

QAM-I-121

Operation and Calibration of the Biological Safety Cabinet

Revision 0

Approval:



Laboratory Manager

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Texas Institute for Applied Environmental Research

Operation and Calibration of the Biological Safety Cabinet

1. Applicability and Purpose

This procedure applies to the operation and calibration of the Thermo Scientific 1300 Series A2 Class II, Type A2 Biological Safety Cabinet (BSC). The purpose is to provide a method for safe operation of the cabinet.

2. Definitions

2.1. Standard QA/QC definitions are found in QAM-Q-101, "Laboratory Quality Control."

3. Equipment, Reagents and Standards

- 3.1. Thermo Scientific 1300 Series A2 Class II, Type A2 Biological Safety Cabinet, Model 1387 or equivalent.
- 3.2. 70% isopropyl alcohol (may also be labeled isopropanol)
- 3.3. Deionized water (DI)

4. Procedure

- 4.1. Turn the cabinet on press and hold the ON key until the blowers start, status indicators illuminate and an audible tone sounds.
- 4.2. Move the window to the work position (10-inch opening).
- 4.3. Wait until the blue LED "air flow is steady" illuminates.
- 4.4. Disinfect the chamber with 70% Isopropyl alcohol for 5 minutes. **(Never use caustic agents such as chlorine)**
- 4.5. To load the chamber, move the front window to the maximum opening position. Install needed work materials within the sample chamber work area (Avoid blocking the front air intake grille). Return the front window to the work position and wait for the airflow to stabilize.
- 4.6. Load the work tray with samples. (For work breaks or for extended phases without manual intervention, switch the device to standby mode by closing the window.)
- 4.7. During operation:
 - 4.7.1. Place samples only within the defined work area.
 - 4.7.2. Do not place unnecessary items into the work chamber.
 - 4.7.3. Use only disinfected and cleaned accessories for the work process.

SOP-I-121

Operation and Calibration of the Biological Safety Cabinet

- 4.7.4. Do not cause air turbulence by quick hand, arm or body movements in the sample chamber or in front of the work opening.
- 4.7.5. Do not place accessories into the sample chamber that cause air turbulence or emit excessive heat.
- 4.7.6. Do not block air circulation at the ventilation slots of the work tray.
- 4.8. After completing a procedure:
 - 4.8.1. Remove samples from the sample chamber and store them properly.
 - 4.8.2. Clean and disinfect the sample chamber surfaces, including the work tray and the drain pan with 70% isopropyl alcohol for 5 minutes. Rinse all surfaces twice with deionized water.
 - 4.8.3. Clean and disinfect all accessories with 70% isopropyl alcohol for 5 minutes.
 - 4.8.4. Rinse surfaces two times with DI water.
- 4.9. At the end of a work day the UV light should be turned on for 1 hour by closing the front window and pressing the UV key. To interrupt or cancel the UV disinfection procedure, press the UV key and slide the window up.
- 4.10. To clean the drain pan, use a solution of tepid water and mild soap. Remove the work tray from the chamber. Clean thoroughly to remove any residues. Wipe the drain pan using a clean cloth and plenty of water. Discard any water in the drain pan. Rinse and dry thoroughly.
- 4.11. To clean the paper catch grid, remove a grid section by pushing the retaining tab down until the section can be moved out from under the inner back wall. Reinstall by placing the grid section on the lip of the back wall and pushing the retaining tab down and towards the back until the locking tabs are secured behind the inner back wall. Do not operate the unit without the paper catch grids installed.
- 4.12. To turn off the device, close the window and hold the ON key until the unit powers off.
- 4.13. The top of the cabinet should be dusted monthly.
- 4.14. The cabinet is calibrated annually in accordance with NSF/ANSI 49 by a vendor and whenever HEPA filters are changed, repairs are made to internal parts or the cabinet is relocated.

SOP-I-121

Operation and Calibration of the Biological Safety Cabinet

- 4.15. To replace chamber light bulbs:
 - 4.15.1. Switch the unit off and disconnect it from the power source.
 - 4.15.2. Move the window to the cleaning position (below closed position) to ensure a sufficient gap between window's upper edge and the light dome.
 - 4.15.3. Remove the bulb by rotating the bulb counterclockwise to disengage the latch and remove it from the sockets.
 - 4.15.4. To install, slide the bulb contact pins into the rotating socket grooves and rotate the bulb clockwise to latch the sockets.
- 4.16. To replace UV light bulbs (should be replaced after 1500 operating hours):
 - 4.16.1. Turn off the unit and disconnect it from the power source.
 - 4.16.2. Move the window to the maximum open position.
 - 4.16.3. Wear protective gloves to prevent skin oils from burning into the bulb. The UV bulb is installed in rotating sockets. To remove, rotate the bulb counterclockwise to disengage the latch and remove it from the sockets.
 - 4.16.4. To install, slide the bulb contact pins into the rotating socket grooves and rotate the bulb clockwise to latch the sockets.

5. Quality Control and Safety Aspects

- 5.1. All aspects of this procedure comply with SOP-Q-101, "Laboratory Quality Control" and SOP-S-101, "Laboratory Safety".
- 5.2. Appropriate Personal Protective Equipment (PPE) must be worn when using the cabinet. For example, gloves and a lab coat.
- 5.3. Isopropyl alcohol is flammable. Analysts will take care to avoid igniting the alcohol while disinfecting the cabinet.

6. References

- 6.1. Thermo Scientific 1300 Series A2 Operating Manual 7021355 Rev. 22.
- 6.2. Standard Methods for the Examination of Water and Wastewater, latest online, approved edition, Ed. by Arnold Greenberg, et al., APHA.

SOP-I-121

Operation and Calibration of the Biological Safety Cabinet

- 6.3. The NELAC Institute (TNI) Standard, 2016, National Environmental Laboratory Accreditation Conference
- 6.4. NSF International Standard / American National Standard for Biosafety Cabinetry, 2020, NSF/ANSI 49 – 2019
- 6.5. <https://www.cdc.gov/infectioncontrol/guidelines/disinfection/disinfection-methods/chemical.html>

7. **Attachments**

- 7.1. None

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