

Respirable Silica Exposure in Engineered Stone Fabrication: How Exposure Occurs

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Respirable crystalline silica exposure associated with engineered stone fabrication has become a central issue in silicosis litigation involving fabrication shops and construction environments. Determining how exposure occurred often requires reconstruction of fabrication practices, shop conditions, and dust-control measures used during slab processing.

Understanding where respirable silica dust is generated during fabrication is essential when evaluating workplace practices, exposure pathways, and potential responsibility among the parties involved in fabrication and installation.

Dust Generation During Engineered Stone Fabrication

Engineered stone products, particularly quartz surfaces, are cut, shaped, and polished prior to installation. Each stage of fabrication can generate respirable silica dust if proper controls are not implemented.

Common dust generation points include:

- **Cutting**, particularly dry cutting using handheld grinders or bridge saws
- **Edge profiling and sink cutouts**, where high-friction shaping operations generate dust
- **Polishing**, especially when performed dry or with worn polishing pads
- **Cleanup activities**, such as sweeping or using compressed air instead of wet vacuum systems or dust collection

Even fabrication shops that report using wet methods may experience inconsistent dust control. Water delivery systems may be uneven, ventilation may be inadequate, and respirator programs may not be consistently implemented.

Areas of Investigation in Silica Exposure Cases

When evaluating potential silica exposure, investigators often look beyond the immediate employer-employee relationship and examine conditions throughout the fabrication process.

Potential areas of investigation may include:

- Shop owners or supervisors responsible for implementing safety programs

- Product distributors or importers responsible for Safety Data Sheet (SDS) disclosures
- Jobsite conditions where cutting or fabrication occurred during installation
- Equipment manufacturers providing tools used to cut high-silica materials

Each case requires careful review of documentation, work practices, and site conditions to determine how exposure may have occurred.

Forensic Reconstruction of Exposure

In silica exposure investigations, experts often reconstruct what can be described as a chain of dust, identifying how respirable silica was generated and how workers may have been exposed.

Typical evidence reviewed may include:

- Photographs of fabrication shops, cutting stations, and equipment
- Safety Data Sheets (SDS) associated with the materials used
- Air monitoring or industrial hygiene data when available
- Work logs, slab invoices, or fabrication records linking workers to specific materials
- Respirator protection programs and training documentation
- Shop layout, ventilation conditions, and airflow patterns

Together, these sources can help establish a timeline of fabrication practices and potential exposure conditions.

Investigative Methodology

In forensic evaluations of silica exposure, the analysis typically involves review of fabrication practices, equipment used, dust-control measures, and workplace documentation. Investigators examine shop layout, ventilation conditions, cutting and polishing procedures, material safety documentation, and available industrial hygiene data. These elements are evaluated together with worker interviews and photographic documentation to determine how respirable silica dust may have been generated and whether exposure pathways can be reconstructed from the available evidence.

Exposure Duration and Engineered Stone

Engineered stone products typically contain high levels of crystalline silica. As a result, cases reported in recent years have shown that silicosis can develop after significantly shorter exposure periods than historically associated with traditional stone work.

Investigations have documented cases in which workers developed symptoms after only a few years of high-intensity exposure, particularly in fabrication environments where dust controls were limited or inconsistently applied.

These shorter latency periods can make reconstruction of workplace conditions especially important when evaluating potential exposure.

The Importance of Early Technical Evaluation

Silica exposure cases often involve multiple parties and complex fabrication histories. Early technical analysis can assist counsel in understanding how fabrication activities occurred, what controls were in place, and whether exposure conditions can be reconstructed through available documentation and evidence.

In many cases, the central question becomes whether the path of exposure can be clearly established through objective forensic investigation.

Gil Chotam and Greg Andrews provide forensic investigation and expert witness services through the National Tile and Stone Authority in matters involving tile, natural stone, glass tile, waterproofing systems, and engineered stone fabrication practices.