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Joint Committee on Biosafety Cabinetry

August 13, 2025

Proposed revision to NSF/ANSI: 49 – Biosafety Cabinetry: Design, Construction, Performance and Field Certification (49i199r2)

Revision 2 of NSF/ANSI 49, issue 199 is being forwarded to the Joint Committee on Biosafety Cabinetry for consideration. Please review the proposal and **submit your ballot by September 3, 2025** 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 proposed revised regarding the canopy connection set up instructions in Standard 49.

Background

Issue paper **BSC-2024-05 – Canopy Connection Set Point** highlighted that some canopy connections are sent to NSF with minimal setup instructions and it's not feasible to test every possible airflow, damper, and blower speed configuration. Since field certifiers are not required to check the inflow reduction during a failed external exhaust for listed canopy connections, there is the potential for it to not function properly in the field. The proponent suggested language requiring a set point to help ensure the canopy connection will function the same in the field as tested in the lab.

This issue was presented to the JC during the 2024 Face-to-Face meeting. At that time the proposed language was not motioned to go to ballot, but rather this TG was motioned into existence for discussing this issue. The TG met twice since the 2024 Face-to-Face meeting and the group sorted out the language which was presented to the JC as revision 1 approval ballot. This ballot yielded a vote of 17 : 1 : 0 (Affirmative : Negative : Abstain) with 2 comments.

Comments were discussed during the 2025 JC Face-to-Face, where volunteers agreed to revised based on discussion and comments. This latest version is presented here for your consideration as revision 2 approval ballot.

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 —

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

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5 Design and construction

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5.22.4 Types A1 or A2 canopy exhaust alarm

Types A1 or A2 cabinets may be connected to an exhaust system via a canopy connection and exhausted by a remote fan. Once the cabinet and canopy is set or certified in its acceptable airflow range, audible and visual alarms shall be required to indicate within 15 s a loss of capture of room air using a visible medium to verify at the canopy air intake(s). The cabinet fan(s) ~~must~~ shall remain in operation when the alarm is activated. Canopy connections listed as acceptable options for a BSC shall have a manufacturer specified set up instructions separate from the BSC's inflow and downflow set points, to ensure proper setup and function in the field.

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Normative Annex 1

Performance tests

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N-1.13 Canopy connection test

N-1.13.1 Purpose

This test demonstrates the ability of a Types A1, A2, or C1 BSC to maintain inflow velocity during a facility exhaust system failure.

N-1.13.2 Method

a) Connect the BSC to a facility exhaust system via the BSC manufacturer's canopy connection.

b) ~~Adjust facility exhaust flow according to the BSC manufacturer's instructions~~ Setup the canopy connection and airflows according to the manufactuer's instructions using the provided canopy connection set up instructions and balance the cabinet inflow and downflow velocities at the manufacturer's recommended nominal set points ± 2 ft/min (0.01 m/s).

c) Follow the BSC / canopy connection manufacturer's instructions to calibrate the canopy alarm if needed.

d) Reduce facility exhaust flow until a loss of capture of room air at the canopy intake slots is verified using a visible medium.

e) Measure the amount of time from loss of capture to canopy alarm activation.

f) Restore facility exhaust flow to the previous setting.

g) Measure the inflow velocity using a DIM.

h) Turn off the facility exhaust fan. Do not close any valves in the facility exhaust ductwork.

i) Wait 15 s after the canopy exhaust alarm is activated and then measure the inflow velocity again, using a DIM instrument.

N-1.13.3 Acceptance

N-1.13.4 The canopy alarm shall activate within 15 s of loss of capture of the visible medium.

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N-5.1.1.1.1 Exhaust alarm system – Types A1 or A2 canopy connection

N-5.1.1.1.1.1 Maintain inflow velocity using canopy connection on Types A1 or A2 cabinets:

When a canopy connection is not included as an acceptable option in listing for the BSC being certified, complete the test in Step b. When a canopy connection is included as an acceptable option in listing for the BSC being certified, the test in Step b is not required. When possible, airflow balancing of the BSC being certified shall be completed following manufacturer instructions for canopy connection set up, including, but not limited to, bringing slot velocities or static duct pressure within the manufacturer specified ranges. The standard acknowledges this is not always possible. For example, installation of a canopy connection in a room with low ceiling clearance may make measurement of the exhaust static pressure impossible.

***Rationale**: this language is intended to establish a set point to help ensure the canopy connection will function the same in the field as tested in the lab.*