FACS
Forensic Analytical Consulting Services

Silica in Fabrication: Case Studies, Claims, and Courtroom Outcomes

Presented By:
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CIHC, November 2025

Agenda

- Brief History of Silica and Health Effects
- CCR § 5204. Occupational Exposures to Respirable Crystalline Silica
- Case Studies – Fabrication Industry
- Litigation Aspect

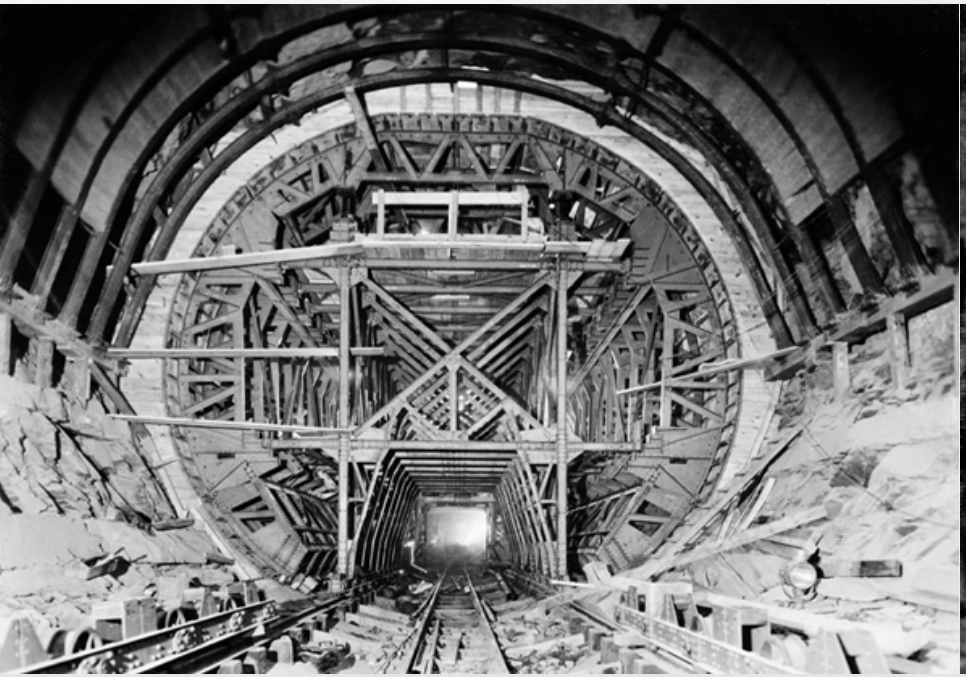
Statistics

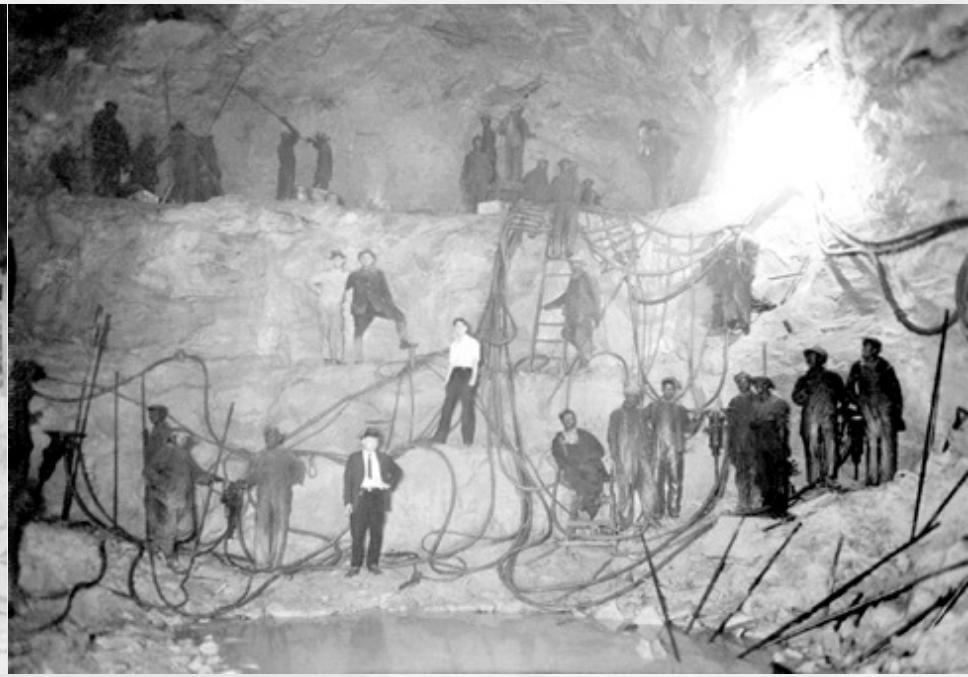
- As of Oct 2025, the California Department of Public Health (CDPH) reported 425 medically-diagnosed cases of silicosis related to engineered (“artificial”) stone in California, with 23 deaths.
- About 4,040 workers are employed in California’s stone fabrication shops. Based on a silicosis prevalence rate of 12% to 21% and a fatality rate of 19%, Cal/OSHA estimates that between 500 and 850 cases of silicosis will occur among these workers, and between 90 and 160 will likely die of silicosis.
- On the litigation front: there are over 80 active lawsuits in California related to silicosis and artificial stone.

History of Silica

- Evidence of occupational silicosis dates back to Egypt and Greece, where stonecutters and builders showed lung damage.
- In 1556 Agricola described a lung disease in miners and stonecutters caused by dust exposure.
- Dr. Benardino Ramazzini (1700s) the “father of occupational medicine,” documented “sand-like” substances in the lungs of stone workers.
- Early 1900s – Dr. Alice Hamilton identified silica-related illness among granite workers in Vermont, leading to early industrial hygiene reforms.
- 1910s–1930s:
  - U.S. Public Health Service and Bureau of Mines issued warnings about silica dust hazards.
  - Studies confirmed sandblasting and mining caused severe and often fatal lung disease.

Hawk's Nest – Deadly Dust



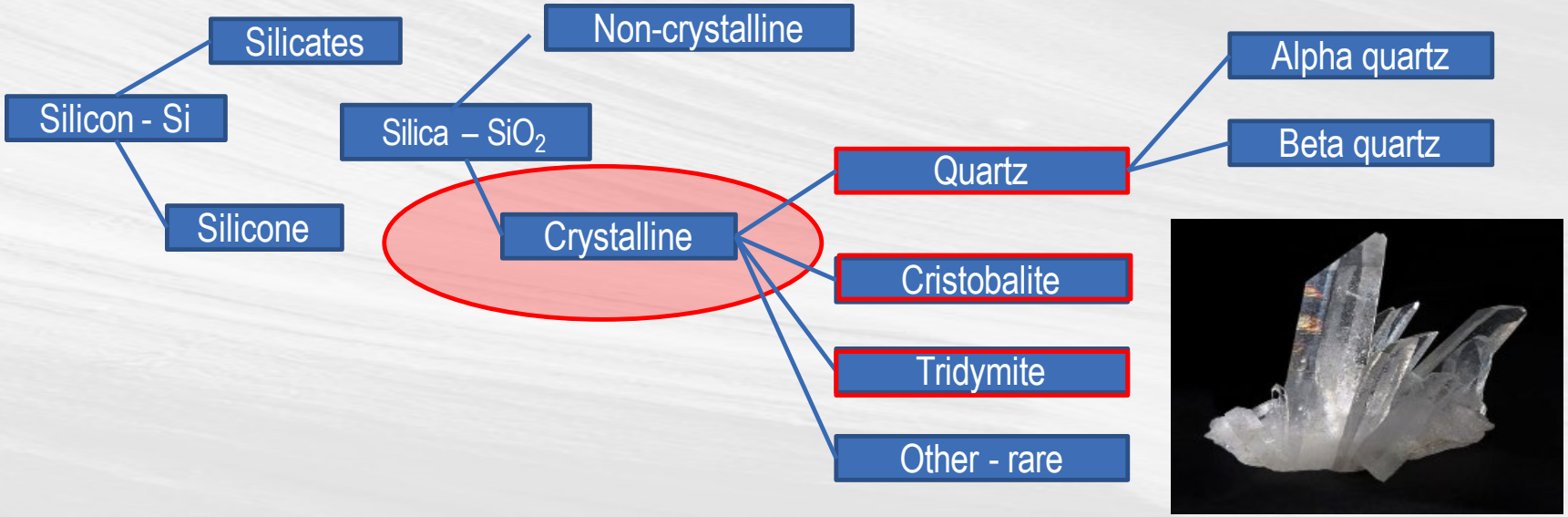


Graphic courtesy of OSHA

About 2.3 million people in the U.S. are exposed to silica at work.

Silica – What is it?

- Relationship between the forms of Silicon



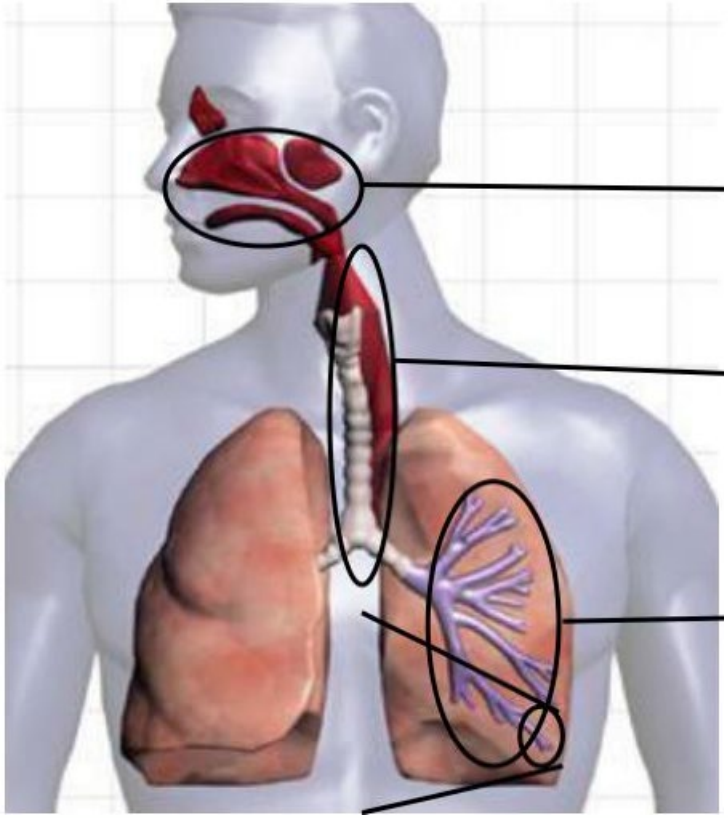
From: Special Publication - Crystalline Silica Primer, US Bureau of Mines, Washington DC, Branch of Industrial Minerals.

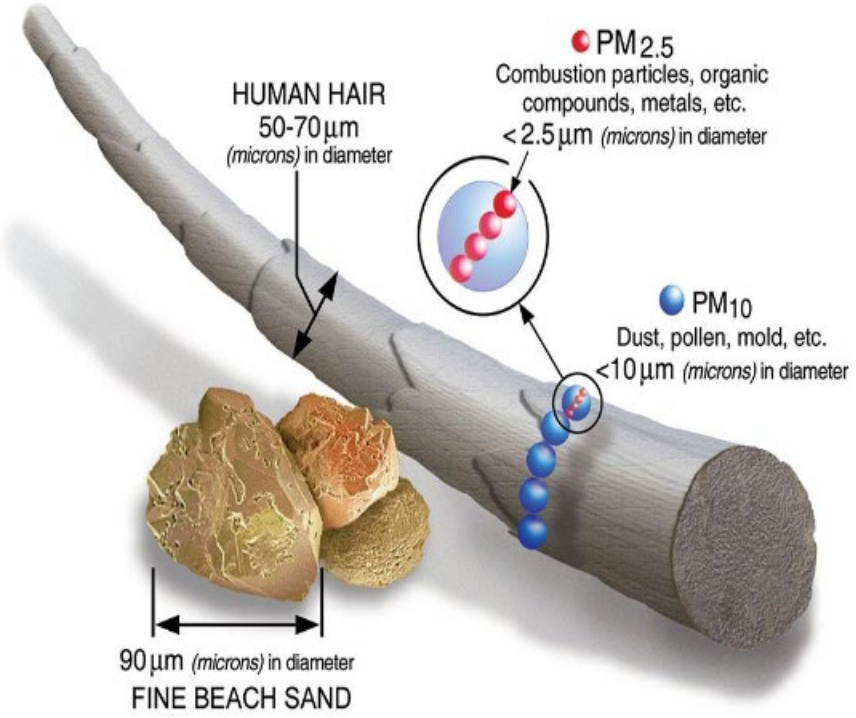
Crystalline Silica - Where is it?

- Sand
- Soil and rock
- Gravel
- Sandstone
- Slate
- Granite
- Clay

Silica – What Industries

- Fabrication
- Concrete mixing and cutting
- Sandblasting
- Brick and stone cutting
- Foundry work
- Construction
- Mining (including metal, stone, aggregate and coal mining)
- Fracking (hydraulic fracturing for natural gas extraction)
- Pottery manufacturing
- Many others



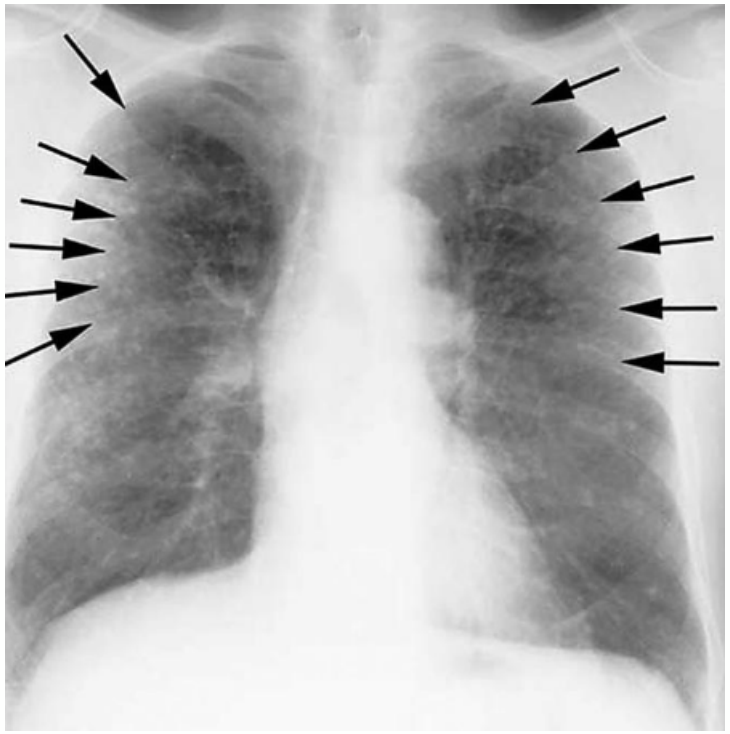


https://www.euroenvironmental.co.uk/news/item/dust

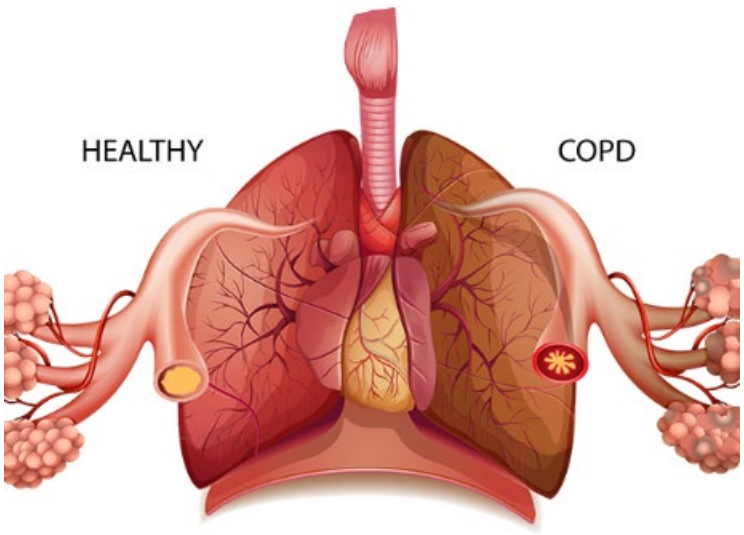
Health Effects

Silicosis:

- Can develop without symptoms
- Symptoms include: shortness of breath and cough
- “scar tissue”
- Recognized as nodules on x-rays
- Debilitating, even fatal
- Chronic (> 20 yrs), accelerated (5-10 yrs), acute (months to 2 yrs)



Health Effects



Other Diseases

- Chronic Obstructive Pulmonary Disease (COPD)/Emphysema
- Tuberculosis (TB) and other lung infections
- Lung cancer
- Kidney disease
- Autoimmune diseases (such as rheumatoid arthritis and scleroderma)

California Department of PublicHealth

Silica – Stone Fabrication

Process of transforming raw stone slabs into finished, custom pieces for construction and design. It involves cutting, shaping, and polishing.

Job Titles

- **Cutter** - uses a powered circular saw to cut the large slab
- **Fabricator** - uses a smaller powered saw to cut holes for the sink, faucet, water return, and detergent dispenser; also grinds the edges using power tools
- **Polisher/Grinder** - uses a powered device, to polish the surface of the countertop; may also be done by the fabricator
- **Installer** - uses powered saws, grinding tools, drills, polishing machines, and chemicals to install the countertop in the customer's kitchen or bathroom and does finishing work, including assembling and gluing artificial stone pieces together, cutting holes for electrical outlets, edging, polishing, and sealing countertops

Artificial Stone

- Also called Agglomerate, Agglomerated Stone, Engineered Stone Conglomerate, Manufactured Stone, and Synthetic Stone.
- Commonly made by combining natural stone or other crystalline silica-containing materials with adhesives, polymers, epoxies, resins, or other binding materials to form a slab.

https://www.fieldfisher.com/en/injury-claims/insights/concerning-link-between-artificial-stone-worktops-and-rising-cases-of-silicosis

Sections

Los Angeles Times

CALIFORNIA

California workers who cut countertops are dying of an incurable disease

Leobardo Segura Meza, 27, of Pacoima suffers from silicosis, an incurable lung disease that has been afflicting workers who cut and polish engineered stone high in crystalline silica. (Mel Melcon / Los Angeles Times)

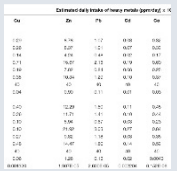
BY EMILY ALPERT REYES, CINDY CARCAMO

SEPT. 24, 2023 3 AM PT

Regulatory Timeline

- March 24, 2016: OSHA issues the final rule.
- June 23, 2016: The rule officially became effective.
- Compliance Dates:
  - Construction industry: September 23, 2017.
  - General industry and maritime: June 23, 2018.
- July 20, 2023: Cal/OSHA Standards Board receives a petition to amend standard
- December 14, 2023: Standards Board votes to adopt an Emergency Temporary Standard (ETS)
- December 29, 2023: ETS goes into effect
- January 7, 2025: Cal/OSHA Standards Board votes to make the ETS permanent

Standards and Regulations



AIRBORNE CONTAMINANT LIST

CONSTRUCTION

GENERAL INDUSTRY & MARITIME

Emergency Temporary Standard (ETS)

TITLE 8, DIVISION 1, CHAPTER 4

Subchapter 7. General Industry Safety Orders
Group 16. Control of Hazardous Substances
Article 110. Regulated Carcinogens

TITLE 8, DIVISION 1, CHAPTER 4

TITLE 8, DIVISION 1, CHAPTER 4

TITLE 8, DIVISION 1, CHAPTER 4

2. Wet methods or vacuum cleaners equipped with HEPA filters shall be used to collect all wastes, dusts, residues, debris, or other materials that are generated from high-exposure trigger tasks or that otherwise contain or are contaminated with respirable crystalline silica.

3. Employees engaged in housekeeping tasks shall use respirator protection in accordance with subsection (h)(3).

4. The employer shall provide readily accessible washing facilities in accordance with Section 3366 (Washing Facilities).

(C) The Division may require the employer to take additional actions to protect employees through the issuance of an Order to Take Special Action in accordance with Section 332.3.

(D) Prohibitions. The following practices are prohibited for high-exposure trigger tasks, regardless of exposure levels.

1. Any use of compressed air.

a. On waste, dust, debris, residue, or other materials that may contain crystalline silica;

b. On any surface or clothing or body surface that may contain crystalline silica; and

c. To back flush, backwash, or clean water, air, or other types of filters that may contain crystalline silica.

2. Any dry sweeping, shoveling, disturbing, or other dry clean-up of wastes, dusts, debris, or other materials that may contain crystalline silica.

3. Use of employee rotation as a means of reducing employee exposure to respirable crystalline silica.

4. Walking or moving equipment on or through dry dust, debris, residue, or other materials that may contain crystalline silica.

(32) Written exposure control plan.

(A) The employer shall establish and implement a written exposure control plan that contains at least the following elements:

1. A description of the tasks in the workplace that involve exposure to respirable crystalline silica;

California Department of Industrial Relations
Division of Occupational Safety & Health
Publications Unit

SAFETY & HEALTH | FACT SHEET

CAL OSHA

Silica Emergency Temporary Standard
Information for Employers

What is the concern?

California is experiencing a silicosis epidemic among artificial stone fabrication workers.

"Artificial Stone" is any reconstituted, artificial, synthetic, composite, engineered, or manufactured stone, porcelain, or quartz. It is commonly made by binding crushed or pulverized stone with adhesives, polymers, epoxies, resins, or other binding materials to form a slab.

Between 2010 and October of 2023, more than 90 California workers who make countertops from artificial stone have developed silicosis. Ten of these workers — and counting — have died. This is not counting unreported cases.

Silica is a natural mineral that comes in different forms. The crystalline forms are far more hazardous, especially when employees are exposed to airborne particle sizes smaller than the diameter of a human hair. This is known as "respirable" dust. Breathing too much airborne respirable crystalline silica (RCS) can cause:

- Lung cancer.
- Silicosis — an incurable lung disease — and other lung effects.
- Kidney and autoimmune disease.

In recent years, **artificial stone** has become more widely used, particularly in the manufacture of countertops. It is more hazardous to employees exposed to airborne dust since it can contain approximately 93% or greater crystalline silica — **more than double that for granite**.

Material	Percent Crystalline Silica
Artificial Stone	more than 93%
Quartzite	95%
Sandstone	60%
Granite	10 to 45%

High-exposure trigger tasks are of particular concern. These are tasks such as cutting, grinding, drilling, and polishing **artificial stone that contains more than 0.1% crystalline silica, or for natural stone that contains more than 10% crystalline silica.** This includes cleanup and handling of dust and debris created during these types of tasks.

Cal/OSHA inspections of the artificial stone fabrication industry in 2019-2020 found widespread non-compliance with Title 8, California Code of Regulations, **section 5204, Occupational Exposure to Respirable Crystalline Silica. The Emergency Temporary Standard (ETS) changes to section 5204 go into effect beginning December 29, 2023 to better address this silicosis epidemic in the workplace.**

What must employers do?

Effectively implement section 5204 — **including all the ETS requirements** — in their workplaces if the work their employees are performing meets the scope and application of this standard. This fact sheet only provides an overview. Employers must refer to section 5204 for details on all the requirements and definitions.

Summary of the ETS changes

- **Where there is any employee exposure to airborne RCS.** Employers must:
  - Promptly (within 24 hours) report any confirmed RCS exposure-related silicosis or cancer case to the California Department of Health and Cal/OSHA.
  - Communicate RCS exposure hazards to employees in a language they understand and appropriate for their level education and literacy. This includes:
    - The exposure symptoms, such as cough, difficulty breathing, fatigue, shortness of breathing, weakness, fever, chest pain, or unexpected weight loss.

(Continued on Next Page)

CCR § 5204. Occupational Exposures to Respirable Crystalline Silica

- **"High-Exposure Trigger Task"** means machining, crushing, cutting, drilling, abrading, abrasive blasting, grinding, chiseling, carving, gouging, polishing, buffing, fracturing, intentional breaking, or intentional chipping of artificial stone that contains more than **0.1 percent** by weight crystalline silica, or other silica containing products, including natural stone, that contains more than **10 percent** by weight crystalline silica. High-exposure trigger tasks also includes clean up, disturbing, or handling of wastes, dusts, residues, debris, or other materials created during the above-listed tasks

CCR § 5204. Occupational Exposures to Respirable Crystalline Silica

- **Exceptions:**
  - Geologic field research is not considered a high-exposure trigger task.
  - Outdoor work at quarries or open pit mines is not considered a high-exposure trigger task.
  - Fabrication or finishing of natural stone tombstones, monuments, memorials, burial vaults, sculptures, or related items is not considered a high-exposure trigger task.

https://www.geologyin.com/2014/11/geological-field-equipment-and-safety

https://www.europages.co.uk/companies/funerary

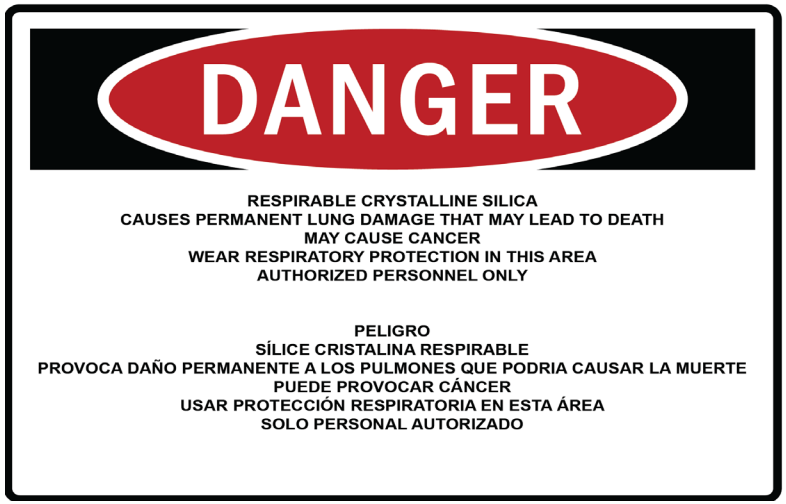
Exposure assessment

High-Exposure Trigger Tasks

"Qualified Person", for purposes of this section only, means a third party independent of the employer who, by extensive instruction, knowledge, training, and experience, has demonstrated their ability to effectively perform, and interpret the results of representative air monitoring for occupational exposure to respirable crystalline silica. The qualified person shall be knowledgeable in this standard and shall be competent in industrial hygiene practice. A Certified Industrial Hygienist as codified in California's Business and Professions Code sections 20700-20705 is considered competent in industrial hygiene practice.

Controls

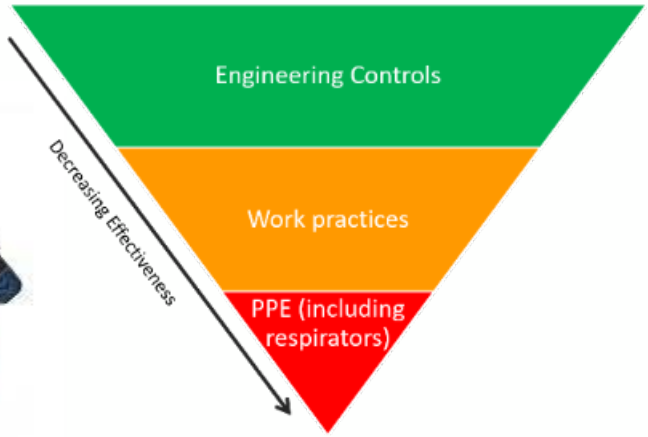
- Regulated Areas
  - Signage in English & Spanish



All high-exposure trigger tasks shall be conducted within a regulated work areas regardless of employee exposures, exposure assessments, or other objective data.

Controls

- Engineering, work practice and PPE controls



Wet methods for all high-exposure trigger

https://www.dir.ca.gov/dosh/dosh_publications/emergency-silica-reg-employer-info.pdf

Housekeeping

https://atrix.com/product/hazardous-particulate-d4-6-hepa-vacuum/

Wastes, dusts, residues, debris, or other materials that are generated from high-exposure trigger tasks or that otherwise contain or are contaminated with respirable crystalline silica shall be promptly and properly cleaned up and placed into leak-tight containers, bags, or equivalent. At a minimum, all such wastes, dusts, residues, debris, or other materials shall be cleaned up at the end of each shift or more frequently as needed to ensure there is no visible dust build-up in the workplace

Employees engaged in housekeeping tasks shall use respirator protection

Housekeeping

- Prohibited Practices regardless of exposure levels
  - Use of compressed air
  - Dry sweeping or shoveling of materials
  - Employee rotation to reduce employee exposure
  - Walking/moving equipment through dry dust debris

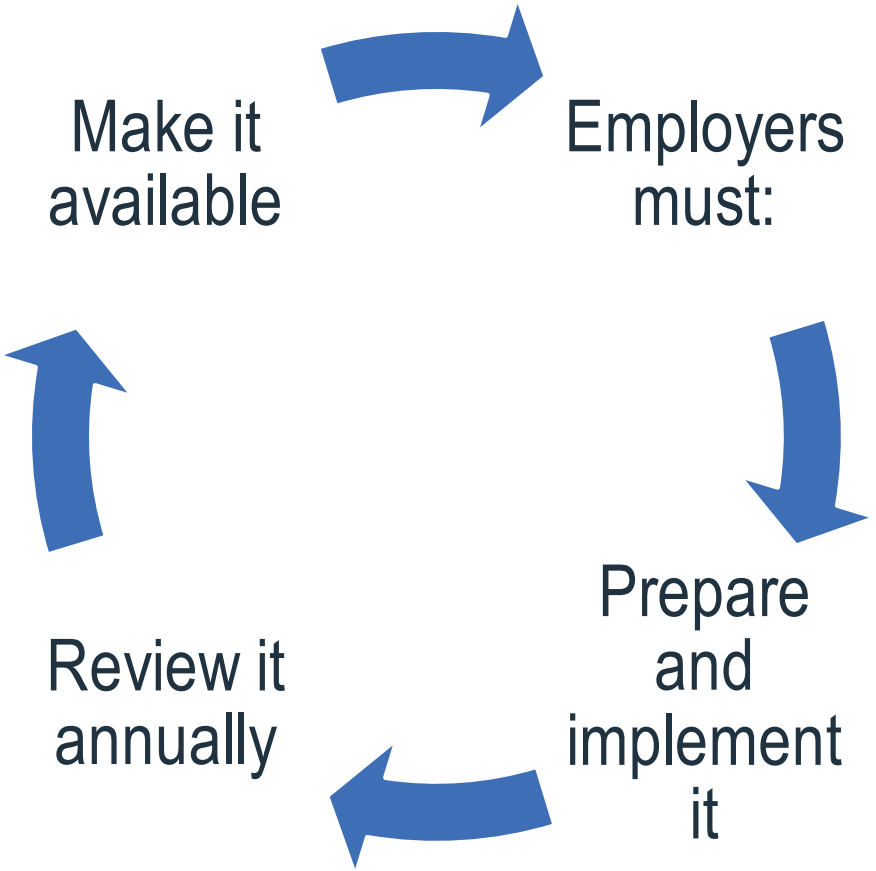
Written Exposure Control Plan

Tasks with Exposure:

Controls (Engineering/Work Practice) :

Respiratory Protection:

Housekeeping:



Written Exposure Control Plan

High-Exposure Trigger Tasks

- Air monitoring records
- PPE donning and doffing procedures
- Reporting documentation
- Training records

Respiratory Protection

- Full face, tight-fitting powered-air purifying respirator (PAPR), a helmet or hood PAPR with an Assigned Protection Factor (APF) of 1000; or
- Respirator with equal or greater protection equipped with a HEPA, N100, R100, or P100 filter

Respiratory Protection

- Exception 1: The employer may provide employees with a loose-fitting PAPR (APF of 25), a half-face PAPR (APF of 50), a full-face piece air-purifying respirator (APF of 50), or another respirator providing equal or greater protection where employee exposures are continuously < AL through representative air sampling conducted by a qualified person at least once every 6 months.

- Exception 2: The employer may provide employees with a respirator with an APF of 10 or greater equipped with a HEPA, N100,R100, or P100 filter if all of the following conditions are met:

  1. Exposure continuously < AL every 6 months.
  2. All employees are fully participating in all components of the medical surveillance program, pursuant to subsection (j); no employee, either currently or previously employed, has been diagnosed with silicosis; and no current employee meets the definition of suspected silicosis.
  3. This exception does not apply if the PLHCP or specialist recommends a more protective respirator.

MEDICAL SURVEILLANCE

- Offered:
  - Initial Examination - Within 30 days after initial assignment
  - Every 3 years
- Medical and Work History
- Physical Exam
- Chest X-Ray/ Chest CT (if recommended)
- Pulmonary Function Test
- Testing for latent tuberculosis infection

Recordkeeping and Reporting

AIR MONITORING DATA

OBJECTIVE DATA

MEDICAL SURVEILLANCE

Reporting of Silicosis or Lung Cancer: Within 24 hours of receiving information regarding confined silicosis case or lung cancer related to RSC exposure. Report to OSHA and CDPH.

Case Study 1 – Artificial Stone Fabrication

- Purpose:
  - Evaluate silica exposures of employees
  - Evaluate effectiveness of engineering controls
- Work Tasks:
  - Cutting, grinding, and polishing of marble and granite benchtops
  - Dry and wet methods
- Controls:
  - LEV
  - Respiratory

Exposure Assessment Results

Table 1 – Sample Results Table, February 26, 2021 Respirable Crystalline Silica					
Employee / Sample ID	Sample duration (min)	Result TWA			
		Respirable Quartz (mg/m^3)	Respirable Cristobalite (mg/m^3)	Respirable Tridymite (mg/m^3)	RCS (mg/m^3)
[redacted] Dry Methods	501	0.11	<0.004	<0.016	0.11
[redacted] Dry Methods	488	0.11	<0.0041	<0.016	0.11
[redacted] Wet Methods	456	0.012	<0.0044	<0.018	0.012
Cal/OSHA Permissible Exposure Limit (PEL) – 8-hour TWA		**0.05**	**0.05**	**0.05**	**0.05**
Cal/OSHA Action Level		**0.025**	**0.025**	**0.025**	**0.025**

Notes:
mg/m^3 (milligrams per cubic meter); PEL – permissible exposure limit; TWA – time-weighted average
The symbol "<" means "less than" and the value following indicates the laboratory reporting limit for the analytical method and sample volume.
RCS = Respirable Crystalline Silica; includes all three forms added together (quartz, cristobalite, & tridymite)

Recommendations

1. Evaluate and implement additional engineering controls.
2. Training.
3. Regulated Areas.
4. Quarterly monitoring.
5. Use of respiratory protection is required during dry cutting tasks monitored with APF of 50 or greater (pre-update to standard)
6. Comply with silica standard requirements.
    1. Develop written exposure control plans
    2. Establishment and demarcation of regulated areas
    3. Repeated exposure monitoring every quarter.
    4. Install or implement feasible engineering and work practice controls
    5. Improvement of housekeeping measures
    6. Medical surveillance
    7. Recordkeeping

Case Study 1 – Artificial Stone Fabrication

- Re-evaluate following installation of a larger local exhaust system for Dry Side.

Exposure Assessment Results: Re-evaluate

Table 1 – Sample Results Table, December 3, 2021 Respirable Crystalline Silica Marble Expressions Inc					
Employee / Sample ID	Sample duration (min)	Result TWA			
		Respirable Quartz (mg/m^3)	Respirable Cristobalite (mg/m^3)	Respirable Tridymite (mg/m^3)	RCS (mg/m^3)
Dry Methods	452	0.16	0.012	<0.018	0.18
Wet Methods	434	0.007	<0.005	<0.019	0.007
Cal/OSHA Permissible Exposure Limit (PEL) – 8-hour TWA		**0.050**	**0.050**	**0.050**	**0.050**
Cal/OSHA Action Level		**0.025**	**0.025**	**0.025**	**0.025**

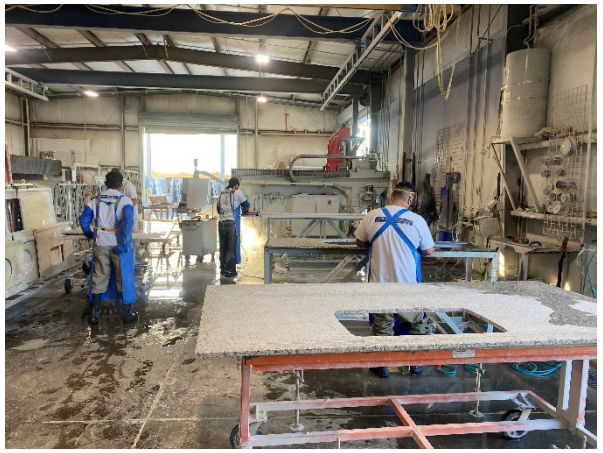
Notes:
mg/m^3 (milligrams per cubic meter); PEL – permissible exposure limit; TWA – time-weighted average
The symbol "<" means "less than" and the value following indicates the laboratory reporting limit for the analytical method and sample volume.
RCS = Respirable Crystalline Silica; includes all three forms added together (quartz, cristobalite, & tridymite)

Recommendations

- Similar to prior assessment.
- Relocate new dust collector systems.
- Training.

Case Study 2 – Artificial Stone Fabrication

- Purpose:
  - Evaluate silica exposure of employees to meet requirements of the ETS
  - Assess effectiveness of engineering controls
  - Assess PPE
- Work Tasks:
  - Cutting, grinding, and polishing of marble and granite benchtops
  - Dry and Wet methods
- Controls:
  - LEV
  - Respiratory (1/2 face)



Exposure Assessment Results

Sample ID	Work Task / Employee	Sample Duration (min.)	Sample Volume (L)	Respirable Quartz (mg/m^3)	Respirable Cristobalite (mg/m^3)	Respirable Tridymite (mg/m^3)	Calculated TWA[1] Total Silica (mg/m^3)
P01	Grinding Operator - [redacted]	454	1112.3 L	**0.14**	< 0.023	< 0.018	**0.13**
P02	Fabrication Operator – [redacted]	438	1086.2 L	0.0085	< 0.0046	< 0.018	0.0078
P03	Saw Cutting Operator [redacted]	433	1078.2 L	<0.019	< 0.0046	< 0.019	<0.019
P04	Polishing Operator – [redacted]	427	1084.6 L	**0.066**	< 0.0046	< 0.018	**0.059**
P05	Grinding Operator – [redacted]	338	838.24 L	**0.051**	< 0.0072	< 0.0024	**0.036**
P06	Blank	-	-	-	-	-	-
Cal/OSHA PEL (8-hour TWA)				**0.050**	**0.050**	**0.050**	**0.050**
Cal/OSHA Action Limit (8-hour TWA)				**0.025**	**0.025**	**0.025**	**0.025**

[1] Calculated TWA assuming zero exposure to respirable crystalline silica during the remaining 8 hour work shift.
Cal/OSHA = California Division of Occupational Safety and Health; PEL = Permissible Exposure Limit
NA = no current exposure limits/guidelines available; AL = Action Level
BOLD = values greater than regulatory (Cal/OSHA) PEL or AL

Conclusions and Recommendations

- Respiratory protection worn by employees was inadequate based on the Cal/OSHA ETS requirements.
- All work tasks assessed at the facility were considered "high-exposure trigger task" as defined by the Cal/OSHA ETS.
- All requirements of the ETS are applicable to all employees performing similar work tasks assessed.
- Repeat monitoring within 3 months for exposures that exceeded the PEL.
- Annual scheduled monitoring for employees below the AL.

Conclusions and Recommendations

- Use of full face tight-fitting PAPR (APF of 1000), or a respirator providing equal or greater protection equipped with a HEPA, N100, R100, or P100 filter for employees who exceeded the AL.
- Use of full loose-fitting PAPR, a full facepiece air-purifying respirator, a half-face PAPR, or another respirator providing equal or greater protection for employees who were below the AL.
- Implementation of control methods to effectively suppress dust – wet methods only per the ETS.
- Use of air compressor, dry sweeping & brushing is prohibited.
- Implement controls using wet-methods only.

PUBLIC HEALTH WATCH

SILICOSIS EPIDEMIC

Jury Awards $52.4M in Case Against Artificial-Stone Countertop Makers

by **Jim Morris**
August 8, 2024

In the first case of its type to go to trial in the United States, a Los Angeles County jury handed down a $52.4 million verdict Wednesday against three artificial-stone countertop manufacturers sued by a fabrication worker who developed the lung disease silicosis.

Gustavo Reyes Gonzalez has a severe case of silicosis from cutting countertops. He says he used water to suppress the dust and wore high-quality masks, but the fine silica powder still entered his lungs. Credit: Leslie Berestein Rojas

Gustavo Reyes Gonzalez, 34, sued 34 manufacturers, claiming their products are inherently dangerous because they contain high amounts of silica, a mineral that, when pulverized, can enter the lungs and cause irreversible scarring. Twenty-nine of the manufacturers settled with Reyes, and two were granted summary judgment. The other three cases went to trial. Reyes is among dozens of workers in Southern California who developed silicosis after cutting and grinding countertops with little or no respiratory protection.

Public Health Watch and partners LAist and Univision were the first media outlets to report the existence of the silicosis cluster in December 2022. A year later, the state of California issued an emergency rule requiring employers of fabrication workers to suppress toxic silica dust with water and take other protective measures.

Overview of Silica Litigation

- **Case Example:** Gustavo Reyes-Gonzalez v. Multiple Artificial Stone Manufacturers (Los Angeles Superior Court, Case No. 22STCV31907)
- **Plaintiff's Claim:** Occupational exposure to respirable crystalline silica dust while fabricating engineered stone products.
- **Defendants:** 30+ major countertop manufacturers/distributors (e.g., Caesarstone, Cambria, Cosentino, DuPont).
- **Causes of Action:** Negligence, Strict Liability (Failure to Warn and Design Defect), and Fraudulent Concealment.

Key Allegations in Litigation

Failure to Warn: Companies allegedly knew of silicosis risks but failed to provide adequate safety instructions or warnings.

Defective Design: High-silica artificial stone marketed without sufficient dust control measures.

Fraudulent Concealment: Internal documents and Safety Data Sheets allegedly downplayed or omitted known hazards.

Corporate Knowledge: Manufacturers aware of worker illnesses and government warnings but delayed response.

Industry and Legal Implications

- **Rising Lawsuits:** Dozens of workers across multiple states filing claims for occupational silicosis.
- **Regulatory Focus:** Cal/OSHA emphasizing enforcement on engineered stone fabrication. Other states may follow suit.
- **Potential Outcomes:** Product labeling reforms, compensation for affected workers, safer material development.

Future Outlook

Engineering Controls: Wet cutting, ventilation, HEPA filtration, PPE use. Move to other states.

Medical Surveillance: Early detection of lung disease among workers.

Industry Shift: Movement toward low-silica or silica-free composite materials.

Legal Trend: Increasing corporate accountability in toxic tort and occupational disease cases.

Thank You!

Forensic Analytical Consulting Services, Inc.

Right People.

Right Perspective.

Right Now.