

Frederick National Laboratory for Cancer Research <small>sponsored by the National Cancer Institute</small>	HPV Serology Laboratory Standard Operating Procedure	
Use and Maintenance of an Analytical & Precision Balance		
Document ID: HSL_EQ_015	Version 1.0	Page 1 of 7

Released by/Date Effective:

Author Name	Title	Signature/Date

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1. PURPOSE

- 1.1. The purpose of this procedure is to set instructions in the proper use and handling of an analytical and precision balance.

2. SCOPE

- 2.1. This procedure applies to the HPV Serology Laboratory located at the Advanced Technology Research Facility, Room C2007.

3. REFERENCES

- 3.1. Mettler Toledo analytical balance ML user manual
- 3.2. HSL_EQ_015.01: Precision Balance Use and Maintenance Form
- 3.3. HSL_EQ_015.02: Analytical Balance Use and Maintenance Form
- 3.4. HSL_GL_001: Waste Disposal at the Advanced Technology Research Facility
- 3.5. HSL_GL_002: Equipment Qualification and Calibration in the HPV Serology Laboratory
- 3.6. HSL_GL_003: Good Documentation Practices for the HPV Serology Laboratory
- 3.7. HSL_GL_006: Reagent Preparation for the HPV Serology Laboratory
- 3.8. HSL_GL_007: Reagent and Chemical Expiry in the HPV Serology Laboratory
- 3.9. HSL_GL_008: Laboratory Flow and Gowning Procedures for the HPV Serology Laboratory
- 3.10. HSL_GL_009: HPV Serology Laboratory BSL-2 Procedures
- 3.11. HSL_GL_010: Control and Request of Documents in the HPV Serology Laboratory

4. RESPONSIBILITIES

- 4.1. The Research Associate, hereafter referred 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. REAGENTS, CHEMICALS AND EQUIPMENT

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- 5.1. Mettler Toledo analytical balance
- 5.2. Mettler Toledo precision balance
- 5.3. Ster-ahol (VWR, Cat # 14003-358 or equivalent)
- 5.4. Wypalls paper towel (Warehouse, Cat # 79300335 or equivalent)
- 5.5. Weigh Boats (VWR, Cat # 89106-768 or equivalent)
- 5.6. Weigh Paper (VWR, Cat # 12578-121 or equivalent)
- 5.7. Spatula (VWR, Cat # 13197-378 or equivalent)

6. HEALTH AND SAFETY CONSIDERATIONS

- 6.1. 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.
- 6.2. Refer to the respective SDS when working with any chemicals.
- 6.3. Refer to "HSL_GL_001: Waste Disposal at the Advanced Technology Research Facility" regarding waste disposal processes at the ATRF.

7. DEFINITIONS

Term	Definition
ATRF	Advanced Technology Research Facility
HPV	Human Papillomavirus
HSL	HPV Serology Laboratory
SDS	Safety Data Sheets
SOP	Standard Operating Procedure

8. DOCUMENTATION

- 8.1. All activities performed on a balance must be captured on the associated data capture form. This includes, but is not limited to leveling the balance, checking the calibration with weights or actual use of the balance.
- 8.2. Data references should be included when applicable.
- 8.3. Calibration check print outs should be attached to the back of the logbook page where the check is recorded.
- 8.4. Weight print outs should be attached to raw data or logbooks (where there is space, either a comment box or on the back of the page).

9. OPERATION

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9.1. Leveling a Balance

Note: Balances need to be level prior to use.

- 9.1.1. The balances have a level indicator and two adjustable leveling feet to compensate for slight irregularities in the surface of the weighing bench.
- 9.1.2. The balance is exactly horizontal when the air bubble is in the middle of the level glass.
- 9.1.3. Adjust the two leveling feet appropriately until the air bubble comes to rest exactly in the middle of the glass:
 - 9.1.3.1. Use the “Leveling Assistant” option under “Menu” to assist with manually adjusting the balance prior to calibration.
- 9.1.4. If a balance is leveled at any time, it must be calibrated prior to next use.

9.2. Calibration check

Note: Calibration check MUST be performed prior to use on the day of use.

- 9.2.1. Press **«On»**. The balance is ready for weighing or for operation with the last active application. Approved balances will execute an initial zero.
- 9.2.2. Press **«→0/T←»** to zero the balance.
- 9.2.3. Print zero reading.
- 9.2.4. Place the calibration check weight on the weighing pan.
 - Note:** Calibration check weights:
Analytical Balance: 200mg, 5g, and 100g
Precision Balance: 20g and 500g
- 9.2.5. Wait until the instability detector "O" disappears and the stability beep sounds.
- 9.2.6. Record the results on the appropriate balance use form.
- 9.2.7. Print the calibration result.
- 9.2.8. Repeat steps for all calibration check weights for the appropriate balance being used.
 - Note:** Only handle weights using tweezers or special gloves that come with calibration set. Never touch the weight with your bare hands.
- 9.2.9. Attach calibration printout to back of form.

9.3. Performing a Weighing

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- 9.3.1. Press **«On»**. The balance is ready for weighing or for operation with the last active application. Approved balances will execute an initial zero.
- 9.3.2. Press **«→0/T←»** to zero the balance.
- 9.3.3. Print zero reading.
- 9.3.4. Place the appropriate weigh boat/paper on the weighing pan and Press **«→0/T←»** to zero the balance. "0.00 g" and "Net" appears in the display.
- 9.3.5. Place the weighing sample on the weighing boat/paper.
- 9.3.6. Wait until the instability detector "O" disappears and the stability beep sounds.
- 9.3.7. Read, then print the result, and attach to record.

9.4. Switching weight Units

- 9.4.1. The  key can be used at any time to toggle between weight unit "UNIT 1", "RECALL" value (if selected), weight unit "UNIT 2" (if different from weight unit 2) and the application unit (if any).

10. SYSTEM SUITABILITY CRITERIA

- 10.1. Calibration check measured values must fall within 10% of actual applied weight load.

Actual Weight Applied	Acceptable Weight Range
200 mg	180 mg – 220 mg
5 g	4.5 g – 5.5 g
20 g	18 g – 22 g
100 g	90 g – 110 g
500 g	450 g – 550 g

11. DATA ACCEPTANCE CRITERIA

- 11.1. If calibration check measurement is >10%, clean the weighing pan, draft shield element, bottom plate, and housing of the balance with Ster-ahol and wipe with a clean low-lint wipe, allow to dry completely. Repeat calibration check steps.
- 11.2. If the calibration check fails again, immediately stop using the instrument and contact the Scientific Manager for next steps.

12. ANNUAL MAINTENANCE

- 12.1. Once a year the balances will receive annual calibration and maintenance, based on the manufacturer's recommendations.

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12.2. Document maintenance as applicable, on HSL_EQ_015.01: Precision Balance Use and Maintenance Form or HSL_EQ_015.02: Analytical Balance Use and Maintenance Form.

13. ATTACHMENTS

Not Applicable.

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14. REVISION HISTORY

Revision Start Date	Version #	Changes	Reasons
16Mar17	New	Create new SOP for use and maintenance of analytical and precision balance	Currently no SOP

Precision Balance Use and Maintenance Form

Form ID: HSL_EQ_015.01

Associated SOP: HSL_EQ_015

Version 1.0

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Equipment ID:

Calibration Date:

Calibration
Due Date:

Weight Set ID:

Calibration Date:

Calibration
Due Date:

Date	Initials	Level Indicator	Calibration Check	Pass/Fail	Activity Performed/ Comments
		<input type="checkbox"/> Level <input type="checkbox"/> Adjusted	<input type="checkbox"/> N/A 20g: Actual(g): _____ 500g: Actual(g): _____	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/> NA
		<input type="checkbox"/> Level <input type="checkbox"/> Adjusted	<input type="checkbox"/> N/A 20g: Actual(g): _____ 500g: Actual(g): _____	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/> NA
		<input type="checkbox"/> Level <input type="checkbox"/> Adjusted	<input type="checkbox"/> N/A 20g: Actual(g): _____ 500g: Actual(g): _____	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/> NA
		<input type="checkbox"/> Level <input type="checkbox"/> Adjusted	<input type="checkbox"/> N/A 20g: Actual(g): _____ 500g: Actual(g): _____	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/> NA
		<input type="checkbox"/> Level <input type="checkbox"/> Adjusted	<input type="checkbox"/> N/A 20g: Actual(g): _____ 500g: Actual(g): _____	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/> NA
		<input type="checkbox"/> Level <input type="checkbox"/> Adjusted	<input type="checkbox"/> N/A 20g: Actual(g): _____ 500g: Actual(g): _____	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/> NA
		<input type="checkbox"/> Level <input type="checkbox"/> Adjusted	<input type="checkbox"/> N/A 20g: Actual(g): _____ 500g: Actual(g): _____	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/> NA
		<input type="checkbox"/> Level <input type="checkbox"/> Adjusted	<input type="checkbox"/> N/A 20g: Actual(g): _____ 500g: Actual(g): _____	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/> NA

Review By/Date:

QA Review By/ Date:

Analytical Balance Use and Maintenance Form

Form ID: HSL_EQ_015.02

Associated SOP: HSL_EQ_015

Version 1.0

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Equipment ID:

Calibration Date:

Calibration
Due Date:

Weight Set ID:

Calibration Date:

Calibration
Due Date:

Date	Initials	Level Indicator	Calibration Check	Pass/Fail	Activity Performed/ Comments
		<input type="checkbox"/> Level <input type="checkbox"/> Adjusted	<input type="checkbox"/> N/A 200 mg: Actual(mg): _____ 5 g: Actual(g): _____ 100 g: Actual(g): _____	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/> NA
		<input type="checkbox"/> Level <input type="checkbox"/> Adjusted	<input type="checkbox"/> N/A 200 mg: Actual(mg): _____ 5 g: Actual(g): _____ 100 g: Actual(g): _____	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/> NA
		<input type="checkbox"/> Level <input type="checkbox"/> Adjusted	<input type="checkbox"/> N/A 200 mg: Actual(mg): _____ 5 g: Actual(g): _____ 100 g: Actual(g): _____	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/> NA
		<input type="checkbox"/> Level <input type="checkbox"/> Adjusted	<input type="checkbox"/> N/A 200 mg: Actual(mg): _____ 5 g: Actual(g): _____ 100 g: Actual(g): _____	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/> NA
		<input type="checkbox"/> Level <input type="checkbox"/> Adjusted	<input type="checkbox"/> N/A 200 mg: Actual(mg): _____ 5 g: Actual(g): _____ 100 g: Actual(g): _____	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/> NA
		<input type="checkbox"/> Level <input type="checkbox"/> Adjusted	<input type="checkbox"/> N/A 200 mg: Actual(mg): _____ 5 g: Actual(g): _____ 100 g: Actual(g): _____	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/> NA

Review By/Date:

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