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National Personal Protective Technology Laboratory  
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DETERMINATION OF LOW FLOW WARNING DEVICE VISIBILITY,  
FOR POWERED AIR-PURIFYING RESPIRATORS (PAPR) SERIES PAPR100  
STANDARD TESTING PROCEDURE (STP)

1. PURPOSE

This test establishes the procedure for ensuring that the level of protection provided by the low flow warning device visibility requirement for powered air-purifying respirators (PAPR), series PAPR100, meet the minimum requirements set forth in 42 CFR Part 84, Subpart K, 84.171(j)(1).

2. GENERAL

This STP describes the Determination of Low Flow Warning Device Visibility, For Powered Air-Purifying Respirators, Series PAPR100, test procedure in sufficient detail that a person knowledgeable in the appropriate technical field can select equipment with the necessary resolution, conduct the test, and determine whether or not the product passes the test.

3. EQUIPMENT/MATERIAL

None

4. TESTING REQUIREMENTS AND CONDITIONS

4.1. Prior to beginning any testing, confirm that all measuring equipment employed has been calibrated in accordance with the testing laboratory's calibration procedure and schedule. All measuring equipment utilized for this testing must have been calibrated using a method traceable to recognized international standards when available.

4.2. Determination of Low Flow Warning Device Visibility will be completed for any PAPR100 respirator with a visual low flow warning device.

4.3. Testing shall be conducted on as-received respirators at  $25 \pm 2.5$  degrees Celsius ( $^{\circ}\text{C}$ ) and adhere to User's Instructions.

4.4. One complete respirator system will be evaluated for low flow warning device visibility.

5. PROCEDURE

5.1. Prior to any testing, the respirator shall be evaluated per the user check instructions in the User's Manual to ensure that the low flow warning(s) activate as designed.

5.2. The visibility test will be conducted with a fully assembled PAPR system. The warning device shall be appropriately positioned and colored such that any warning is obvious and

easily understandable to the wearer.

- 5.3. The laboratory technician performing the testing will select three volunteer subjects to don the respirator.
  - 5.3.1. User's Instructions regarding the low flow warning device shall be reviewed by the wearer of the PAPR100.
  - 5.3.2. The respirator shall be cleaned prior to donning for each wearer, per the User's Instructions.
- 5.4. Restrict flow to the respirator to activate the low flow warning device. Take care to not jar, shift, or otherwise obstruct the wearer's view of the respirator.
- 5.5. All wearers of the respirator shall give a verbal description regarding their ability to see the visual indication of low flow, whether or not the warning device is visible, and any qualitative additions they may offer. Qualitative additions shall not be solicited from the subject, but shall be noted if they are offered. Qualitative observations may, and should be provided as part of the test report, so long as subject anonymity is maintained in so doing.

## 6. PASS/FAIL CRITERIA

- 6.1. The requirement for passing this test is set forth in 42 CFR Part 84, Subpart K, Section 81.171(j)(1).
  - 6.1.1. A pass is defined as all three wearers of the respirator confirming visibility of the low flow warning device.
  - 6.1.2. A fail is defined as one or more wearers of the respirator denying visibility of the low flow warning device.

## 7. RECORDS/TEST SHEETS

- 7.1. Record the test data in a format that shall be stored and retrievable.

### Revision History

<b>Revision</b>	<b>Date</b>	<b>Reason for Revision</b>
0.0	23 March 2020	Original Release