

TECHNICAL BULLETIN GENERAL INFORMATION



2100 Fernbrook Lane
Plymouth, MN 55447-4722
U.S.A.

Phone: 763.553.1270
Fax: 763.553.0459
Toll Free: 1.800.328.3352

CONTAINMENT CAPABILITIES OF A CLASS II, TYPE A2 BSC USING A CHEMO PAD ON THE WORKSURFACE.

Test Objective

- To study the containment capabilities of the BSC when using a chemo plus prep mat on the worksurface.

Procedure Used

- A NuAire model NU-425-500 Class II, Type A2 BSC was set to its nominal average velocity airflow of 70 fpm downflow and 105 fpm inflow.
- Personnel protection tests followed NSF/ANSI 49:2002 at nominal airflows using a chemo prep plus mat (10-3/8" x 16-1/2" size) on the worksurface in different configurations. The following configuration along with the BSC test report and runs were represented:

<u>Test setup configuration (fig)</u>	<u>BSC test report/run</u>
Dry mat (fig. 1)	test # 1 / run 1 & 2
Dry mat w/glassware (fig. 2)	test # 1 / run 3
Wet crumpled mat (fig. 3)	test # 2 / run 1 & 2
Wet crumpled mat w/glassware (fig. 4)	test # 2 / run 3

Materials Used

- NU-425-500 Class II, Type A2 BSC
- 6 AGI - 30 impinger samplers
- 2 slit - type air samplers
- 6 - jet collision nebulizer
- Large (140mm x 16mm) petri dishes containing trypticase soy agar
- A 63mm (2-1/2 in.) outside diameter stainless steel closed end cylinder
- 5 to 8 x 10⁸ B. subtilis spores
- Chemo plus prep mat, tyco Healthcare, item No. CT0300-1

Test Results

A total of 6 personnel protection test runs were performed. 3 runs with a dry mat and 3 runs with a wet crumpled mat. 1 run within each group of 3 had some glassware present on the mat representing work materials. All 6 personnel protection test runs did pass the requirements of NSF/ANSI 49:2002 (see attached Biological Test Reports #1 & #2).

The NSF/ANSI 49:2002 acceptance requirements are the following:

- The number of B. subtilis recovered from the 6 AGI impingers shall not exceed 10 colony forming units per test.
- The total number of colony forming units of B. subtilis on the two slit samplers plates shall not exceed 5.
- The control plate shall be positive and contain greater than 300 colony forming units of B. subtilis.

Conclusion

As the results indicate, the use of a chemo plus prep mat used on the worksurface of a BSC does not harm the containment performance of the BSC. However, during the use of the mat, it should always remain on the worksurface and never block the front or rear workzone grills of the BSC.

Biological Test Report # 1

Model: NU-425-500
 Access Opening: 10"
 Inflow Velocity: 105 fpm
 Downflow Velocity: 70 fpm
 Motor Volts: 73.6
 Modifications: Chemo Safety Prep Mat is placed
 on work surface. Centered and under arm about
 2" back from lip of worktray

Date: 5/20/2003
 Dissemination Rate: 0.98 ml/5min.
 Applied psi: 20
 Technician: B. Lynch
 Notebook: 0020
 Test Method: NSF

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Personnel Protection Test (10⁸) Bacillus

Bacillus: 7.1 x 10⁸ (239)

Acceptance Criteria:

Challenge: 1 - 8 x 10⁸ B. subtilis spores in 5 minutes.

AGI Samplers: Max 10 CFU's (colony forming units) on 6 AGI's per test.

Slit Sampler Plates: Maximum 5 CFU's on two plates per test.

Initial wt. of Nebulizer: 467.0g

	1	2	3
Test Run	1	2	3
Control:	<u>> 300</u>	<u>> 300</u>	<u>> 300</u>
Left Slit:	<u>1</u>	<u>2</u>	<u>0</u>
Right Slit:	<u>0</u>	<u>0</u>	<u>1</u>
Impingers:	<u>1</u>	<u>5</u>	<u>2</u>
Wt. of nebulizer after test:	<u>465.8g</u>	<u>464.3g</u>	<u>462.9g</u>
Sprayed Spores:	<u>1.2g</u>	<u>1.5g</u>	<u>1.4g</u>

Product Protection Test (10⁶) Bacillus

Bacillus: _____

Acceptance Criteria:

Challenge: 1 - 8 x 10⁶ B. subtilis spores in 5 minutes.

Agar Sampler Plates: Maximum 5 CFU's per test.

Initial wt. of Nebulizer: _____

Control:	_____	_____	_____															
Surface:	<table border="1" style="width: 100%; height: 20px;"> <tr><td></td><td></td><td></td><td></td><td></td></tr> </table>						<table border="1" style="width: 100%; height: 20px;"> <tr><td></td><td></td><td></td><td></td><td></td></tr> </table>						<table border="1" style="width: 100%; height: 20px;"> <tr><td></td><td></td><td></td><td></td><td></td></tr> </table>					
Plates:	<table border="1" style="width: 100%; height: 20px;"> <tr><td></td><td></td><td></td><td></td><td></td></tr> </table>						<table border="1" style="width: 100%; height: 20px;"> <tr><td></td><td></td><td></td><td></td><td></td></tr> </table>						<table border="1" style="width: 100%; height: 20px;"> <tr><td></td><td></td><td></td><td></td><td></td></tr> </table>					
Wt. of nebulizer after test:	_____	_____	_____															
Sprayed Spores:	_____	_____	_____															

Biological Test Report # 2

Model: 425-500
 Access Opening: 10"
 Inflow Velocity: 105 fpm
 Downflow Velocity: 70 fpm
 Motor Volts: 73.6
 Modifications: Chemo Safety Prep Mat is wet and wrinkled
 up and placed on worktray. Centered and under
 arm about 2" back from lip of worktray

Date: 5/21/03
 Dissemination Rate: 0.98 ml/5min.
 Applied psi: 20
 Technician: B. Lynch
 Notebook: 0020
 Test Method: NSF

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Personnel Protection Test (10⁸) Bacillus

Bacillus: 7.1 x 10⁸ (239)

Acceptance Criteria:

Challenge: 1 - 8 x 10⁸ B. subtilis spores in 5 minutes.

AGI Samplers: Max 10 CFU's (colony forming units) on 6 AGI's per test.

Slit Sampler Plates: Maximum 5 CFU's on two plates per test.

Initial wt. of Nebulizer: 465.7g

	1	2	3
Test Run	1	2	3
Control:	<u>> 300</u>	<u>> 300</u>	<u>> 300</u>
Left Slit:	<u>1</u>	<u>0</u>	<u>0</u>
Right Slit:	<u>1</u>	<u>0</u>	<u>0</u>
Impingers:	<u>2</u>	<u>4</u>	<u>0</u>
Wt. of nebulizer after test:	<u>464.7g</u>	<u>463.7g</u>	<u>462.5g</u>
Sprayed Spores:	<u>1.0g</u>	<u>1.0g</u>	<u>1.2g</u>

Product Protection Test (10⁶) Bacillus

Bacillus: _____

Acceptance Criteria:

Challenge: 1 - 8 x 10⁶ B. subtilis spores in 5 minutes.

Agar Sampler Plates: Maximum 5 CFU's per test.

Initial wt. of Nebulizer: _____

Control:	_____	_____	_____															
Surface:	<table border="1" style="width: 100%; height: 20px;"> <tr><td></td><td></td><td></td><td></td><td></td></tr> </table>						<table border="1" style="width: 100%; height: 20px;"> <tr><td></td><td></td><td></td><td></td><td></td></tr> </table>						<table border="1" style="width: 100%; height: 20px;"> <tr><td></td><td></td><td></td><td></td><td></td></tr> </table>					
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Wt. of nebulizer after test:	_____	_____	_____															
Sprayed Spores:	_____	_____	_____															

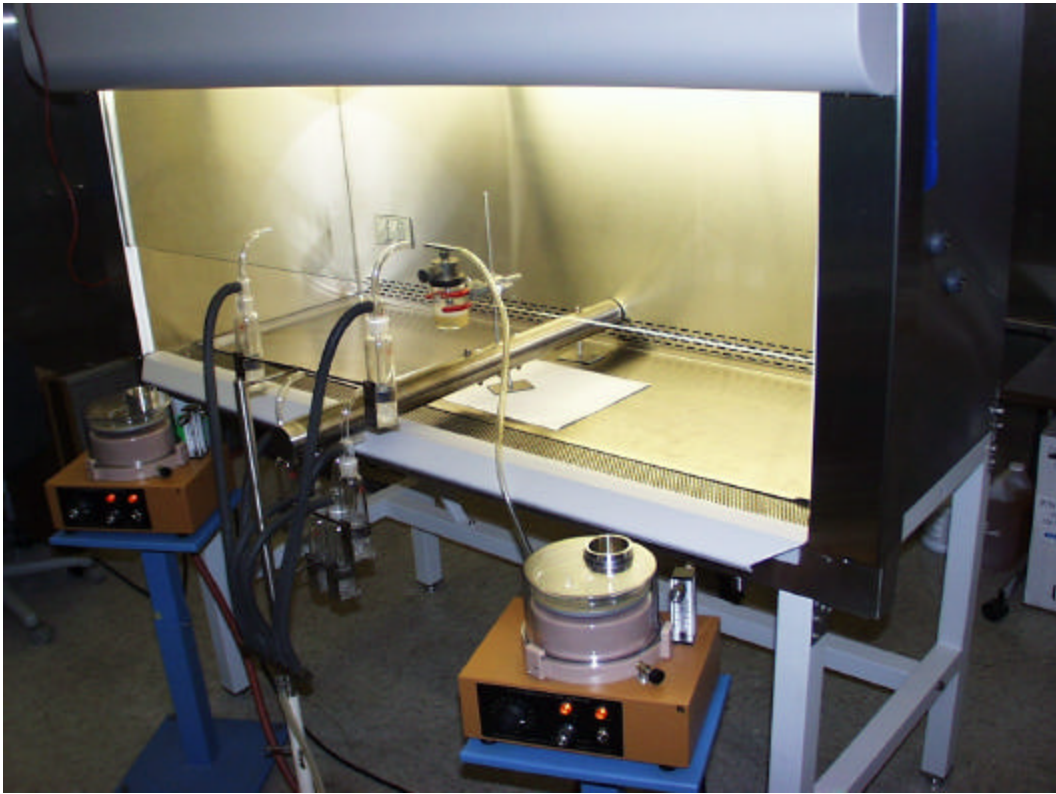


Fig. #1

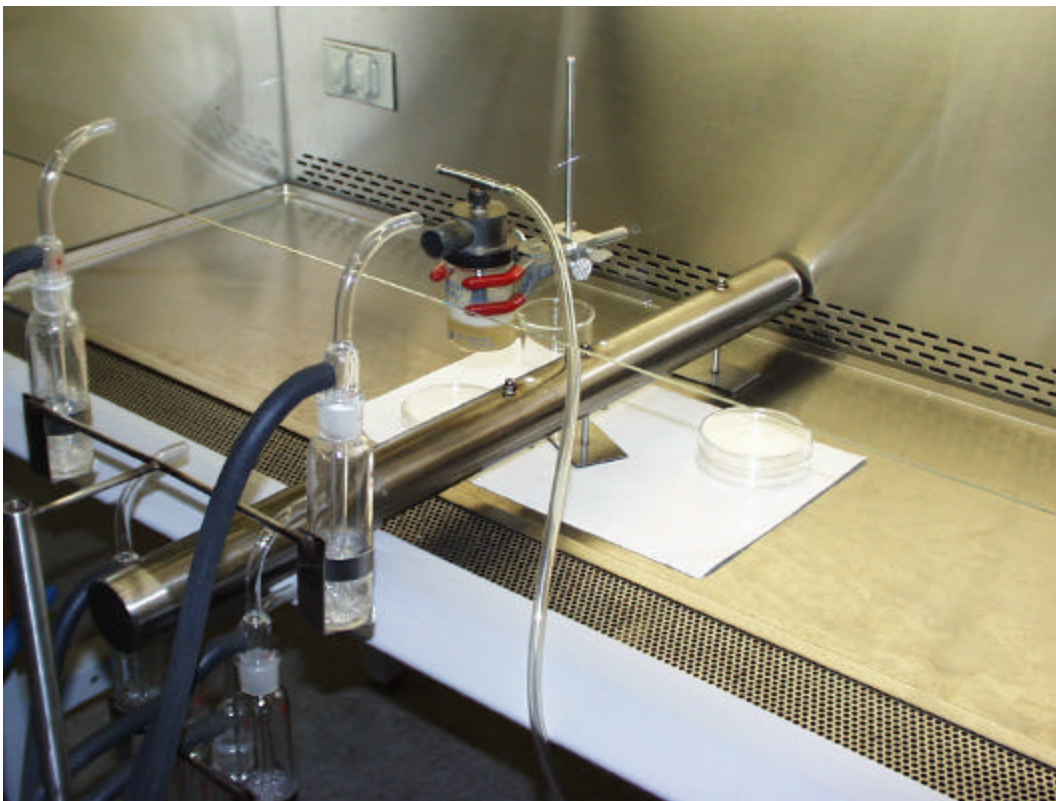


Fig. #2

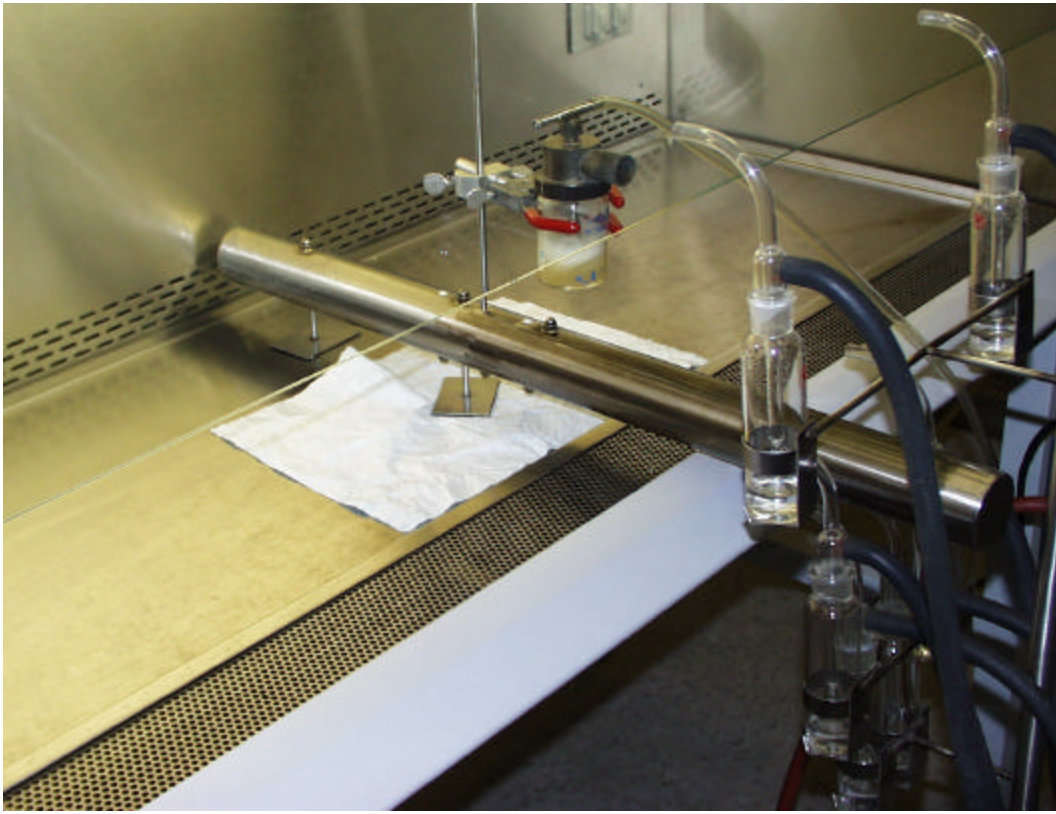


Fig. #3

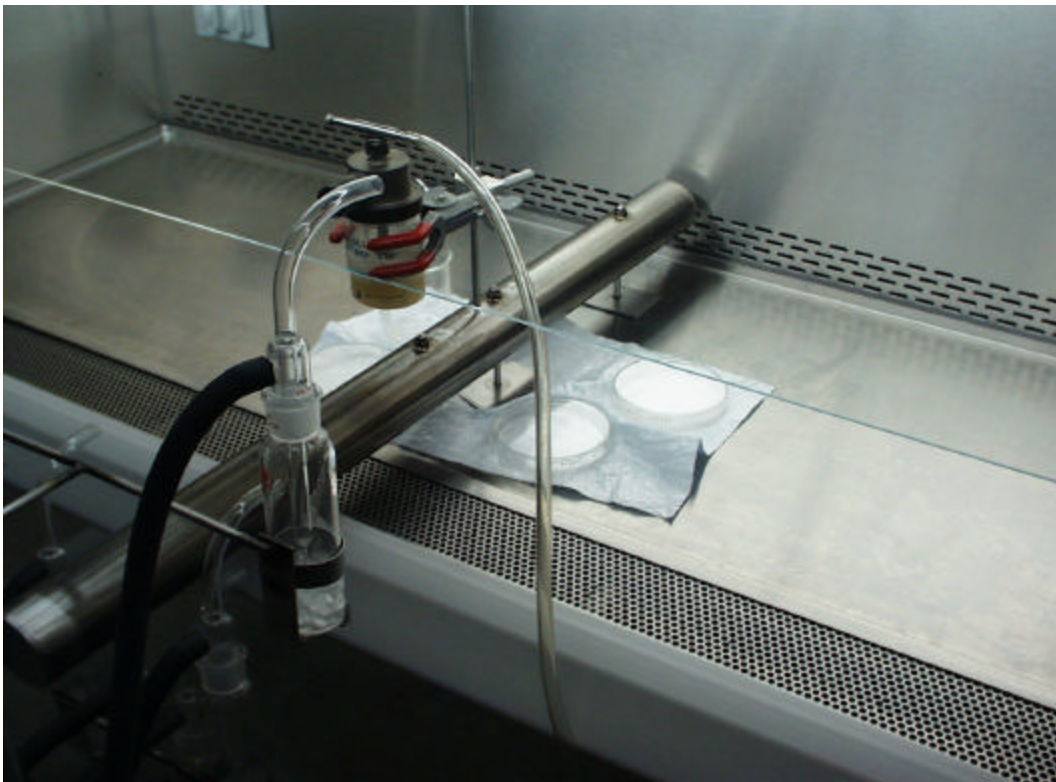


Fig. #4