Decontamination and Servicing of Laboratory Microbiological Safety Cabinets (MSC)

OBJECTIVE:

Microbiological safety cabinets (MSC) are intended to reduce the risk to the operator when handling hazardous or potentially hazardous microorganisms. A MSC is a ventilated enclosure intended to offer protection to the user and the environment from the aerosols arising from the handling of hazardous or potentially hazardous microorganisms. Each cabinet is constructed so that air discharged from the cabinet is filtered through a high efficiency particulate air (HEPA) filter.

Before any service, repair or modification is carried out on a cabinet by a service organisation, the user shall certify, in writing, that the cabinet has been adequately decontaminated. Current contracts with service providers at the NHLS make provision for decontamination to be performed by the service provider. Service intervals are six monthly.

This document provides guidelines on the decontamination and servicing process and for the benefit of NHLS laboratories, the following documents are contained within this document:

- Appendix A - VC8041 Service checklist
- Appendix B - EN12469 Service checklist
- Appendix C - BSC filter repair annexure
- Appendix D - Guide to interpret service reports completed and issued by service provider

It is important for the Lab manager and/or Health and Safety Representative (HSR) to monitor the work done by the service technician and the above documents can be used for this purpose.

RESPONSIBILITY:

All staff working with microbiological safety cabinets must be familiar with the decontamination and servicing procedure. The current NHLS BSC service contract makes provision for decontamination to be performed by the service provider. However, it is important for Laboratory managers and Health and Safety Representatives (HSR) to be familiar with the Decontamination and the Service / validation process followed by the Service provider to ensure that proper protocol is followed at all times.

DECONTAMINATION PROCEDURE:

Personnel

1. Only authorised trained technicians are allowed to decontaminate the BSC. Service technicians are trained to carry out the decontamination and must follow the company's standard operating procedure (SOP).
2. All service technicians must sign the NHLS visitor's register in the laboratory before entering the laboratory and proceeding to work on the BSC.
3. The minimum protective clothing and equipment required to be worn by the technician when performing decontamination is a laboratory coat, gloves, safety goggles or protective eyewear and a full face mask with formaldehyde specific cartridges.
4. Service and validation should not proceed without the BSC being decontaminated unless the Lab manager confirms in writing that the BSC does not require decontamination prior to servicing. (eg in clean labs working with pure tissue cultures)

Equipment and materials

1. 2 x electric frying pans
2. 1 x plastic beaker with water
3. Plastic to seal front aperture and / or exhaust ports.
4. Paraformaldehyde and Ammonium Carbonate

Procedure (Performed by Service technician)

1. Inform the Lab manager or another lab staff that decontamination is going to begin.
2. Place the" DECONTAMINATION" status label on the BSC/ lab door.
3. Ensure that the BSC to be decontaminated has been cleaned and all equipment removed. This should be done by the laboratory personnel prior to the decontamination process. Therefore, it is very important for the service personnel to inform the lab in advance of their scheduled visit.
4. The technician must ensure that the decontamination bag / plastic bag to be used is intact and not torn or damaged.
5. Calculate the quantity of Paraformaldehyde and Ammonium Carbonate to be used as per the table below:

BSC Size	Amount of Paraformaldehyde	Amount of Ammonium Carbonate
2 ft	7,5 g	8, 3 g
4 ft	15,0 g	17,0 g
6 ft	25,0 g	27,5 g

6. Place both frying pans inside the BSC and ensure that the cabinet is sealed properly so that there is no release of formaldehyde gas into the laboratory during the decontamination process.

Fumigation with Paraformaldehyde

1. Fumigation is best undertaken at the end of the day. Spread the paraformaldehyde evenly onto the surface of the frying pan.
2. Switch the frying pan on and set it to about 240°C (temperature should not exceed 260°C as paraformaldehyde ignites at 300°C).
3. Once about 25% of the paraformaldehyde has been depolymerised, switch on the fan of the BSC to run for about 15 seconds. Do this twice.
4. Repeat the above procedure at 50%, 75% and 100% depolymerisation of the paraformaldeyde.
5. Once all the paraformaldehyde has been depolymerised, switch off the electric frying pan, ensure that the BSC is completely sealed and allow it to stand for at least 6-7 hours.
6. This procedure is best done at the end of the working day when all staff have left/can leave afterwards and the BSC can stand overnight.

Neutralising the Paraformaldehyde

1. Once the standing time has been reached, the correct quantity of Ammonium Carbonate can be added to the 2nd electric frying pan and it can be switched on.
2. Repeat steps 3 and 4 above.
3. Once the Ammonium Carbonate has been vaporised allow the BSC to stand for at least 15-20 minutes before removing the plastic seals.
4. Remove both electric frying pans and ensure that the work area of the BSC is properly cleaned up and any powder residue removed and disposed of.
5. Always ensure that there is fresh air in the room and air outlets opened to ensure proper ventilation of the lab especially for BSCs that exhaust into the lab.
6. Observe for any fume effects in the lab and in neighbouring labs. If there is any evidence of fume release the laboratory must be evacuated and staff only return to the lab once it is safe to do so. The gas release incident must be reported the Area SHE Officer and the incident and possible staff exposure/s reported in OHASIS.
7. In the event that it is not possible to vent the laboratory to the outside adequately or should the air-conditioning be running on a closed loop system then a specialised extraction system can be considered to ensure the safety of staff.

8. Once the decontamination process has been completed, Form 26 of POLS0009 can be completed by the laboratory personnel and filed in the laboratory. Only now can the BSC be declared safe for servicing.

NOTE:

- Appendix A or Appendix B must be completed by the Service provider and emailed to the Lab Manager within 2 days of the service.
- Appendix C will be completed only in cases where the HEPA filter is repaired
- Appendix D has been written up as a guide to be used by the Lab Manager and / or HSR to monitor the work done by the service provider.

Appendix A

BIOLOGICAL SAFETY CABINET MAINTENANCE AND SERVICE REPORT FOR LOCALY MANUFACTURED CABINETS – CLASSES 1&2 VC8041 cabinets (Excluding those manufactured in accordance with EN12469)

Laboratory: ..... **Location:** .....

Floor: ..... **Room No:** ..... **Lab Manager:** .....

Tel: (.....) .....**Fax :**(.....)..... **Email:** .....

Serial number: ..... **Asset Number:** ..... **Other number:** .....

Type of unit: ..... **Manufacturer:** .....

Name of service contractor: ..... **Date:** .....

NB. No access panels to contaminated zones to be removed without prior decontamination.

All sections must be completed in black pen and a copy to be forwarded to the Laboratory Manager within 2 working days of the work being done.

Standard applicable:	**VC8041**

1. Test equipment used

Type of equipment used:		**Serial No.**	**Calibration date:**
Anemometer:			
Efficiency measuring device:			
Smoke generating device:			

2. Filter details

Pre filter replaced:	Yes	No	N/A	Type:	Media	Cartridge	Size:	
Downflow HEPA filter		Size				Quantity		
Exhaust HEPA filter		Size				Quantity		

3. General evaluation of cabinet

BSC Decontaminated?	YES	NO	Comments:

Does the cabinet meet the requirements of the standard including the following:

Test check	Meets std.		Comments
Correct positioning in laboratory	Yes	No	
Stability	Yes	No	
Electrical system / alarms	Yes	No	
Windows	Yes	No	
Velocity / pressure alarm – if applicable	Yes	No	
Pressure gage	Yes	No	
Exhaust ducting – if applicable	Yes	No	
Work floor / sump	Yes	No	
Lighting	Yes	No	
Gas fittings / installations	Yes	No	
Work space	Yes	No	
Outer shell	Yes	No	
Sample ports	Yes	No	
General conditions / cleanliness	Yes	No	

4. Air flow, distribution, velocity and uniformity and flow rate determination.

a. Downflow air velocities recorded – Position and downflow velocity – m/s
Class II BSC (vertical velocity) – 0, 45 – 0, 5 m/sec (max variance = 20%)
(Inland Reef altitude minimum of 0, 30 m/s if all other criteria pass)

		1	2	3	4	5	6	7	8	9	10	11	12
Rear	A												
Front	B												

Average velocity reading = ……m/s

Minimum velocity reading=…… m/s Maximum velocity reading= ……m/s

Variation of max from average= …….. % Variation of min from average= ……..%

Pressure gauge reading=…….. (KPa / Pa)

Fan/s speed setting / marked: ……

b. Inflow air velocities recorded – Inflow – m/s (Class II)
Class II biological safety cabinet (inward velocity) – minimum 0, 4 m/sec

Filter 1

Position	1	2	3	4	5	6	7	8
Velocity m/s								

Filter 2

Position	1	2	3	4	5	6	7	8
Velocity m/s								

Exhaust pressure drop across the exhaust filter system (if applicable) = …….. (K)Pa

Dimensions of: exhaust aperture/duct=……m^2 Work access aperture= ……m^2

Exhaust velocity filter 1…… m/s & filter 2……m/s Total exhaust volume……m^3/s

Mean inflow velocity = …… m/s

Exhaust duct velocity readings: (Only if solid connected exhaust duct is present)

Alternative: Constricted Inflow Readings (constricted opening area to be recorded below)

Position	1	2	3	4	5	6	7	8	9	10	11	12
Velocity m/s												

Average duct velocity: ……m/s

Exhaust duct/Constricted air volume: ……m^3/sec

Constricted opening area: ……m^2 (width: ……mm X height: ……mm)

c. Smoke test

Joints and seals	Pass	Fail
Air barrier	Pass	Fail
Direction of air flow at work access aperture	Pass	Fail
Determination of air flow patterns	Pass	Fail
Demonstrated Smoke test to lab staff	Yes	No

General comments regarding air flow: ……

……

……

5. HEPA filters

(In the event of filter replacements)

	Size	Efficiency level	Quantity
Main HEPA filter			
Serial numbers old			
Serial numbers new			
Exhaust HEPA filter			
Serial numbers old			
Serial numbers new			

Filter integrity test

Aerosol Photometer max 0.03% penetration

Aerosol challenge concentration in µg/l or mg/m^3:_____µg/l (10 – 80 µg/l)

After scan concentration in %:_____% (85 – 115%)

	Meets std.		Seals	Media
Main HEPA filter:	Pass	Fail		
1.				
2.				
3.				
Exhaust HEPA filter:	Pass	Fail		
1.				
2.				

General comments regarding filters: .....

.....

.....

If HEPA filters were repaired "Annexure A" must be completed.

6. Conclusion

The bio-safety cabinet is **safe** | **unsafe** to use. If not safe please furnish reasons in section 8.

7. Spares used not specified above: .....

.....

.....

8. Future spares needed, observations and / or points of importance for future attention: .....

.....

.....

9. .....

Name of service technician

.....

Signature of service technician

(In signing the service provider is confirming that the required work was done, including decontamination, in accordance with the relevant standards and legislation.)

Date of next validation: .....

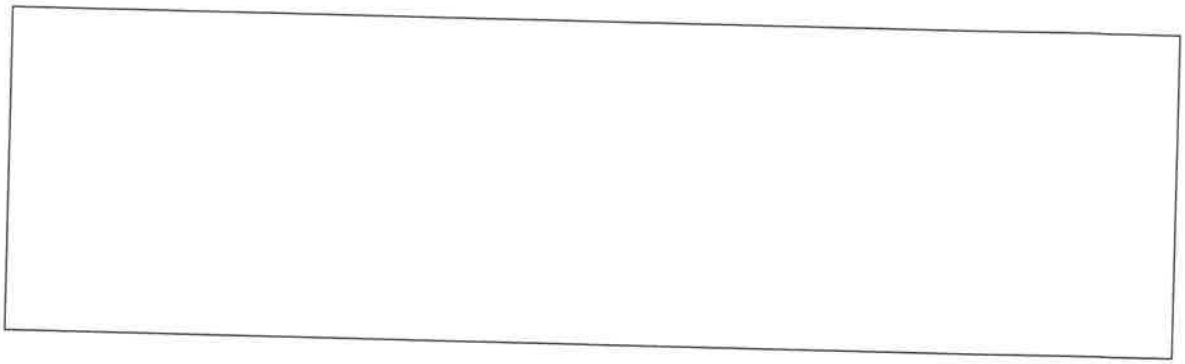
Order number: .....

Lab. Manager/Representative Name: ..... Work done satisfactory: YES / NO

Signature: ..... Comments: .....

Appendix B

BIOLOGICAL SAFETY CABINET MAINTENANCE AND SERVICE REPORT FOR IMPORTED CABINETS – CLASSES 2 (A2) (Cabinets manufactured in accordance with EN12469)



Laboratory: ..... **Location:** .....

Floor: ..... **Room No:** ..... **Lab Manager:** .....

Tel: (.....) .....**Fax :**(.....)..... **Email:** .....

Serial number: ..... **Asset Number:** ..... **Other number:** .....

Type of unit: ..... **Manufacturer:** .....

Name of service contractor: ..... **Date:** .....

NB. No access panels to contaminated zones to be removed without prior decontamination.

All sections must be completed in black pen and a copy to be forwarded to the Laboratory Manager within 2 working days of the work being done.

Standard applicable:	**EN 12469 (SANS 12469 of 2002)**

1. Test equipment used

Type of equipment used:		Serial No.	Calibration date:
Anemometer:			
Efficiency measuring device:			
Smoke generating device:			

2. Filter details

Pre filter replaced:	Yes	No	N/A	Type:	Media	Cartridge	Size:	
Downflow HEPA filter		Size				Quantity		
Exhaust HEPA filter		Size				Quantity		

3. General evaluation of cabinet

BSC Decontaminated?	YES	NO	Comments:

Does the cabinet meet the requirements of the standard including the following:

Test check	Meets std.		Comments
Correct positioning in laboratory	Yes	No	
Stability	Yes	No	
Electrical system / alarms	Yes	No	
Windows	Yes	No	
Velocity / pressure alarm – if applicable	Yes	No	
Pressure gage	Yes	No	
Exhaust ducting – if applicable	Yes	No	
Work floor / sump	Yes	No	
Lighting	Yes	No	
Gas fittings / installations	Yes	No	
Work space	Yes	No	
Outer shell	Yes	No	
Sample ports	Yes	No	
General conditions / cleanliness	Yes	No	

4. Air flow, distribution, velocity and uniformity and flow rate determination.

Manufacturer Specifications	Downflow Velocities
High Limit (Back)	
Low Limit (Mid)	
Tolerance (Front)	

Manufacturer Specifications	Inflow Velocities
High Limit	
Low Limit	
Tolerance	

a. Downflow air velocities recorded – Position and downflow velocity – m/s
Class II BSC (vertical velocity) – 0, 25 – 0, 5 m/sec (max. variance = 20%)

		1	2	3	4	5	6	7	8	9
Rear	A									
(MID)	B									
Front	C									

Average velocity reading = ……m/s

Minimum velocity reading=…… m/s Maximum velocity reading= ……..m/s

Variation of max from average= …….. % Variation of min from average= ……..%

Pressure gauge reading=…… (KPa / Pa / In. H_2O)

Alternative:

Display Readings: Downflow: ……m/s & Inflow: ……m/s

Fan/s speed setting / marked: …….. (Internal)
b. Inflow air velocities recorded – Inflow – m/s (Class II)
Class II biological safety cabinet (inward velocity) – minimum 0, 4 m/sec

Filter 1

Position	1	2	3	4	5	6	7	8
Velocity m/s								

Filter 2

Position	1	2	3	4	5	6	7	8
Velocity m/s								

Exhaust pressure drop across the exhaust filter system (if applicable)=.....(K)Pa/"H_2O

Dimensions of: exhaust aperture/duct=.....m^2 Work access aperture= .....m^2

Exhaust velocity filter 1..... m/s & filter 2.....m/s Total exhaust volume.....m^3/s

Mean inflow velocity = ... m/s

Exhaust duct velocity readings: (Only if solid connected exhaust duct is present)

Alternative: Constricted Inflow Readings (constricted opening area to be recorded below)

Position	1	2	3	4	5	6	7	8	9	10	11	12
Velocity m/s												

Average duct velocity: .....m/s

Exhaust duct/Constricted air volume: .....m^3/sec

Constricted opening area: .....m^2 (width: .....mm X height: .....mm)

c. Smoke test

Joints and seals	Pass	Fail
Air barrier	Pass	Fail
Direction of air flow at work access aperture	Pass	Fail
Determination of air flow patterns	Pass	Fail
Demonstrated Smoke test to lab staff	Yes	No

General comments regarding air flow: .....

.....

.....

5. HEPA filters

(In the event of filter replacements)

	Size	Efficiency level	Quantity
Main HEPA filter			
Serial numbers old			
Serial numbers new			
Exhaust HEPA filter			
Serial numbers old			
Serial numbers new			

Filter integrity test

Aerosol Photometer max 0.01% penetration

Aerosol challenge concentration in µg/l or mg/m^3:_____µg/l (10 – 80 µg/l)

After scan concentration in %:_____% (85 – 115%)

	Meets std.		Seals	Media
Main HEPA filter:	Pass	Fail		
1.				
2.				
Exhaust HEPA filter:	Pass	Fail		
1.				
2.				

General comments regarding filters: .....

.....

.....

If HEPA filters were repaired "Annexure A" must be completed.

6. Conclusion

The bio-safety cabinet is **safe** | **unsafe** to use. If not safe please furnish reasons in section 8.

7. Spares used not specified above: .....

.....

.....

8. Future spares needed, observations and / or points of importance for future attention:.....

.....

.....

9. .....

Name of service technician

.....

Signature of service technician

(In signing the service provider is confirming that the required work was done, including decontamination, in accordance with the relevant standards and legislation.)

Date of next validation: .....

Order number: .....

Lab. Manager/Representative Name: ..... Work done satisfactory: YES / NO

Signature: ..... Comments: .....

.....

.....

Appendix C

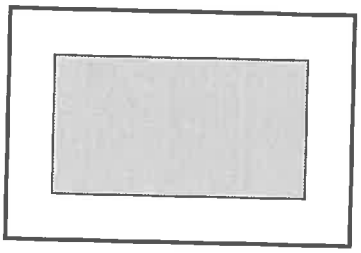
Annexure A - Record of repairs to HEPA filters

Please indicate with an "**X**" the location of any repairs on the appropriate HEPA filter.

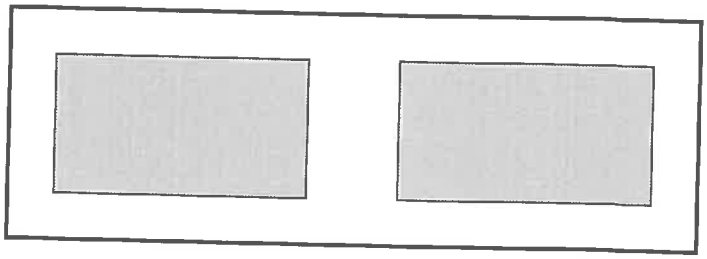
No more than 5% of the HEPA filter surface to be repaired.

Main HEPA filters: (select appropriate layout)

Single HEPA filter

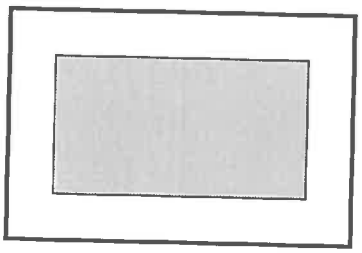


Two HEPA filters side by side



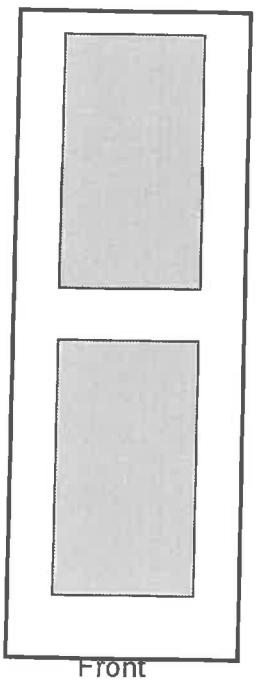
Exhaust HEPA filters: (select appropriate layout)

Single HEPA filter



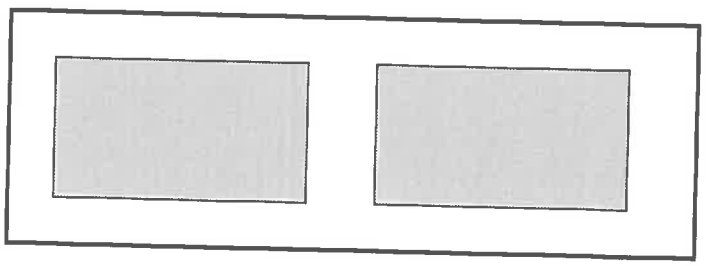
Front

Two HEPA filters, one below the other



Front

Two HEPA filters – side by side



Front

Appendix D

Guide to interpret the Microbiological Safety Cabinet Maintenance and Service Report supplied by maintenance service contractors, Class II A2.

Before any service provider commences work in any potentially contaminated area of the microbiological safety cabinet they are required to decontaminate it in terms of the contract.

Please note that there are two standards which are applicable depending on whether the microbiological safety cabinet is manufactured locally or imported.

Your service contractor will service the microbiological safety cabinet in accordance with the applicable standard and then furnish you with the correct report.

VC8041 will be applicable for locally manufactured microbiological safety cabinets and EN12469 for imported microbiological safety cabinets.

Local cabinets include (VC8041):
Labotec
Labaire
Lab and Air
Bino
Vivid
Airvolution
Afronix
Modtek

Imported cabinets include (EN12469):
Esco
Heal Force
Baker
Telstar
Eheret
Nu-Aire
Labconco
Euroclone
Bio-Quell / Microflow

Generic information
This section reflects details of the facility and the microbiological safety cabinet which has been serviced or repaired. The intervals between routine servicing are six monthly.
There are also details of the company who has been contracted to do the service.

Please note that the Laboratory Manager should receive a copy of this report completed accurately and in full from the service company within 2 working days of the service having been completed.

A copy should also be emailed by the service provider to the National SHE Programme Office by the service provider.

In terms of the contract the service provider is required to book a time with the Laboratory Manager when the microbiological safety cabinet will be made available for service and the

service provider is also required to decontaminate the microbiological safety cabinet prior to commencing work.

Please note that the same service report is required for all new installations.

Section 1 – Test equipment used

Different pieces of equipment are used to test the efficiency of and to validate a microbiological safety cabinet.
An anemometer (mounted on a stand) is used to measure the volume of the air flow.
The efficiency measuring device (an aerosol photometer or in the case of EN12469 there is also the option of using a discrete particle counter) measures the efficiency of the filters (additional pieces of equipment are required to cause the efficiency measuring device to function).
Both pieces of equipment need to be calibrated annually – proper calibration is required in terms of the contract that exists between the appointed service contractor and the NHLS.
The facility manager is entitled to ask to see the calibration records.
The made for purpose smoke generating device which is not calibrated and does not carry a serial number.

Section 2 – Filter details

The replacing of high efficiency particulate air (HEPA) filters is probably one of the most expensive aspects of routine microbiological safety cabinet maintenance. The frequency of replacement will depend on the cleanliness of the environment in which the microbiological safety cabinet operates.

Imported cabinets are not always fitted with prefilters. Should this be the case, the life of the HEPA filters may be shorter than what you would expect if prefilters were a part of the design of the microbiological safety cabinet.

This section will assist the Laboratory Manager to keep a record of the type and size of the filters used in the microbiological safety cabinet and to track the frequency of replacements.

Section 3 General evaluation of the cabinet

The table in this section is a summary report of various aspects of and equipment on the microbiological safety cabinet which the service provider will have inspected during a routine service. Should the service provider find that any of the points do not meet standard they are required to insert a comment. Under comments the service provider will insert corrective actions that are necessary to ensure compliance with the necessary standard. It is possible that an item may not meet the required standard but the microbiological safety cabinet may still be safe to use. This section should be read with **Section 6 – Conclusion**.

Section 4 Airflow, distribution, velocity and uniformity and flow rate determination
Subsection a – Downflow velocity

In terms of EN12469
A minimum of eight readings (4 front and 4 rear) must be taken at various predetermined points in the working area of the microbiological safety cabinet. The readings are inserted in the table.
Based on all the readings the minimum and the maximum readings are then inserted into the place provided on the form and the mean velocity is then calculated using all the readings. The mean velocity is then inserted in the appropriate place on the form.
The calculated mean velocity (downflow) must be 0,25 - 0,5 m/second.
No individual measurement may differ from the mean downflow velocity by more than 20%.

In terms of VC8041
The same process is followed as above except that the points at which the readings are taken must be between 200 and 225 mm apart.
The same calculations are done using the measurements.
The final calculated mean velocity must be between 0,45 and 0,5m /sec. However if the required downflow velocity cannot be achieved and all other criteria is within tolerance the downflow can be as low as but never lower than 0,30 m/s in laboratories with high altitude (i.e. Inland Reef altitude or top of escarpment rim).
No individual measurement may differ from the mean downflow velocity by more than 20%.

Subsection b – Inflow velocity
In terms of EN12469 and VC 8041 (Class 2)
The standard does not specify the number of points at which readings must be taken, only that separate readings must be taken for each of the separate HEPA filters (if there is more than one main HEPA filter). The readings obtained are inserted in the tables provided and then used to calculate the mean inflow velocity. If under **Section 2** the service provider has indicated that there are 2 main HEPA filters then there will be measurements reflected for two filters in **Section 4b**.
The service provider will then measure the area of the exhaust duct positioned at the top or at the side of the microbiological safety cabinet, this measurement is then inserted onto the report and multiplied by the mean velocity to calculate the total exhaust volume being discharged.
The service provider will finally measure the area of the front aperture (work access aperture).
The total exhaust volume is then divided by the area of the front aperture to calculate the mean inflow air velocity.
The mean inflow air velocity must not be less than 0,4m/second.

Subsection c – smoke test
Class 1 and class 2 microbiological safety cabinets
In terms of EN12469 and VC8041
The smoke test is used to test for the following:
If there are any broken joints or defective seals as this may cause the microbiological safety cabinet to leak.
To demonstrate the direction of the airflow over the whole area of the front aperture external to the microbiological safety cabinet to ensure that the air barrier is intact.
To demonstrates that the airflow within the work area is without turbulence.
To determine airflow patterns.

Section 5 – HEPA filters
Every HEPA filter has a unique serial number.
As indicated earlier in this guide, the replacing of high efficiency particulate air (HEPA) filters is probably one of the most expensive aspects of routine microbiological safety cabinet maintenance. For this reason this section is intended to keep an accurate record of filters removed and the replacement filters, this will assist in the budgetary planning of the facility.

Please note that it is the responsibility of the laboratory to dispose of the HEPA filters. The appropriate bags for the HEPA filters are available from the company contracted to remove the health care risk waste and they will also remove the HEPA filters in terms of the contract which is in place. The Laboratory Manager must ensure that adequate supplies of plastic bags suitable for the disposal of HEPA filters are ordered timeously and are available.

In order to establish the efficiency of a HEPA filter an aerosol generator is used to introduce particles up stream (on the dirty side) of the HEPA filters. An aerosol photometer or discrete particle counter is then used to measure the quantity of particles that pass through the HEPA filters.

If it is a VC8041 cabinet:
A maximum of 0,03% penetration is permitted when using an aerosol photometer is used. VC8041 does not make provision for a discrete particle counter.

If it is an EN 12469 cabinet:
A maximum of 0.01% penetration is permitted if an aerosol photometer is used or 0,05% if a discrete particle counter is used.

Should these maximum be exceeded then the filters must be replaced or repaired.

The required efficiency levels of any new HEPA filters installed in the microbiological safety cabinet shall be at least H14 – this efficiency level is indicated on the filter or the box.

On occasions it is possible to repair a HEPA filter rather than replacing it. At no point should repairs cover more than 5% of the total area of a HEPA filter. Annexure "A" has been provided to record the position on the applicable HEPA filter of any repairs done.

The section referring to challenge and scan concentrations is recorded to ensure equipment was set up and operated correctly. The values must be within the ranges as indicated between brackets.

Section 6 – Conclusion
This is the most important section of the whole report. The service provider will indicate, based on all the tests which they have done, if the microbiological safety cabinet is safe to use.

Should the service provider find that the cabinet is not safe to be used then they must furnish the reasons for their findings under section 8 and also negotiate with the Laboratory Manager as to when the cabinet will be repaired.

No cabinet that was found to be unsafe should be used until it has been made safe.

Section 7 – Spares used not specified above
This section is intended as a record of work done on the microbiological safety cabinet.

Section 8 – Future spares needed, observations and / or points of importance for future attention
This section will assist in the planning and budgeting for the next maintenance cycle.

Section 9
It is required that the service provider sign and date the report to confirm that the cabinet has been decontaminated and that the required maintenance and validation has been done. There is also a section where, in conjunction with the Laboratory Manager, the next maintenance visit can be planned – maintenance cycles are required to be done every six months. For control purposes a section has been provided to record the order number.

REFERENCES

1. SANS 12469:2002 South African National Standard – Biotechnology – Performance Criteria for Microbiological Safety Cabinets
2. VC8041– The Compulsory Specification for Microbiological Safety Cabinets (Classes 1, 11 and 111) Published by Government Notice R93 (Government Gazette 22014) of 2 February 2001

LABORATORY NAME	QUANTITY	Physical Adress
All saints	1	NHLS Laboratory, All Saints
cala	1	cala Hosp, Druly lane Street Cala Hosiptal
Canzibe	1	Canzibe Hospital, Mtata road , Ngqeleni
Cofimvaba	1	Cofimvaba Hospital, Zigudu Road Cofimvaba
cradock	1	Provincial Hospital , Hospital Street, Cradock, 5880
Hewu	1	NHLS Laboratory,Hewu Hospital, Whittlesea
Glen Grey	1	NHLS Laboratory, Glen Grey Hospital, Lady Frere
Queenstown	1	NHLS Laboratory, Frontier Hospital, Kingsway, Queenstown
St Barnabas	1	NHLS St Barnabas , Libode
Dr MMM Lab	1	R392 Maluti route DR MMM hosp NHLS Tsolo 5170
Cytology	1	C/O Buckingham & Eastbourne Rd, 5th floor, Mount Croix, PE
Livingstone Laboratory	1	Livinsgtone Hospital. Stanford Rd, Korsten, Port Elizabeth
TB LABORATORY	9	C/O Buckingham & Eastbourne Rd, 2nd floor, Mount Croix, PE
Virology-Molecular (3rd Floor)	2	C/O Buckingham & Eastbourne Rd, 3rd floor, Mount Croix, PE
Virology-COVID (8th Floor)	3	C/O Buckingham & Eastbourne Rd, 3rd floor, Mount Croix, PE
Dora Nginza	1	Dora Nginza Hospital, Spondau Rd, Zwide, Port Elizabeth
SOMERSET EAST	1	Andries Vosloo Hospital, Charl Street, Somerset East
Graaff-Reinet	0	Midlands Hospital, Albertyn Street, Graaff Reinet
NHLS Grahamstown	1	Settlers Hospital, Milner Street. Grahamstown
PE Micro	4	C/O Buckingham & Eastbourne Rd, 1 st floor, Mount Croix, PE
Port Alfred	1	Kowie Hospital, Southwell Street, Port Alfred