ULTRA STONES
LUXURY SURFACES

ULTRA STONES LLC — INSTALLER HEALTH & SAFETY GUIDE

Prevention of Exposure to Respirable Crystalline Silica

Ultra Stones LLC | info@ultrastones.com | NY: 631-873-4747 | PA: 215-647-3972

Preventing Exposure to Respirable Crystalline Silica

During the Installation of Stone Countertops & Surfaces

Who is this guide for? This guide is intended for professionals — including installers, stonemasons, and tradespeople — who fit kitchen, bathroom, or similar stone countertops on-site. It covers prefabricated modules delivered and installed at a customer's home, as well as countertops fabricated in a workshop and then installed on-site, whether the material is natural stone, engineered stone, or ceramic. Its purpose is to set out preventive measures to eliminate or reduce, as far as reasonably practicable, the risk of exposure to respirable crystalline silica (RCS).

Crystalline silica is a naturally occurring mineral found in soil, sand, granite, quartz, and a wide range of other minerals and stone products. When stone is cut, drilled, ground, or polished, fine particles — known as respirable crystalline silica (RCS) — are released into the air. These particles are small enough to be inhaled deep into the lungs and, with repeated uncontrolled exposure, can cause serious and irreversible lung diseases including silicosis and lung cancer.

Once a stone surface is fully installed, it is completely safe for its intended everyday use. The risk arises specifically during mechanical processing — cutting, trimming, grinding, or polishing — and must be managed at every stage of the installation process. Dry, uncontrolled cutting or grinding must be avoided at all times, as it can expose workers and bystanders to very high concentrations of RCS.

Before beginning any installation work, always review the Safety Data Sheet (SDS) for the specific product being installed. An installation is not considered adequately controlled unless the worker's daily silica exposure remains within the applicable permissible exposure limit (PEL) set by the relevant regulatory authority — in the United States, this is governed by OSHA 29 CFR 1910.1053.

■ **Key Principle:** Uncontrolled dry cutting, trimming, grinding, or polishing of stone must be avoided. It exposes workers and anyone nearby to dangerously high amounts of RCS. Always use wet methods or on-tool dust extraction, and always wear appropriate respiratory protective equipment (RPE) — even when water suppression is in use.

1: PLANNING THE INSTALLATION

The single most effective way to reduce silica dust exposure on-site is to reduce the amount of cutting and grinding that takes place during the installation itself. Good planning before arriving on-site can dramatically reduce the need for on-site modifications.

Recommended planning steps:

- Take accurate measurements before fabrication to minimise the need for on-site adjustments.
- Cut all holes and voids — for sinks, taps, hobs, and electrical outlets — at the workshop before the installation visit, wherever possible. Obtain exact locations and dimensions from the client in advance.

- Complete all edge profiling, finishing, and alterations at the workshop rather than on-site.
- Communicate clearly with the client and any principal contractor well ahead of the installation date to avoid last-minute design changes that require on-site cutting.
- When installing prefabricated modules, wet cutting methods must be used. Where wet cutting is not feasible, use tools fitted with dust suppression systems capable of capturing at least 99.9% of generated dust — both indoors and outdoors.
- In enclosed spaces, ensure the water flow of any cutting tool used is sufficient to suppress all visible dust throughout the operation.

2: MINIMISING DUST DURING UNAVOIDABLE ON-SITE MODIFICATIONS

Despite best planning efforts, some on-site cutting or adjustment may be unavoidable. In these situations, workers must be equipped with the correct tools and controls to carry out the work safely. The following requirements apply whenever mechanical processing takes place on-site:

- Use only power tools fitted **with integrated water suppression** or on-**tool dust extraction.** Tools without one of these systems must not be used for stone processing.
- Ensure workers wear appropriate **respiratory protective equipment (RPE)** at all times during cutting, trimming, grinding, or polishing — even when wet methods are in use.
- Implement additional exposure management measures including safe work method statements, restricted access to the cutting area, and use of full personal protective equipment (PPE).
- Operate and maintain all tools strictly in accordance with the manufacturer's instructions to ensure dust suppression systems function effectively.

3: WATER DUST SUPPRESSION

When wet cutting is the chosen control method, it must be implemented correctly to be effective. Using water incorrectly — such as applying it with a sponge or garden hose pressed against a spinning blade — does not adequately suppress dust and is also dangerous when used with electric tools not designed for water use.

Requirements for effective water suppression:

- Use stone saws, grinders, and polishers that are specifically designed for wet use and rated for water operation by their manufacturer.
- The water supply must be directly attached to the tool and directed precisely at the blade, disc, or contact point to prevent any visible dust from escaping during the operation.
- Maintain a minimum water flow rate of 0.5 litres per minute throughout the operation.
- Fit tools with appropriate guards, plastic flaps, or brush guards to control water splashing and contain wet debris.
- Protect nearby furniture, appliances, and surfaces by covering them with plastic sheeting before cutting begins.

Important: A spray bottle, sponge, or garden hose held near a cutting disc does not constitute effective water suppression and must not be used as a substitute for properly designed wet-cutting equipment. Never use electric power tools near water unless they are specifically rated and designed for wet operation.

4: LOCAL EXHAUST VENTILATION (ON-TOOL EXTRACTION)

Where wet cutting is not suitable, or as an additional layer of control, on-tool dust extraction should be used. Saws, grinders, and polishers can be fitted with a shroud or cover and connected to an industrial vacuum or dust extractor.

Vacuum and extractor requirements:

For work involving respirable crystalline silica, OSHA requires that dust collection systems be capable of effectively capturing fine respirable particles. Industrial vacuums used for RCS clean-up must be fitted with HEPA filters to prevent re-aerosolization of captured dust. HEPA filters — as rated under U.S. standards — must capture at least 99.97% of particles at 0.3 microns. Vacuums without HEPA filtration must not be used for silica dust clean-up, as standard filters allow fine RCS particles to pass through and re-enter the air.

Vacuum Type	Filter Capability	Suitability for RCS Work
Standard shop vacuum (no HEPA filter)	Does not capture fine respirable particles	NOT suitable — particles pass through filter back into air
HEPA vacuum (HEPA-rated filter)	Captures ≥99.97% of particles ≥0.3 microns	Required for all silica dust collection and clean-up per OSHA guidance

Always verify vacuum and filtration requirements with applicable OSHA federal and state regulations. For OSHA's silica standard requirements on dust controls, refer to 29 CFR 1910.1053 Table 1 and the associated engineering control provisions.

Practical tip: Place a sacrificial backer-board or spoil-board underneath the stone slab during cutting. This prevents dust from escaping downward through the gap between the slab and the work surface, significantly improving the effectiveness of on-tool extraction.

5: RESPIRATORY PROTECTIVE EQUIPMENT (RPE)

Respiratory protective equipment is always required when processing stone on-site — it is not optional and must be worn in addition to, not instead of, engineering controls such as water suppression or on-tool extraction. RPE must meet or exceed the standard mandated by applicable local regulations.

U.S. RPE requirements — OSHA & NIOSH:

Authority / Standard	Required Respirator / Filter Type
OSHA 29 CFR 1910.134 / 29 CFR 1910.1053	All respirators used for RCS protection must be NIOSH-approved and used within a written Respiratory Protection Program that includes fit testing, medical evaluation, and training. Minimum: N95, R95, or P95 NIOSH-approved half-face respirator. Higher-rated respirators (N99, R99, P99, N100, R100, P100) are required when airborne silica concentrations exceed levels controllable by N95.
NIOSH National Institute for Occupational Safety and Health	NIOSH-approved respirators are the required standard for all RCS work in U.S. workplaces. Filters are rated by series (N, R, P) and efficiency level (95, 99, 100). For silica dust: N-series: Not resistant to oil — suitable for dry stone dust. P-series: Oil-proof — suitable for wet or mixed environments. Refer to: https://www.cdc.gov/niosh/npg/npgd0684.html
OSHA Action Level 25 µg/m^3 TWA (29 CFR 1910.1053)	When airborne RCS concentrations meet or exceed the OSHA Action Level (25 µg/m^3 as an 8-hour TWA), employers must implement medical surveillance and enhanced exposure monitoring in addition to RPE.

Always verify RPE requirements with federal OSHA and applicable state plan requirements (e.g., Cal/OSHA in California). State OSHA plans may impose requirements that are more stringent than federal minimums.

Additional RPE requirements:

- RPE must be worn even when wet cutting methods are in use. Water suppression reduces but does not eliminate RCS exposure.

- Workers using tight-fitting respirators must undergo a formal fit test to confirm a proper seal between the face piece and the face.
- Facial hair — including stubble — can break the seal of a tight-fitting respirator and significantly reduce its effectiveness. Workers must be clean-shaven where tight-fitting RPE is required.
- A powered, air-purifying respirator (PAPR) with a tight-fitting face piece and high-efficiency particulate filter is strongly recommended for regular or high-exposure installation work.
- RPE must be properly maintained, stored, and inspected before every use. Damaged or contaminated RPE must be replaced immediately.

6: MANAGING AND MINIMISING DUST ON-SITE

Beyond engineering controls and RPE, a range of additional site management measures must be put in place whenever stone cutting or polishing is carried out on-site.

- Work outdoors or in well-ventilated areas wherever possible.
- Workers who may contact silica dust must wear work clothing made from dust-resistant fabric to avoid dust absorption into fibres.
- Restrict access to the immediate cutting area — prevent bystanders, clients, and other trades from entering the zone during processing.
- Never clean work clothing using compressed air — this re-aerosolises settled RCS dust and creates a secondary exposure hazard.
- Prepare and follow a written Safe Work Method Statement (SWMS) or Job Hazard Analysis (JHA) before beginning any on-site stone work.
- Workers must not smoke inside any work area where stone processing occurs.
- Provide workers with appropriate PPE including disposable coveralls or a protective apron, safety boots, and hearing protection where noise levels require it.
- At the end of the working day, workers should thoroughly clean up, shower if facilities are available, and change into clean clothes before leaving the site.
- Ensure an adequate supply of clean work clothing is available, including spares.
- Work clothing must never be laundered together with personal or family clothing. A specialist industrial laundry service is strongly recommended.

7: PROPER CLEAN-UP AFTER INSTALLATION

Thorough clean-up after the installation is complete is essential to prevent other people — including the client, their family, and future tradespeople — from being exposed to residual RCS settled on surfaces, tools, and equipment.

- Keep RPE on throughout the entire clean-up process — do not remove your respirator until the area is fully cleared.
- Use a Class H vacuum cleaner to thoroughly clean all surfaces, tools, equipment, and the work area. Pay particular attention to horizontal surfaces where fine dust tends to settle invisibly.
- Where vacuuming is not practical, use wet cleaning methods — hosing down, mopping, or wet-wiping surfaces — to capture settled dust without re-suspending it.
- Dry sweeping with brooms or using compressed air for clean-up is strictly prohibited. These methods lift settled RCS back into the breathing zone and create a serious secondary exposure risk for everyone in the area.
- Dispose of collected dust, slurry, and waste materials in accordance with applicable local, state, and federal waste disposal regulations.

✓ **Clean-up checklist:** RPE still on • Class H vacuum used on all surfaces • Tools and equipment vacuumed or wet-wiped • No dry sweeping or compressed air used • Waste bagged and labelled for compliant disposal • Work clothes removed and sent to specialist laundry

8: ADDITIONAL RESOURCES & REFERENCES

- Ultra Stones Safety Data Sheet (SDS) — available from Ultra Stones LLC or at www.ultrastonesusa.com
- OSHA Respirable Crystalline Silica Standard for General Industry — 29 CFR 1910.1053: https://www.osha.gov/silica-crystalline
- OSHA Respiratory Protection Standard — 29 CFR 1910.134: https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.134
- NIOSH Pocket Guide to Chemical Hazards — Silica, Crystalline: https://www.cdc.gov/niosh/npg/npgd0684.html
- California OSHA (Cal/OSHA) — Respirable Crystalline Silica, Title 8 Section 5204: https://www.dir.ca.gov/dosh/respiratory-silica-FAQ.html
- California Proposition 65 — Crystalline silica (airborne, respirable) is listed as a substance known to the State of California to cause cancer. For more information: www.P65Warnings.ca.gov

For guidance on controlling exposure and implementing preventive measures, seek advice from a qualified industrial hygienist or occupational health and safety professional familiar with stone fabrication and installation work.
