

**SOP Title:** Biosafety Cabinet (BSC) Use and Maintenance

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**1. PURPOSE**

- 1.1. The purpose of this procedure is to describe the use and maintenance of the Biosafety Cabinets (BSC) in the Human Papillomavirus (HPV) Serology Laboratory.

**2. SCOPE**

- 2.1. This procedure applies to BSCs in the HPV Serology Laboratory located at the Advanced Technology Research Facility (ATRF), room C2007.

**3. REFERENCES**

- 3.1. HSL\_\_GL\_001: Waste Disposal at the Advanced Technology Research Facility  
3.2. ISM144: Effective Use of Biological Safety Cabinets Safetygram

**4. RESPONSIBILITIES**

- 4.1. The Research Associate, hereafter referred to as analyst, is responsible for reviewing and following this procedure.  
4.2. The Scientific Manager or designee is responsible for training personnel in this procedure and reviewing associated documentation.  
4.3. The Quality Assurance Specialist is responsible for quality oversight and approval of this procedure.

**5. DEFINITIONS**

Term	Definition
FME	Facilities, Maintenance and Engineering
HSL	HPV Serology Laboratory
SDS	Safety Data Sheets

**6. REAGENTS, MATERIALS AND EQUIPMENT**

- 6.1. Class II Biosafety Cabinet (BSC)  
6.2. Cavicide (Warehouse, Cat # 79300360)  
6.3. Ster-ahol (VWR, Cat # 14003-358 or equivalent)  
6.4. Wypalls paper towel (Warehouse, Cat # 79300335 or equivalent)  
6.5. TechniCloth Wipe (VWR, Cat# TWTX1112 or equivalent)  
6.6. 1 L Flask

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- 6.7. Vacushield PTFE Filter (PALL, Cat # 4402)
- 6.8. Clorox Bleach (Warehouse, Cat # 68100251)
- 6.9. Hood Cleaning Rod

## **7. HEALTH AND SAFETY CONSIDERAIONS**

- 7.1. Proper safety precautions should be taken while working in a laboratory setting. This includes, but is not limited to, proper protective equipment such as lab coats, safety glasses, closed-toe shoes, and non-latex gloves.
- 7.2. Refer to the respective SDS when working with any chemicals.
- 7.3. Refer to "HSL\_GL\_001: Waste Disposal at the Advanced Technology Research Facility" regarding waste disposal processes at the ATRF.
- 7.4. If the BSC was turned off, turn it on and allow it to run for at least 30 minutes before using it to ensure a clean, filtered environment.

## **8. USE AND MAINTENANCE**

- 8.1. General Information
  - 8.1.1. When working in a BSC, do not block airflow by placing objects or arms on the front air grill. This will disrupt the airflow and could contaminate both the experiment and the air outside of the hood. See Attachment 1 for BSC airflow details.
  - 8.1.2. The number of items stored in the BSC must be kept at a minimum and placed away from air vents that can disrupt proper airflow. No more than 3 boxes of pipette tips and 1 vacuum aspirator can be stored in a BSC. No other items can be stored in the BSC. See Attachment 2 for the general layout used in room C2007.
  - 8.1.3. The BSC is cleaned daily prior to use and after each use. If the hood is not used, no cleaning needs to be performed.
  - 8.1.4. When cleaning, wipe the hood from top to bottom and back to front, finishing with the work surface and front grill. Use the hood cleaning rod to reach the rear wall when cleaning.
  - 8.1.5. Cavicide is used as the primary disinfectant cleaner. When cleaning with cavicide, allow a minimum 3-minute contact time before wiping with a low-lint wipe.

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- 8.1.6. Ster-ahol is never used as a primary disinfectant cleaner. Ster-ahol is used as a secondary cleaning agent to remove precipitate or residue left behind from cavicide.
- 8.1.7. The vacuum aspirator must always have a Hepa filter linked between the vacuum source and aspirator. See Attachment 2 for example of set up.
- 8.1.8. Proper precautions should be taken to ensure there is no cross contamination, such as cleaning the interior work surface if a spill occurs, when an experiment is finished, and between analysts. Additional precautions are decided on a case by case basis, or at recommendation by the Scientific Manager.
- 8.1.9. If an outside contractor performs maintenance or certification on the BSC, it is the responsibility of the analyst to enter the information on "HSL\_EQ\_001.02: BSC Maintenance Form."
- 8.1.10. See Attachment 3 for common process codes used on Form "HSL\_EQ\_001.01: BSC Daily Use Form."
- 8.2. Daily Use
  - 8.2.1. Record daily use on HSL\_EQ\_001.01.
  - 8.2.2. Prior to beginning work in the BSC, spray down the hood interior with cavicide. Wipe down the hood using a clean, low-lint wipe.
  - 8.2.3. Ster-ahol may be used following the cavicide cleaning. If using Ster-ahol, spray on a clean, low-lint wipe, and wipe hood.
  - 8.2.4. If aspirating biological fluids, add bleach (at 10% final concentration) to the aspirator before use; otherwise, the aspirator may be used as a vacuum source for filtering reagents and media without adding any disinfectant.
    - 8.2.4.1. If bleach is added to the aspirator to disinfect biological material, the aspirator with bleach and biological material must sit for 30 minutes after use. The contents in the aspirator may be safely poured down the laboratory sink.
    - 8.2.4.2. Rinse the aspirator with water and allow to dry before use.
  - 8.2.5. Clean hood with ster-ahol between experiments, and between analysts to prevent cross contamination.
  - 8.2.6. If a second analyst performs Process #2 in the BSC, the analyst records information on the line of form HSL\_EQ\_001.01 initiated by the first analyst.

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8.2.6.1. Record date and initials under the first analyst date and initials.

8.2.6.2. Record process #2 information.

8.2.6.3. Initial next to process #2 information and shutdown information, if applicable.

8.2.7. If performing separate Transfections within the same day in the same BSC, record the second Transfection under Process #2.

8.2.8. After use at the end of the day, remove all items from the BSC, except items listed in section 8.1.2. Clean BSC with cavicide per step 8.2.2. Ster-ahol may be used following the cavicide cleaning per step 8.2.3.

### 8.3. Quarterly Maintenance

8.3.1. Record Quarterly maintenance on HSL\_EQ\_001.02.

8.3.2. Quarterly Maintenance is performed once a quarter when the BSC is in use. When the instrument is not in use, a note is recorded. The quarterly cleaning must be performed prior to the continuation of routine use and maintenance.

8.3.3. Shut down hood fan prior to cleaning.

8.3.4. Spray all stationary and removable internal components of the hood with cavicide, such as the screens and plenum. See Attachment 4 for surface cleaning guidance. Remove work surface panel to clean the negative pressure tray.

8.3.5. Spray all internal surfaces of the hood with cavicide.

8.3.6. Spray Ster-ahol on a clean, low-lint wipe, and wipe hood.

8.3.7. Reassemble hood and turn on hood fan.

8.3.8. Allow air to circulate in the BSC for at least 30 minutes prior to use.

### 8.4. Annual Maintenance

8.4.1. FME or a contracted vendor certify and perform preventive maintenance of the BSC according to National Sanitation Foundation/American National Standards Institute (NSF/ANSI) 49.

8.4.2. All non-routine maintenance procedures, such as replacement of filters, blower motors, fans, belts, etc., are handled by a vendor, contractor, or FME.

8.4.3. Allow air to circulate in the BSC for at least 30 minutes prior to use.

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8.4.4. Record maintenance on HSL\_EQ\_001.02.

## **9. ATTACHMENTS**

- 9.1. Attachment 1: Airflow in a BSC
- 9.2. Attachment 2: BSC Layout in HSL
- 9.3. Attachment 3: Common Process Codes
- 9.4. Attachment 4: Quarterly BSC Cleaning in HSL
- 9.5. Attachment 5: HSL\_EQ\_001.01: BSC Daily Use Form
- 9.6. Attachment 6: HSL\_EQ\_001.02: BSC Maintenance Form

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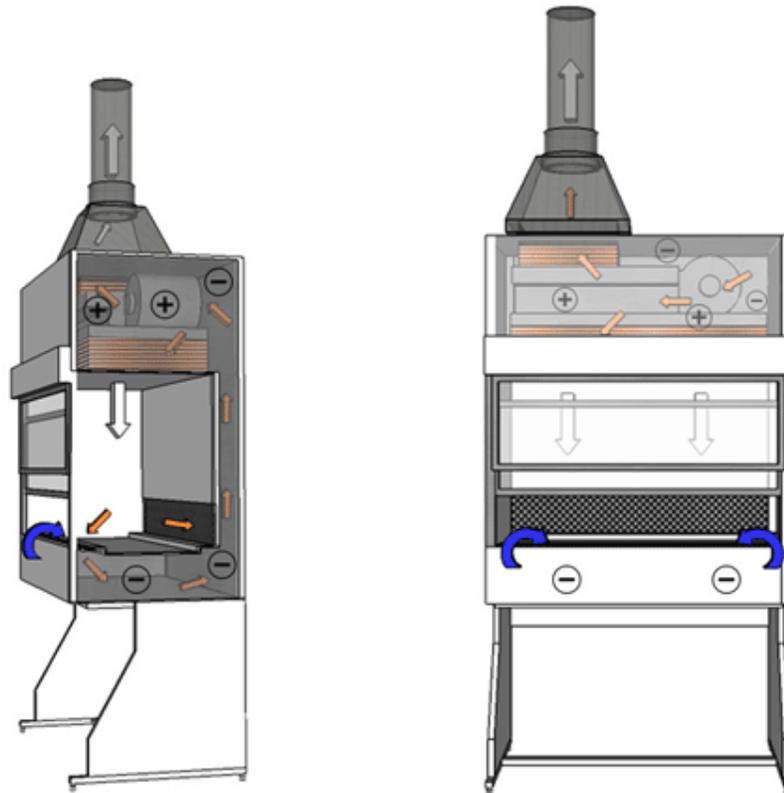
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**Attachment 1: Airflow in a BSC**



⊖ Negative Pressure



HEPA Filter



Supply Air

⊕ Positive Pressure



HEPA Filtered Air



Contaminated Air

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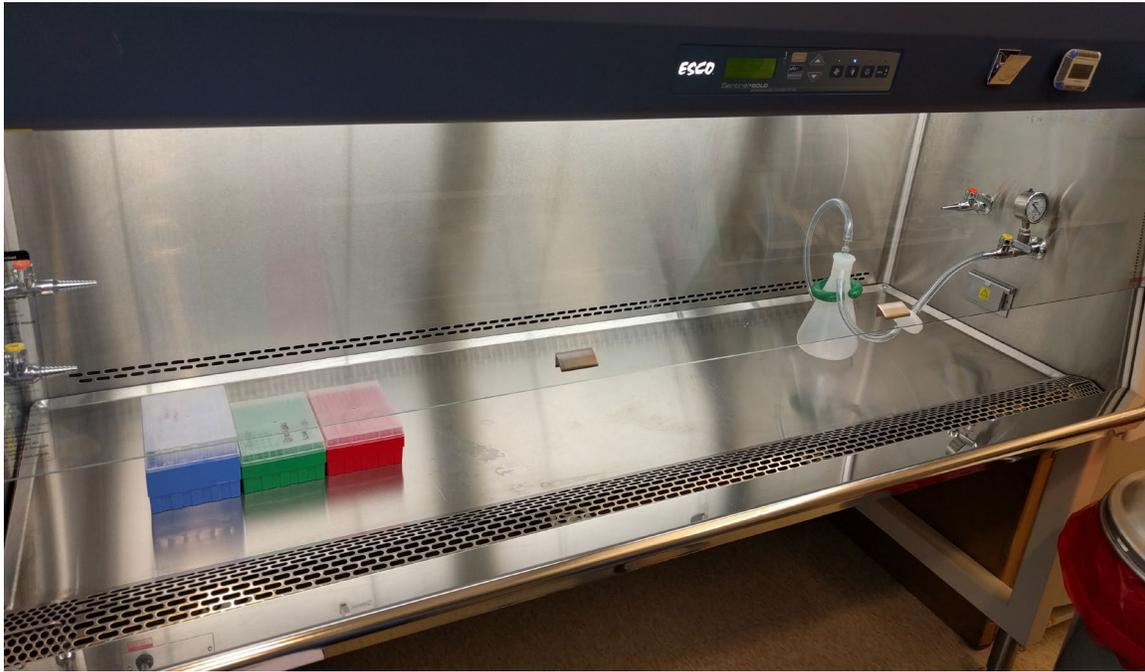
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**Attachment 2: BSC Layout in HSL**



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**Attachment 3: Common Process Codes**

Process Code	Process Description
PBNA	Pseudovirion Based Neutralization Assay
LUM	Luminex Assay
CELLS	Cell Maintenance
TSFXN-HPV TYPE	HPV Type-specific Transfection Process
BCA	BCA Protein Assay
ELISA	HPV Type Specificity Assay and HPV ELISA
GEL	Coomassie Blue Gel set up
PLASMID-HPV TYPE	Plasmid Purification
SERUM	Serum Isolation and Aliquots

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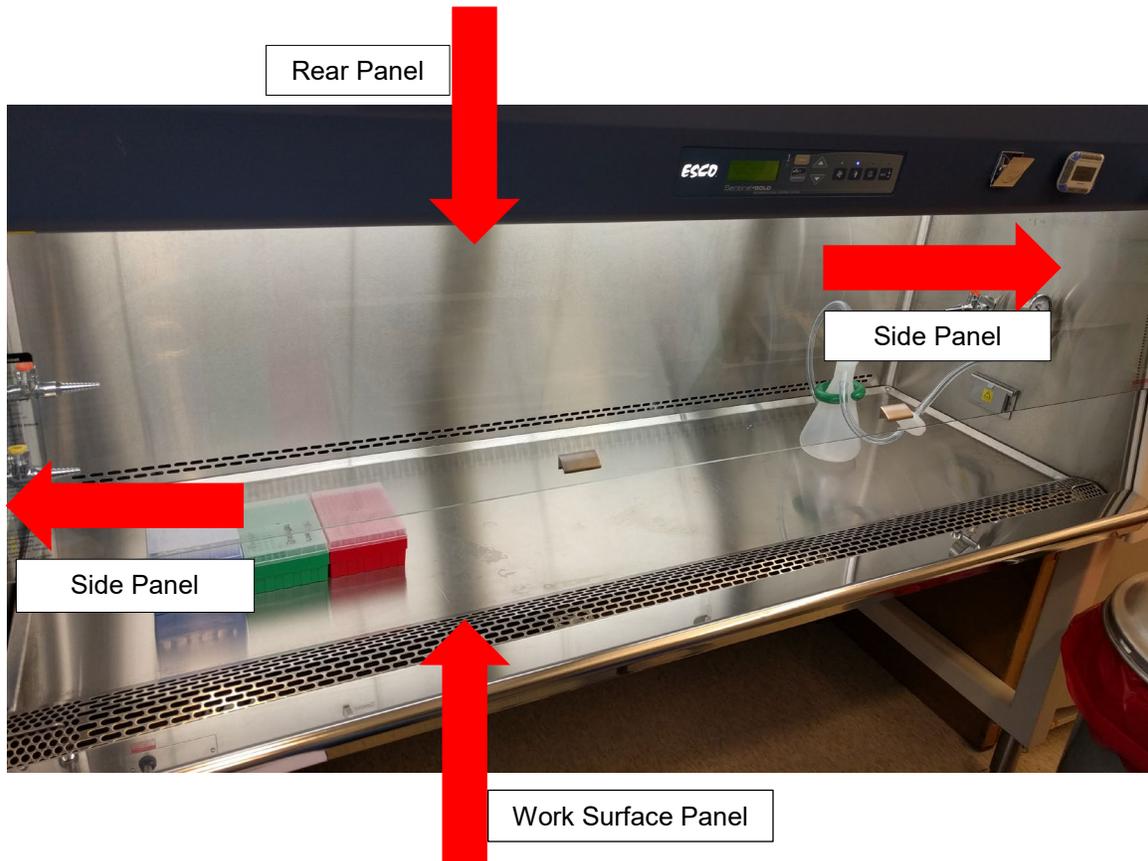
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**Attachment 4: Quarterly BSC Cleaning in HSL**



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**Attachment 5: HSL\_EQ\_001.01: BSC Daily Use Form**

<p><b>Frederick National Laboratory for Cancer Research</b> <i>sponsored by the National Cancer Institute</i></p>		<p>HPV Serology Laboratory Standard Operating Procedure Form</p>	
<p><b>Form Title:</b> BSC Daily Use Form</p>			
<p><b>Document ID:</b> HSL_EQ_001.01</p>		<p><b>Version:</b> 3.0</p>	
<p><b>Associated SOP:</b> HSL_EQ_001</p>		<p><b>Effective Date:</b></p>	
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Equipment ID:		HSL_00				
Date	Initials	Disinfectant	Start Up	Process / Lot Number	Shut Down	Comments
		<input type="checkbox"/> N/A Cavicide Lot #: _____  Ster-ahol Lot #: <input type="checkbox"/> N/A	<input type="checkbox"/> N/A Air Flow OK: <input type="checkbox"/> Yes <input type="checkbox"/> No  <input type="checkbox"/> Cavicide <input type="checkbox"/> Ster-ahol	<input type="checkbox"/> N/A Process 1:  <input type="checkbox"/> Ster-ahol, Process 2, Ster-ahol/Shut Down:	<input type="checkbox"/> N/A <input type="checkbox"/> Cavicide <input type="checkbox"/> Ster-ahol	<input type="checkbox"/> N/A <input type="checkbox"/> Logbook Review
		<input type="checkbox"/> N/A Cavicide Lot #: _____  Ster-ahol Lot #: <input type="checkbox"/> N/A	<input type="checkbox"/> N/A Air Flow OK: <input type="checkbox"/> Yes <input type="checkbox"/> No  <input type="checkbox"/> Cavicide <input type="checkbox"/> Ster-ahol	<input type="checkbox"/> N/A Process 1:  <input type="checkbox"/> Ster-ahol, Process 2, Ster-ahol/Shut Down:	<input type="checkbox"/> N/A <input type="checkbox"/> Cavicide <input type="checkbox"/> Ster-ahol	<input type="checkbox"/> N/A <input type="checkbox"/> Logbook Review
		<input type="checkbox"/> N/A Cavicide Lot #: _____  Ster-ahol Lot #: <input type="checkbox"/> N/A	<input type="checkbox"/> N/A Air Flow OK: <input type="checkbox"/> Yes <input type="checkbox"/> No  <input type="checkbox"/> Cavicide <input type="checkbox"/> Ster-ahol	<input type="checkbox"/> N/A Process 1:  <input type="checkbox"/> Ster-ahol, Process 2, Ster-ahol/Shut Down:	<input type="checkbox"/> N/A <input type="checkbox"/> Cavicide <input type="checkbox"/> Ster-ahol	<input type="checkbox"/> N/A <input type="checkbox"/> Logbook Review
		<input type="checkbox"/> N/A Cavicide Lot #: _____  Ster-ahol Lot #: <input type="checkbox"/> N/A	<input type="checkbox"/> N/A Air Flow OK: <input type="checkbox"/> Yes <input type="checkbox"/> No  <input type="checkbox"/> Cavicide <input type="checkbox"/> Ster-ahol	<input type="checkbox"/> N/A Process 1:  <input type="checkbox"/> Ster-ahol, Process 2, Ster-ahol/Shut Down:	<input type="checkbox"/> N/A <input type="checkbox"/> Cavicide <input type="checkbox"/> Ster-ahol	<input type="checkbox"/> N/A <input type="checkbox"/> Logbook Review

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**Attachment 6: HSL\_EQ\_001.02: BSC Maintenance Form**

<b>Frederick National Laboratory for Cancer Research</b> <i>sponsored by the National Cancer Institute</i>		HPV Serology Laboratory Standard Operating Procedure Form	
<b>Form Title:</b> BSC Maintenance Form			
<b>Document ID:</b> HSL_EQ_001.02		Version:	3.0
Associated SOP: HSL_EQ_001		Effective Date:	
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Maintenance Year:	
Equipment ID:	HSL_00

**Quarterly Maintenance**

Quarter	Q1	Q2	Q3	Q4
Performed by/date:				
Reviewed by/date:				

**Annual Maintenance**

Recorded by/date:	
Reviewed by/date:	

**Unscheduled Maintenance**

Date	Quality Event Number	Activity Performed	Recorded by/date	Reviewed by/date

QA Reviewed by/date: \_\_\_\_\_

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