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Joint Committee on Biosafety Cabinetry

July 16, 2024

Proposed revision to NSF/ANSI: 49 – Biosafety Cabinetry: Design, Construction, Performance and Field Certification (49i177r3)

Revision 3 of NSF/ANSI 49, issue 177 is being forwarded to the Joint Committee on Biosafety Cabinetry for consideration. Please review the proposal and **submit your ballot by August 6, 2024** via the NSF Online Workspace.

Please review all ballot materials. When adding comments, please include the section number for your comment and add all comments under one comment number whenever possible. If additional space is needed, you may upload a MS Word or .PDF version of your comments directly to the NSF Online Workspace.

Purpose

The purpose of this ballot is to affirm revised and new language related to the noise level tests in Standard 49.

Background

Issue paper **BSC-2023-03 – Noise Max Range** was submitted to the JC to revise the noise level test method primarily focusing on the measurement point in reference to the cabinet. The old method used the term "leading edge" as the point of measurement away from the cabinet. This would be in some cases from the armrest, if present or from the window when in the closed position. To keep the measurement point the same for all cabinets, it has been proposed to measure from the outside of the window in the closed position or where it intersects the armrest.

The TG was reconvened, met once in May 2023 to bring discussion points to the JC Face-to-Face meeting in August. After additional discussion (see F2F meeting summary), the TG met 2 additional times with newly proposed procedures tested in various labs as well. During the most recent meeting of the TG, language was slightly updated based on the testing and was motioned to be sent the newest to approval ballot.

This latest language is presented here as revision 3 for your consideration.

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

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c/o Allan Rose, Joint Committee Secretariat, 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 *red italics* and only used to add clarity; these statements will NOT be in the finished publication.]

NSF/ANSI International Standard for Biosafety Cabinetry —

Biosafety Cabinetry: Design, Construction, Performance, and Field Certification

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6.4 Noise level

6.4.1 The noise level shall be determined with the cabinet operating at the nominal set point velocities.

6.4.2 The overall noise level ~~12~~ 14 in (~~300~~ 360 mm) in front of the ~~cabinet~~ top of the access opening and ~~15~~ 4 in (~~380~~ 100 mm) above the ~~plane of the work surface~~ top of the access opening at the side-to-side ~~vertical~~ centerline of the cabinet shall not exceed:

- 67 dBA with a maximum background level of 57 dBA (biosafety cabinets with an access opening less than 12 in (300 mm)).
- 69 dBA with a maximum background level of 59 dBA (biosafety cabinets with an access opening greater or equal to 12 in (300 mm)).

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N-1.3 Noise level test

N-1.3.1 Purpose

This test provides a uniform method for measuring the noise level produced by the cabinet. The methods can be performed in most acoustically ordinary rooms, such as a factory, where walls are neither sound absorbing nor completely sound reflecting. The cabinet shall be operated at the manufacturer's recommended nominal set points ± 2 ft/min (0.01 m/s).

N-1.3.2 Apparatus

The measuring instrument shall be a type / Class 1 sound level meter with a minimum range of 50 to 100 dB and an "A" weighting scale set up in accordance with the manufacturer's instructions.

N-1.3.3 Method

a) Turn on the cabinet blower and lights.

b) Set the instrument to the "A" weighting mode.

c) Position the noise level meter ~~12~~ 14 in (~~0.30 m~~ 300 mm) in front of the ~~cabinet front edge~~ sash at the top of the access opening and ~~15~~ 4 in (~~0.38 m~~ 100 mm) above the ~~plane of the work surface~~ top of the access opening, in line with the side-to-side ~~vertical~~ centerline of the cabinet (see Figure 12).

d) Measure the gross noise level.

e) Measure the background noise level with the cabinet blower(s) and light(s) off and, if applicable, the exhaust blower on.

f) Correct the gross noise level in accordance with curves or tables provided in the instrument operator's manual to determine the net noise level.

N-1.3.4 Acceptance

Biosafety cabinets with an access opening less than 12 in (250 mm): The net noise level in front of the cabinet shall not exceed 67 dBA.

Biosafety cabinets with an access opening greater or equal to 12 in (250 mm): The net noise level in front of the cabinet shall not exceed 69 dBA.

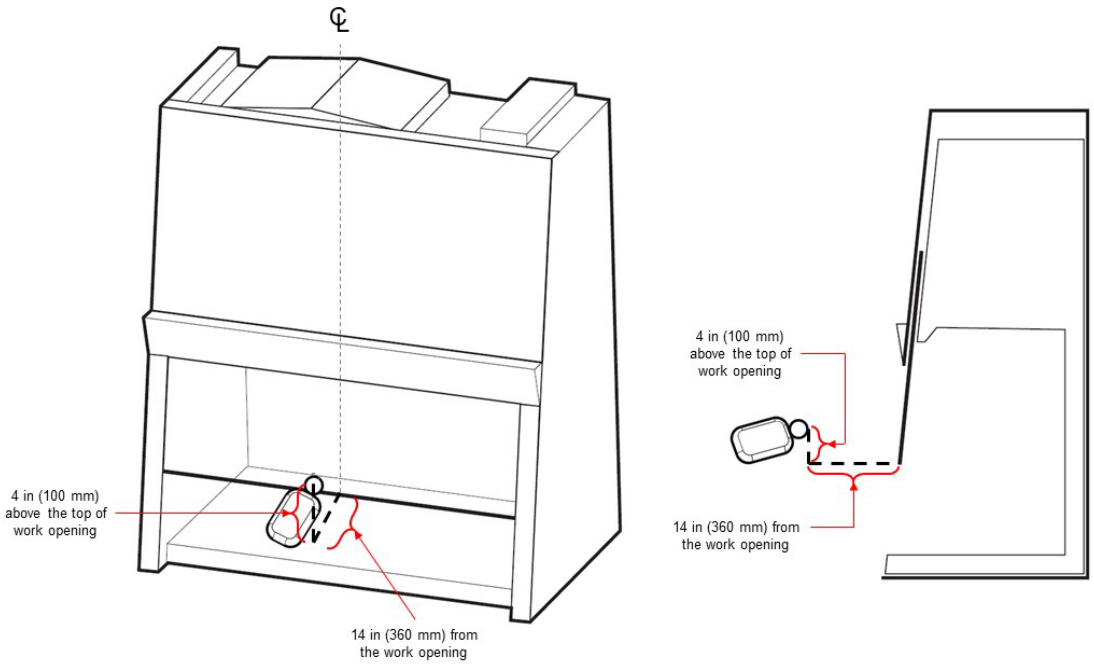

Figure 12
Noise level test

N-5.11 Noise level tests

N-5.11.1 Purpose

This test is performed to measure the noise levels produced by the cabinet as a guide to satisfactory mechanical performance and an aid in minimizing cabinet operator's fatigue. The procedures can be performed in most acoustically ordinary rooms, such as a factory, where walls are neither sound absorbing nor completely sound reflecting.

N-5.11.2 Apparatus

A-type / Class 2 sound level meter with a minimum range of at least 50 to 100 dB and an "A" weighing scale set up in accordance with the manufacturer's instructions.

N-5.11.3 Method

a) Operate the cabinet within 5 ft/min (0.025 m/s) of the nominal set point with lights on.

b) Set the instrument to the "A" weighting mode.

c) Position the noise level meter ~~12~~ 14 in (~~300~~ 360 mm) in front of the sash at the top of the access opening ~~cabinet (front edge of the access opening)~~ and ~~15~~ 4 in (~~380~~ 100 mm) above the top of the access opening ~~plane of the work surface~~, in line with the side-to-side ~~vertical~~ centerline of the cabinet (Annex N-1, Figure 13).

d) Measure the gross noise level.

e) Measure the background noise level with the cabinet blower(s) and light(s) off and, if applicable, the exhaust blower on.

f) Correct the gross noise level in accordance with curves or tables provided in the instrument operator's manual to determine the net noise level.

g) Reported values shall be:

— gross sound level reading (cabinet sound level before correcting for background);
— background sound level reading (with cabinet turned off);
— net sound level;
— pass or fail; and
— name of test (noise level tests).

N-5.11.4 Acceptance

Biosafety cabinets with an access opening less than 12 in (300 mm): The ~~net~~ cabinet noise level in front of the cabinet shall not exceed 70 dBA.

Biosafety cabinets with an access opening greater or equal to 12 in (300 mm): The ~~net~~ cabinet noise level in front of the cabinet shall not exceed 72 dBA.

***Rationale**: the issue proponent argued use of the old term 'front edge' was ambiguous. The TG was convened and discussed additional language to make the tests more objectively worded as well.*