 2.75 in (70 mm) above the work surface.

e) As a positive control, an agar plate shall be placed under ~~the center of the cylinder, and supported 0.50 in (13 mm) above or below~~ the work surface or front intake grill, ~~to~~ in a manner that minimizes ~~minimize~~ the obstruction of airflow into the grill (see Figure 19).

***Rationale**: This language allows more flexibility for placement of the control plate during performance testing, allowing for the cabinet to operate as designed, without the control plate creating an inappropriate obstruction.*