
Annual Respirator Fit Testing Protocol

1.0 Objective & Intent

The objective of this Standard Operating Procedure (SOP) is to establish a mandatory, repeatable, and documented protocol for annual respirator fit testing of all personnel who are required to wear tight-fitting respirators (including half-face, full-face, and N95 filtering facepieces) within the cabinet and millwork manufacturing facility. This procedure ensures compliance with WorkSafeBC Occupational Health and Safety Regulation (OHSR) Part 8.33 to 8.38, which mandates that respirators must provide an adequate seal to the wearer's face to prevent inhalation of airborne contaminants such as wood dust, formaldehyde, isocyanates from finishes, and volatile organic compounds (VOCs) from adhesives and coatings. The specific risk mitigated by this SOP is the failure of a respirator to protect the wearer due to an improper fit, which can lead to chronic respiratory diseases, occupational asthma, sensitization, and acute chemical exposure. Annual fit testing verifies that the respirator model, size, and style continue to provide a satisfactory fit for each individual user, accounting for changes in facial features, weight, dental work, or scarring that may have occurred since the last test.

2.0 Operational Scope

This procedure applies to all employees, contractors, temporary workers, and visitors who are required by the facility's Respiratory Protection Program to wear any tight-fitting respirator (including N95 filtering facepieces, half-face elastomeric respirators, full-face respirators, and powered air-purifying respirators (PAPRs) with tight-fitting facepieces) in any area of the cabinet and millwork manufacturing plant, including but not limited to: the main production floor, sanding department, finishing booth, spray booth, glue-up area, CNC machining center, panel saw area, edgebanding station, and maintenance workshops. It also applies to personnel who may be required to wear respirators during emergency response or non-routine tasks such as cleaning dust collection systems or handling chemical spills. Fit testing must be conducted annually (within 12 months of the previous test) and whenever a different respirator model, size, or style is introduced, or when the user reports a change in facial features that could affect the seal. Personnel who are medically cleared to wear a respirator but have not yet been fit tested are not permitted to wear a tight-fitting respirator in any hazardous atmosphere. This SOP does not apply to loose-fitting PAPRs or hoods, which do not require fit testing.

3.0 Hazard Identification & Mandatory PPE

- Respiratory Hazards: Inhalation of airborne wood dust (hardwood and softwood), crystalline silica from MDF and particleboard, formaldehyde from resins and glues, isocyanates from polyurethane finishes, VOCs from solvents and paints, and nuisance dusts from sanding operations.
- Chemical Exposure: Skin and eye contact with fit test solutions (e.g., Bitrex or saccharin) which may cause irritation; ensure no open cuts or abrasions on hands.
- Physical Hazards: Slips, trips, and falls from test area clutter; ensure the fit testing area is clean, dry, and free of obstructions.
- Ergonomic Hazards: Prolonged standing or awkward postures during test exercises; take breaks as needed.
- Mandatory PPE for Fit Tester: Safety glasses or goggles, nitrile gloves (when handling test solutions), and a lab coat or coverall to prevent contamination of personal clothing.
- Mandatory PPE for Test Subject: The respirator being tested (must be clean and in good condition), safety glasses if not wearing a full-face respirator, and hearing protection if the test area is noisy.
- Additional PPE: If the test subject has facial hair that interferes with the respirator seal, they must be clean-shaven in the seal area; no beards, stubble, or long sideburns are permitted.

4.0 Required Safety Equipment & Tools

- Qualitative Fit Test Kit (e.g., 3M FT-10 or equivalent) containing: test hood, nebulizer, sensitivity solution, fit test solution (Bitrex or saccharin), and instruction manual.
- Quantitative Fit Test Equipment (if used): PortaCount or similar device with sampling probes and software.
- Respirator Selection: A clean, undamaged respirator of the model and size to be tested, with appropriate cartridges (e.g., P100 for particulate, organic vapor/acid gas for chemical protection).
- User Seal Check Equipment: Mirror for visual inspection of respirator placement, and a source of clean air (e.g., compressed air with regulator set to 50 psi) for positive/negative pressure checks.
- Cleaning Supplies: Disinfectant wipes or spray, paper towels, and a sealable plastic bag for storing the respirator after testing.
- Documentation Forms: Fit test record forms (paper or digital), pen, and a clipboard.
- First Aid Kit: Located within the fit testing area for immediate response to any adverse reactions (e.g., allergic reaction to test solution).
- Ventilation: Ensure the fit testing area is well-ventilated to prevent accumulation of test solution aerosols.

5.0 Step-by-Step Safety Procedure

1. Pre-Test Preparation: Confirm that the test subject has a valid medical clearance to wear a respirator (per WorkSafeBC OHSR 8.35). Verify that the subject is clean-shaven in the respirator seal area (no facial hair, stubble, or long sideburns). Ensure the subject is not wearing any jewelry, glasses, or headgear that could interfere with the respirator seal. Review the fit test procedure with the subject and explain the exercises they will perform.
2. Respirator Inspection and Donning: Inspect the respirator for cracks, tears, missing valves, or deformed sealing surfaces. Replace any defective components. Have the subject don the respirator according to the manufacturer's instructions, adjusting the straps to achieve a snug but comfortable fit. Perform a user seal check (positive pressure: exhale gently and check for leaks; negative pressure: cover the inlet and inhale, the respirator should collapse slightly). If the seal check fails, readjust the respirator or try a different size/model.
3. Sensitivity Test (Qualitative Method): Prepare the sensitivity solution according to the kit instructions. Have the subject put on the test hood. Using the nebulizer, introduce the sensitivity solution into the hood. Ask the subject to indicate when they can taste or detect the solution. If the subject cannot detect the sensitivity solution, do not proceed with the fit test; the subject may be anosmic (unable to taste/smell) and must be tested using a quantitative method instead.
4. Fit Test Execution: With the subject wearing the respirator and test hood, introduce the fit test solution (Bitrex or saccharin) into the hood using the nebulizer. Instruct the subject to perform the following exercises in order: (a) Normal breathing for 1 minute, (b) Deep breathing for 1 minute, (c) Turning head side to side for 1 minute, (d) Nodding head up and down for 1 minute, (e) Talking aloud (read a prepared passage) for 1 minute, (f) Grimacing for 15 seconds, (g) Bending over (touch toes) for 1 minute, (h) Normal breathing for 1 minute. During each exercise, the subject must not remove the hood or touch the respirator.
5. Leak Detection: Throughout the fit test, the subject must report any taste or odor of the test solution. If the subject detects the test solution at any point, the fit test is failed. Immediately stop the test, remove the hood, and have the subject remove the respirator. Document the failure. The subject may try a different respirator model or size, or be referred for quantitative fit testing.
6. Post-Test Procedures: If the subject does not detect the test solution during any exercise, the fit test is passed. Remove the hood and have the subject remove the respirator. Clean the respirator with disinfectant wipes and store it in a clean, sealable bag. Clean the test hood and nebulizer according to the manufacturer's instructions. Dispose of any used test solution containers properly.
7. Documentation: Complete the fit test record form, including: subject name, date, respirator manufacturer, model, size, test method (qualitative or quantitative), test solution used, test results (pass/fail), and the name of the fit test administrator. Ensure the subject signs the form. Retain the record for at least 5 years as per WorkSafeBC requirements. Update the facility's Respiratory Protection Program log.
8. Post-Test Debrief: Inform the subject of their fit test results. If passed, remind them that they must perform a user seal

check every time they don the respirator. If failed, discuss alternative respirator options (e.g., different brand, size, or a PAPR with a loose-fitting hood) and schedule a re-test within 30 days. Provide the subject with a copy of their fit test record.

9. **Equipment Maintenance:** After each fit test session, inspect all fit test equipment for damage. Replenish test solutions as needed. Calibrate quantitative fit test equipment per manufacturer specifications. Store all equipment in a clean, dry, locked cabinet. Report any equipment malfunctions to the Safety Manager immediately.

10. **Annual Review and Re-Testing:** Ensure that all respirator users are re-tested within 12 months of their last fit test. Maintain a master schedule of fit test expiration dates. Notify employees at least 30 days before their fit test expires. If a new respirator model is introduced, all users of that model must be fit tested before use. Update the Respiratory Protection Program annually to reflect any changes in equipment or procedures.

Regulatory Disclaimer: This document is a generic safety template provided for educational and informational purposes only. It does not constitute professional engineering, legal, or regulatory compliance advice. The end-user assumes all liability for validating all safety protocols against specific machinery manufacturer manuals and local occupational health and safety regulations (e.g., WorkSafeBC, CSA standards) before deployment.