Silica Dust Awareness for Corian Solid Surface Fabrication

1.0 Objective & Intent

The objective of this SOP is to establish mandatory safety protocols for controlling exposure to respirable crystalline silica (RCS) dust generated during the cutting, grinding, sanding, and polishing of Corian solid surface materials. This procedure is designed to mitigate the risk of silicosis, lung cancer, and other occupational lung diseases, ensuring full compliance with WorkSafeBC's Occupational Health and Safety Regulation (OHSR) Part 6 – Substance Specific Requirements and the BC Silica Control Program. The specific risk mitigated is the inhalation of fine silica particles that are released when Corian (which contains up to 70% crystalline silica) is mechanically worked without proper controls.

2.0 Operational Scope

This procedure applies to all maintenance personnel, fabricators, and operators involved in the cutting, routing, sanding, grinding, or polishing of Corian solid surface sheets, countertops, and components within the cabinet and millwork manufacturing facility. It covers all stationary and portable power tools used in the fabrication process, including CNC routers, handheld grinders, belt sanders, and jigsaws. This SOP is mandatory for all employees in the fabrication shop, including temporary workers and contractors.

3.0 Hazard Identification & Mandatory PPE

- Respirable Crystalline Silica (RCS): Fine dust particles (less than 10 microns) that penetrate deep into lung tissue, causing silicosis and lung cancer. Generated during dry cutting, grinding, or sanding of Corian.
- Eye Irritation: Silica dust can cause mechanical irritation to the eyes, leading to redness, tearing, and potential corneal abrasion.
- Skin Irritation: Prolonged contact with silica dust can cause drying, cracking, and dermatitis on exposed skin.
- Fire/Explosion Hazard: Accumulated fine silica dust in enclosed spaces can act as a fuel source for dust explosions if an ignition source is present.
- CSA-Approved Half-Face or Full-Face Respirator with P100 (HEPA) filters (mandatory for all dry operations and when wet methods are insufficient to control dust).
- Safety Glasses or Goggles (must be worn under respirator if using half-face; full-face respirator provides eye protection).
- CSA-Approved Steel Toed Boots (with slip-resistant soles).
- Cut-Resistant Gloves (ANSI A4 or higher) for handling sharp Corian edges.
- Hearing Protection (earplugs or earmuffs with NRR of at least 25 dB) due to high noise levels from fabrication tools.
- Disposable or Washable Coveralls (to prevent dust from contaminating personal clothing and being carried home).

4.0 Required Safety Equipment & Tools

- HEPA-Equipped Vacuum System (Class H or higher) with a minimum airflow of 200 CFM, connected directly to the tool via a dust collection shroud.
- Wet Cutting System (water spray or misting attachment) for all saws, grinders, and routers to suppress dust at the source.
- Portable Dust Extractor (with HEPA filter) for cleanup of settled dust in the work area.
- Respirator Fit Test Kit (for initial and annual fit testing of all respirator users).

- Personal Air Sampling Pump (with cyclone and filter cassette) for periodic exposure monitoring.
- Lockout/Tagout (LOTO) Kit (for isolating power to dust collection systems during maintenance).
- Spill Kit (for containing and cleaning up large accumulations of silica dust).
- Warning Signs (post at all entrances to the fabrication area: 'DANGER: SILICA DUST – RESPIRATORY PROTECTION REQUIRED').

5.0 Step-by-Step Safety Procedure

1. Pre-Operation Inspection: Verify that the HEPA vacuum system and wet cutting system are operational. Check that all hoses, connections, and water lines are intact and free of blockages. Confirm that the dust collection shroud is properly attached to the tool.
2. Respirator Fit Check: Perform a positive and negative pressure seal check on your respirator. Ensure the P100 filters are clean and properly seated. If you have facial hair that interferes with the seal, you must use a powered air-purifying respirator (PAPR) instead.
3. Wet Method Activation: Before starting any cutting, grinding, or sanding operation, activate the water spray system. Ensure a continuous flow of water is directed at the cutting interface to suppress dust generation. Never perform dry cutting of Corian unless specifically authorized and only with full HEPA vacuum and respiratory protection.
4. Tool Start-Up and Dust Collection: Start the HEPA vacuum system first, then the tool. Verify that the vacuum gauge indicates adequate airflow (minimum 200 CFM). If the vacuum system fails or airflow drops below the threshold, stop work immediately and tag the tool out of service.
5. Controlled Cutting Operation: Perform the cut or grind using a steady, controlled motion. Do not force the tool. Keep the dust shroud in contact with the material surface to maximize capture efficiency. If visible dust escapes the shroud, stop and adjust the shroud or water flow before continuing.
6. Post-Operation Cleanup: After completing the cut, turn off the tool first, then allow the HEPA vacuum to run for an additional 30 seconds to clear residual dust from the hose. Use the portable HEPA vacuum to clean any visible dust from the work surface, floor, and surrounding equipment. Do not use compressed air to blow dust off surfaces.
7. Waste Disposal: Collect all silica-containing dust and debris in a sealed, labeled container (e.g., heavy-duty plastic bag or drum). Dispose of waste in accordance with local hazardous waste regulations. Do not sweep dry dust – use a HEPA vacuum or wet mopping method only.
8. Personal Decontamination: Remove coveralls and gloves carefully to avoid shaking dust into the air. Wash hands and face thoroughly with soap and water before eating, drinking, or leaving the work area. Do not use compressed air to clean clothing.
9. Documentation and Monitoring: Record the date, time, tool used, and any dust control issues in the daily safety log. If you experience any respiratory symptoms (coughing, wheezing, shortness of breath), report immediately to your supervisor and seek medical evaluation. Ensure that personal air sampling is conducted at least quarterly to verify exposure levels are below the WorkSafeBC exposure limit (0.025 mg/m³ as an 8-hour TWA).