

NATIONAL INSTITUTES OF HEALTH
 Biocontainment Laboratory Certification Checklist
 (Internal NIH use)

INSTITUTION	BUILDING	ROOM	DATE
SURVEYOR (S)	CONTACT	TELEPHONE	BIOSAFETY SPECIALIST

BSL-3	ASSESSMENT AREA	CERTIFICATION	DOCUMENTATION / ACCEPTANCE CONDITION REQUIRED (When Applicable)		
			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">Documents Are Available</td> <td style="width: 50%; text-align: center;">Acceptance Condition</td> </tr> </table>	Documents Are Available	Acceptance Condition
Documents Are Available	Acceptance Condition				

I. Administrative Controls

	A.	Review and Assess Background Materials	Initial (I)	Annual (A)	Yes	No	N/A	PASS	FAIL	N/A	ADDITIONAL INFORMATION	REF BMBL	NOTES
	1.	SOPs for document retention, maintenance and lab procedures	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		A.1 A.2 A.3 A.4 A.5 A.6						
	2.	Review Commissioning Report. Review other commissioning document (s) if the laboratory has had major improvements where recommissioning was required.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		D.15	Maximum containment facility specifications requirements
	3.	Basis of design, design drawings and specifications to ensure design intent is being met	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		D.15	Certification pre-requisite
	4.	Biosafety policies and procedures (SOPs) for the laboratory (facility) including training of occupants and maintenance staff	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		A.11 A.11						
	5.	Hazardous (infectious) waste management procedures	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.11						
	6.	Integrated Pest Management Program	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		A.10						
	7.	Administrative and engineering procedures to determine if they meet the needs of the program	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		A.1 A.2 A.3 A.4 A.5 A.6						
	8.	BSL-3 Laboratory accident response protocols	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		B.8						
	9.	Decontamination procedures for appropriateness with respect to the protocols being conducted or anticipated	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		A.7 A.8 B.7 D.3 D.3						

	B.	Assess Containment Laboratory Layout	Initial (I)	Annual (A)	Yes	No	N/A	PASS	FAIL	N/A	ADDITIONAL INFORMATION	REF BMBL	NOTES
	1.	An automatically activated emergency power source is provided with a minimum capacity for serving the laboratory exhaust system, alarms, lighting, entry and exit controls and BSCs.	<input checked="" type="checkbox"/>	<input type="checkbox"/>		CDC							
	2.	Monitoring and control systems for supply, exhaust, alarms, entry and exit, and security systems are supplied through an Uninterruptible Power Supply (UPS).	<input checked="" type="checkbox"/>	<input type="checkbox"/>		CDC							
	3.	Windows are break-resistant and sealed.	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.5							
	4.	Monolithic, slip resistant floors are covered at the junction of the walls. Floors are free of stipples.	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.3							
	5.	An eyewash station is readily available in the BSL-3 Laboratory area for use during an emergency.	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.8							
	6.	A hands-free sink must be provided near the exit door. If the laboratory is segregated into different laboratories, a sink must also be available for hand washing in each area where agents are handled.	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.2							
	7.	All BSCs are installed in such a way that airflow disruptions are avoided (far away from supply and exhaust grilles, doors and heavily traveled laboratory areas)	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.6							

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	B. Assess Containment Laboratory Layout (Cont.)	Initial (I)	Annual (A)	Yes	No	N/A	PASS	FAIL	N/A	ADDITIONAL INFORMATION	REF BMBL	NOTES
8.	Available space for decontamination of large pieces of equipment before removal from the laboratory	■	□	□	□	□	□	□	□		D.13	
9.	Evaluate availability of Emergency Equipment:	■	□	□	□	□	□	□	□			
	a. Two way communication system.	■	□	□	□	□	□	□	□			
	b. System provided for transfer of information to outside of containment.	■	□	□	□	□	□	□	□			
	c. Fire extinguisher	■	□	□	□	□	□	□	□			
	d. Chemical spill kit within containment	■	□	□	□	□	□	□	□			

	C. Access Control and Exit Procedures	Initial (I)	Annual (A)	Yes	No	N/A	PASS	FAIL	N/A	ADDITIONAL INFORMATION	REF BMBL	NOTES
1.	Access to the laboratory is through two self-closing doors with locks in accordance with the institutional policies. A clothing change room (anteroom) may be included in the passageway between the two self-closing doors.	□	■	□	□	□	□	□	□		A.1 B.1 D.1 D.14	
2.	Prior to entering the space, there is a graphical interface that allows the users to observe and evaluate the conditions within the space before entering the BSL-3 room (room pressures and alarms as a minimum).	□	■	□	□	□	□	□	□		A.1 B.1 D.9	
3.	If infectious agents are being used within the Laboratory, a sign incorporating the following information is posted: a) Universal biohazard symbol, b) List of agents used, c) Supervisor's contact information and d) Required procedures for entering and exiting the Laboratory.	□	■	□	□	□	□	□	□		A.9 B.1	

	D. Inspect and Evaluate Architectural Features for Maintenance and Operations Within Containment to Meet Requirements for:	Initial (I)	Annual (A)	Yes	No	N/A	Exc.	Good	Fair	Poor	ADDITIONAL INFORMATION	REF BMBL	NOTES
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1. Cleanability of all surfaces including furniture

1.	Doors	□	■	□	□	□	□	□	□	□		D.3 D.4	
2.	Bench tops	□	■	□	□	□	□	□	□	□		D.3 D.4	
3.	Walls	□	■	□	□	□	□	□	□	□		D.3 D.4	
4.	Ceiling	□	■	□	□	□	□	□	□	□		D.3 D.4	
5.	Floors	□	■	□	□	□	□	□	□	□		D.3 D.4	
6.	Shelving	□	■	□	□	□	□	□	□	□		D.3 D.4	
7.	Drawers	□	■	□	□	□	□	□	□	□		D.3 D.4	
8.	Animal cages	□	■	□	□	□	□	□	□	□		D.3 D.4	
9.	Switches	□	■	□	□	□	□	□	□	□		D.3 D.4	
10.	Windows	□	■	□	□	□	□	□	□	□		D.3 D.4	
11.	Exposed piping, conduits or ductwork	□	■	□	□	□	□	□	□	□		D.3 D.4	

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D.	Inspect and Evaluate Architectural Features for Maintenance and Operations Within Containment to Meet Requirements for: (Cont)	Initial (I)	Annual (A)	Yes	No	N/A	Exc.	Good	Fair	Poor	ADDITIONAL INFORMATION	REF BMBL	NOTES
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1. Cleanability of all surfaces including furniture (Cont.)

12.	Primary Class II and Class III containment devices (i.e. BSC's and Gloveboxes)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.3 D.4							
13.	Furniture	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.3 D.4							
14.	Other (please specify) _____	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.3 D.4							

2. Surface impermeability to liquids

1.	Bench tops	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.3 D.4							
2.	Tables	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.3 D.4							
3.	Walls	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.3 D.4							
4.	Switches	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.3 D.4							
5.	Electrical outlets	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.3 D.4							
6.	Floors	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.3 D.4							
7.	Windows / windows frames	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.3 D.4							
8.	Exposed utilities (piping, conduits or ductwork)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.3 D.4							
9.	Furniture	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.3 D.4							
10.	Other (please specify) _____	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.3 D.4							

3. Smoothness of all surfaces

1.	Doors	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.3							
2.	Bench tops	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.3							
3.	Walls	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.3							
4.	Ceiling	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.3							
5.	Floors	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.3							
6.	Shelving	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.3							
7.	Drawers	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.3							
8.	Animal cages	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.3							
9.	Switches	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.3							
10.	Windows / windows frames	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.3							

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E.	Evaluate Maintenance Frequency and Review Maintenance Records/Contracts (Cont.)	Initial (I)	Annual (A)	Yes	No	N/A	Exc.	Good	Fair	Poor	ADDITIONAL INFORMATION	REF BMBL	NOTES
3.	Biological Safety Cabinets / Gloveboxes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		B.7							
4.	Centrifuges	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		B.7							
5.	Doors	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		B.7							
6.	HVAC Testing and Air Balance Report (TAB)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Provide BAS system data, annual air balance report or measure and record on floor plan exhaust and/or supply values for each laboratory room and calculate Air Change Rate (ACH)	B.7							
7.	Lights	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Measure and record on floor plan lighting levels in laboratory rooms	B.7							
8.	Plumbing	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		B.7							
9.	Emergency generator (under load conditions)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		B.7							
10.	HEPA filter maintenance program	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		B.7							
11.	Biosecurity systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		B.7							
12.	Reduced pressure zone backflow preventers (RPZs)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		B.7							
13.	UPS systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		B.7							
14.	Fire alarm systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		B.7							
15.	Building Automation System and components	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		B.7							
16.	Zero leakage valves and/or dampers	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		B.7							
17.	Cage Racks	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		B.7							
18.	HVAC Belts	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>									
19.	HVAC Motor / Sheaves	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Verify operational temperature for the motors								
20.	Backflow prevention valves for lab water system	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>									

II. Validation of Engineering Controls

A.	Discharge Exhaust Assessment	Initial (I)	Annual (A)	Yes	No	N/A	Exc.	Good	Fair	Poor	ADDITIONAL INFORMATION	REF BMBL	NOTES
1.	Exhaust Stacks	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.9								
	a. Minimum 25 ft from intake, 40 ft from boiler stacks and 15 ft from plumbing stacks	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.9								
	b. Minimum 3 m height above highest point on roof	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.9								
2.	Discharge velocities between 15 - 20 m/s (3000 - 4000 fpm)	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.9								

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B.	Doors	Initial (I)	Annual (A)	Yes	No	N/A	Exc.	Good	Fair	Poor			
1.	Door closers are required for all doors and are working properly (all doors automatically close and latch).	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		D.1	
2.	If interlocks are required, check operability in the rooms where these doors are present (test all possible sequences and verify delay set points).	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		D.1	
C.	Evaluate Redundancy Requirements for Containment Areas:	Initial (I)	Annual (A)	Yes	No	N/A	PASS	FAIL	N/A				
1.	Supply System → No. of Air Handling Units	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		D.9	
2.	Exhaust System → No. of Air Exhaust Fans	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		D.9	
3.	Chilled water System → No. of Chillers	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		D.9	Maximum containment facility specifications requirements
4.	Hydronic System → No. of Boilers	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		D.9	
D.	Validate that Extra Capacity is Present on Both Supply and Exhaust Systems and Quantify the Estimated Spare Capacity (must Document how Extra Capacity was Calculated or Estimated):	Initial (I)	Annual (A)	Yes	No	N/A	PASS	FAIL	N/A				
1.	Designed Total Capacity	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		D.9	
	Supply → No. of Air Handler Units											D.9	
	Exhaust → No. of Exhaust Fans											D.9	
2.	Current Total Capacity Spare Capacity	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		D.9	NIH Design Requirements Manual - Section 6-1: HVAC Design Considerations, E. Exhaust Air Systems
	Supply CFM %											D.9	
	Exhaust CFM %											D.9	
E.	Ensure that Directional Airflow (where applicable) and Proper Pressure Relationships between Spaces are Established from Clean Areas into Contaminated Areas:	Initial (I)	Annual (A)	Yes	No	N/A	PASS	FAIL	N/A				
1.	System has been designed as a single pass airflow.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		D.9	
2.	Measure pressure relationships (by testing and record). Pressure differentials across doorways must be measured using a device calibrated against a primary standard. Ideally, at least -0.05 in WG (-12.5 Pa) should be maintained from clean areas to more contaminated areas. In no case should the differential be less than -0.03 in WG (-7.6 Pa) when the door is closed.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		D.9	
3.	Measure air changes and record data.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Measure and record on floor Air Change Rate (ACH) in laboratory rooms	D.9	
4.	If multiple containment zones exist within a laboratory or laboratory suite, then more negative pressure differentials are established so that the more contaminated spaces are maintained at a negative pressure with respect to less contaminated areas.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		D.9	
5.	Review facility maintenance start up and shut down procedures in case of emergency	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			

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F.	Develop HVAC System and Electrical Systems Failure Tests Consistent with Laboratory Design Parameters. Facility Performs Test and Records Data. To Verify Correct Operations these Tests should include at a Minimum:	Initial (I)	Annual (A)	Yes	No	N/A	PASS	FAIL	N/A	ADDITIONAL INFORMATION	REF BMBL	NOTES
1.	Normal Operations -> Standby Power										D.9	
	If generation of emergency electrical power is not part of the building system, then provide documentation of testing of emergency power system.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.9						
	Acceptance Criteria Minimum Requirements:										D.9	
	a. Test is completed from beginning to end without any interruptions.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.9						
	b. Acceptance is based on data collected and review of documentation provided.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.9						
	c. Once "Normal Power" has been failed, generator will start up and transfer to emergency power.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.9						
	d. Building Automation System (if applicable) maintains operational set points.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.9						
	e. No airflow reversals or excursions of positive pressure from BSL-3 areas are observed during the transfer to standby power. If there are an airflow reversal or a positive excursion from a laboratory then a risk assessment shall be put in place. Any airflow reversal or positive excursion is expected at the perimeter of the Suite.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.9						
2.	Standby Power -> Normal Operations										D.9	If condition does not meet requirements, then a risk assessment is required and needs to be documented.
	Acceptance Criteria Minimum Requirements:										D.9	
	a. Test shall be completed from beginning to end without any interruptions.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.9						
	b. Acceptance is based on data collected and review of documentation provided.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.9						
	c. Upon return to "Normal Power", the exhaust flow shall maintain normal set points with the supply flow maintaining the pressure differential.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.9						
	d. No airflow reversals or excursions of positive pressure from BSL-3 areas are observed during the transfer to normal power. If there are an airflow reversal or a positive excursion from a laboratory then a risk assessment shall be put in place. Any airflow reversal or positive excursion is expected at the perimeter of the Suite.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.9						
	e. Building Automation System maintains operational set points.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.9						
	f. Records of power failure(s) and system testing are reviewed annually.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.9						
3.	The Emergency Generator test commissioning report has been submitted, reviewed and approved by the project officer.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		D.9	

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	G. Loss of Supply and Exhaust Fans (Individual and in Combination)	Initial (I)	Annual (A)	Yes	No	N/A	PASS	FAIL	N/A					
	1. Information Required Prior to Testing:											D.9		
	a. With all rooms active, the number of supply fans (SF) normally operating	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		D.9		
	b. With all rooms active, the number of exhaust fans (EF) normally operating	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		D.9		
	c. Operating fan speed of supply fans (Hz)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		D.9		
	d. Operating supply discharge (SD) static pressure	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		D.9		
	e. Operating fan speed for exhaust fans (Hz)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		D.9		
	f. Minimum number of supply fans (SF) required to support the facility	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		D.9		
	g. Minimum number of exhaust fans (EF) required to support the facility	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		D.9		
	2. Individual Air Handling Unit (AHU) Failures											D.9	If condition does not meet requirements, then a risk assessment is required and needs to be documented.	
	a. With Air Handling Units (AHU) and Exhaust Fans (EF) normal on, fail power to one AHU fan.											D.9	Acceptance Criteria Minimum Requirements (Based on HVAC system configuration and number of exhaust fans):	
		AHU IDENTIFICATION	AHU STATUS ALARMS ACTIVATE	AHU STATUS INDICATED ON BAS	REMAINING AHUs CONTINUE TO RUN NORMAL ON								D.9	
		AHU -	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	D.9	a. Test shall be completed from beginning to end without any interruptions.				
		AHU -	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	D.9	Maximum containment facility specifications requirements				
		AHU -	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	D.9	b. Acceptance is based on data collected, recorded and documented.				
		AHU -	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	D.9					
		AHU -	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	D.9					
	3. Multiple AHU Failures											D.9	Acceptance Criteria Minimum Requirements (Based on HVAC system configuration and system's sequence of operation under normal and abnormal conditions)	
	a. With AHU and EF normal on, fail power to air handling units one at a time.											D.9		
		AIR HANDLING UNIT IDENTIFICATION	EF STATUS ALARMS ACTIVATE	REMAINING AHUs RAMP UP TO MAINTAIN STATIC PRESSURE SET POINT									D.9	
	(1)	AHU - Failure (N-1 AHU ON)	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	D.9	
	(2)	AHU - Failure (N-1 AHU ON)	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	D.9	
	(1)	Condition validates the design intend for AHU system normal operation										D.9	b. Acceptance is based on data collected, recorded and documented.	
	(2)	Condition validates the design intend for AHU system abnormal operation										D.9		

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Documents Are Available	Acceptance Condition
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	3. Dunk Tanks (If Installed)				
	<i>If more fields are required please add additional pages</i>			C.1	

		Dunk Tank ID	Location (Room)	Serial Number (if applicable)											
	a.				<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>								
	b.				<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>								
	c.				<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>								
	d.				<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>								
	e.				<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>								
	f.				<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>								
	g.				<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>								

	4. Visual Displays				D.9
	<i>If more fields are required please add additional pages</i>			C.1	

		Visual Display ID	Location (Room)	Serial Number (if applicable)											
	a.				<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.9						
	b.				<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.9						
	c.				<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.9						
	d.				<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.9						
	e.				<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		D.9						

	5. Cage Racks				
	<i>If more fields are required please add additional pages</i>			C.1	

		Cage Racks ID	Location (Room)	Serial Number (if applicable)											
	a.				<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>								
	b.				<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>								
	c.				<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>								
	d.				<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>								

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				Documents Are Available			Acceptance Condition					
		Initial (I)	Annual (A)	Yes	No	N/A	PASS	FAIL	N/A			
9.	Fire Alarms / Alarm Systems											
	a. The Fire Alarm / Alarm System has been commissioned.	■	□	□	□	□	□	□	□			
	b. The commissioning report and test results have been submitted, reviewed and approved.	■	□	□	□	□	□	□	□			
	c. The commissioning report is available for review.	■	□	□	□	□	□	□	□			
	d. Extinguishers are inspected annually (if applicable).	□	■	□	□	□	□	□	□			
	e. Annual Fire Alarm Test completed and documented.	□	■	□	□	□	□	□	□			
10.	Roughing Filters on Exhaust Grilles in Animal Spaces (if applicable)											
	a. Verify maintenance of roughing filters per SOP.	□	■	□	□	□	□	□	□			Required for assessment of operation and maintenance
11.	Autoclave / Digester Verification										A.8 D.11	
	a. Autoclaves / digester have been validated.	□	■	□	□	□	□	□	□		A.8 D.11	
	b. The validation report has been submitted, reviewed and approved. Review documentation to verify successful biological challenge as per AAMI ST46 - Biological indicator testing showing negative growth after sterilization exposure for autoclave and / or digester. Only for digester, total destruction of tissue.	■	□	□	□	□	□	□	□		A.8 D.11	
	c. Manufacturer has reviewed the installation and submitted a report confirming that the installation has met the recommended installation procedures. (Check documentation.)	■	□	□	□	□	□	□	□		A.8 D.11	
	d. Autoclave / digester pass through capability directly from the Containment facility.	■	□	□	□	□	□	□	□		A.8 D.11	
	e. Visually inspect bioseal and perform smoke test to verify it is working properly.	□	■	□	□	□	□	□	□		A.8 D.11	
	f. In older facilities, if autoclave is not available, an autoclave must be available near the BSL-3 facility so that containment of biohazardous waste is maintained.	□	■	□	□	□	□	□	□		A.8 D.11	
12.	Pressurization Alarms										D.9	
	a. There are visual indications for personnel to be aware if the room is under positive or negative pressure prior to entering into the lab.	■	□	□	□	□	□	□	□		D.9	
	b. Availability or airflow alarms showing if the room has gone positive under normal conditions or if any door is open for greater than a recommended 30 seconds but not exceeding 45 seconds.	■	□	□	□	□	□	□	□		D.9	
13.	Oxygen Monitor											
	Oxygen Monitor Location (s)											
	a. Laboratory/Room	■	□	□	□	□	□	□	□			
	b. Have the following factors been used in determining if a device has been properly installed?											
	b.1 Manufacturer's guidance	■	□	□	□	□	□	□	□			
	b.2 Volume of gas used	■	□	□	□	□	□	□	□			
	b.3 Location of gas	■	□	□	□	□	□	□	□			
	b.4 Air changes/hour in room/area	■	□	□	□	□	□	□	□			

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			Documents Are Available			Acceptance Condition						
		Initial (I)	Annual (A)	Yes	No	N/A	PASS	FAIL	N/A			
13.	Oxygen Monitor (Cont.)											
	c. Does the installation of the oxygen monitoring device meet the manufacturer's specific requirements and recommendations?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
	d. Has a low oxygen alarm been installed along with the monitoring device to alert persons in the surrounding area of a hazardous condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
	e. Is this monitoring device also interlocked with the building automation system (BAS)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
	f. Where applicable, is the device interlocked with an emergency exhaust fan or ventilation system that is located at the monitored location?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Required for assessment of operation and maintenance
	g. Has the manufacturer or manufacturer's representative performed the oxygen sensor initial calibration?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
	h. Has the Institute / Center (I/C) performed the oxygen sensor daily calibration?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Initial calibration date
	i. Has the manufacturer or manufacturer's representative performed the oxygen sensor Interval calibration? (If applicable)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
	j. Does the Institute/Center have a program in place to track and ensure the proper maintenance of each monitor?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
	j.1 Verify annual testing of oxygen monitor (if applicable).	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Last test date
14.	HEPA Filter Housings											D.9
	a. Have HEPA filters been tested and certified?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NSF STD#49 and Fed Std #209 (E)		D.9
	b. HEPA filter housings have decontamination ports.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			D.9
	c. HEPA filter housings have testing ports.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			D.9
	d. HEPA filter housing have bubble tight isolation dampers.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			D.9
	e. HEPA filter housing have redundancy (redundant housing).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			D.9
15.	Controls Compressed Air System - Check Condition of:											
	a. Air compressors	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Required for assessment of operation and maintenance
	b. Air dryers and coalescing filters	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
	c. Pressure reducing valves	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
	d. Air filters	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
	e. Backflow preventers	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
	f. Air unloader solenoid valves	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
	g. Maximum pressure alarm switch	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
	h. Low pressure alarm switch	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
	i. Pressure gauges	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
	j. Safety relief valves	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
	k. Blowdown valves	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			

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		Documents Are Available			Acceptance Condition				

	J. Effluent Decontamination System (EDS) (If Installed)	Initial (I)	Annual (A)	Yes	No	N/A	PASS	FAIL	N/A	ADDITIONAL INFORMATION	REF BMBL	NOTES
	The EDS has been commissioned.	■	□	□	□	□	□	□	□	BMBL 5th Ed., Laboratory Biosafety Level Criteria – BSL-4, D. Laboratory Facilities (Secondary Barriers), Suit Laboratory 12	A.8	
	The EDS commissioning report has been submitted, reviewed and approved by the Project Officer.	■	□	□	□	□	□	□	□		A.8	
	The efficacy of the kill process on each cook tank has been validated using an approved procedure and biological indicator.	□	■	□	□	□	□	□	□		A.8	
	The efficacy of the kill process test report been submitted, reviewed and approved.	□	■	□	□	□	□	□	□		A.8	
	Annual testing of efficacy has been submitted, reviewed and approved.	□	■	□	□	□	□	□	□		A.8	
	Indicate EDS operational variables:										A.8	
	a. Number of cook tanks	■	□	□	□	□	□	□	□		A.8	
	b. Cook tanks maximum capacity (L / gal)	■	□	□	□	□	□	□	□		A.8	
	c. Cook tanks operating capacity (L / gal)	■	□	□	□	□	□	□	□		A.8	
	d. Blend tank maximum capacity (L / gal)	■	□	□	□	□	□	□	□		A.8	
	e. Cook tanks maximum operating pressure (PSI)	■	□	□	□	□	□	□	□		A.8	
	f. Steam pressure (PSI)	■	□	□	□	□	□	□	□		A.8	
	g. Pressure integrity test duration (minutes)	■	□	□	□	□	□	□	□		A.8	
	h. Load pre-heat set point (capacity % / L / gal)	■	□	□	□	□	□	□	□		A.8	
	i. Minimum sterilization temperature 121 °C (250 °F)	■	□	□	□	□	□	□	□		A.8	
	j. Sterilization time (min)	■	□	□	□	□	□	□	□		A.8	