Smoke and Carbon Monoxide Detector Test – Safety SOP

1.0 Objective & Intent

The objective of this SOP is to establish a standardized, safe procedure for testing smoke and carbon monoxide (CO) detectors in a cabinet and millwork manufacturing environment. This procedure ensures early detection of fire and CO hazards, protecting personnel from smoke inhalation, burns, and carbon monoxide poisoning. Compliance with WorkSafeBC regulations (OHS Regulation Part 3 – Rights and Responsibilities, and Part 21 – Fire Prevention) and the BC Fire Code is mandatory. The specific risk mitigated is the failure of detection systems during an actual emergency, which could lead to delayed evacuation, injury, or fatality.

2.0 Operational Scope

This procedure applies to all maintenance personnel, safety officers, and designated employees responsible for testing smoke and CO detectors within the facility. It covers all hardwired and battery-operated smoke detectors, CO detectors, and combination units located in production areas, warehouses, offices, break rooms, and storage zones. This SOP does not cover fire alarm control panel testing or sprinkler system inspection, which are addressed in separate procedures.

3.0 Hazard Identification & Mandatory PPE

- Electrical Shock: Risk of contact with live wiring during testing of hardwired detectors. Ensure power is isolated before handling wiring.
- Fall Hazard: Use of ladders or step stools to reach ceiling-mounted detectors. Ensure stable footing and three-point contact.
- Exposure to Test Aerosols: Inhalation of smoke detector test spray or CO test gas. Use in well-ventilated areas.
- Pinch Points: Fingers or hands caught in detector mounting brackets or covers.
- Fire Hazard: Improper handling of test aerosols near ignition sources.
- CSA-Approved Steel Toed Boots
- Safety Glasses with side shields
- Cut-Resistant Gloves (ANSI A2 or higher)
- Hard Hat (if working near overhead obstructions)
- High-Visibility Vest (if testing in active production areas)

4.0 Required Safety Equipment & Tools

- Lockout/Tagout (LOTO) Kit with personal lock and hasp (for hardwired detectors)
- Non-Contact Voltage Tester
- Approved Smoke Detector Test Aerosol (e.g., Solo A10 or equivalent)
- Approved CO Detector Test Gas (e.g., 50 ppm CO in air cylinder)
- Step Ladder or Platform Ladder (rated for 300 lbs minimum)
- Multi-Tool or Screwdriver Set (for opening detector covers)
- Spare Batteries (9V or AA as required)
- Disposable Gloves (for handling test aerosols)

- Fire Extinguisher (ABC-rated, nearby)

5.0 Step-by-Step Safety Procedure

1. Notify all personnel in the testing area via public address or direct communication that detector testing will occur. Ensure no one is working in confined spaces or near sensitive equipment that could be affected by alarm activation.
2. Inspect the detector visually for physical damage, dust accumulation, or obstructions. If damage is found, tag the detector out of service and report to the safety officer immediately.
3. For hardwired detectors, isolate the circuit at the breaker panel and apply a personal lockout/tagout device. Verify zero voltage using a non-contact voltage tester before proceeding.
4. Position a step ladder on stable, level ground. Maintain three-point contact while ascending. Do not overreach; reposition the ladder as needed.
5. Remove the detector cover or access panel using the appropriate tool. For battery-operated units, remove the battery and test it with a multimeter (should read at least 9V or 1.5V per cell). Replace if below threshold.
6. Reinstall the battery (or reconnect power) and press the test button on the detector. Verify that the alarm sounds within 3 seconds. If the alarm fails, replace the detector and retest.
7. Using the approved smoke detector test aerosol, spray a short burst (1-2 seconds) into the detector sensing chamber from a distance of 12-18 inches. Confirm the alarm activates within 10 seconds. If not, clean the detector per manufacturer instructions and retest.
8. For CO detectors, apply the CO test gas according to the manufacturer's instructions (typically a 1-2 second burst). Confirm the alarm activates within 30 seconds and displays a CO reading. If the detector fails, replace it.
9. After successful testing, reset the detector by pressing the silence/reset button or cycling power. Reinstall the cover securely. Remove LOTO and restore power to the circuit.
10. Document the test results in the facility's fire safety logbook, including detector location, test date, tester name, and any corrective actions taken. Report any failures to the safety officer for follow-up.