California Department of Industrial Relations
Division of Occupational Safety & Health

STATE OF CALIFORNIA
CAL OSHA
DEPARTMENT OF INDUSTRIAL RELATIONS

Silica Safety:
A Guide for General Industry



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Department of
Industrial Relations

This document is intended to provide an overview of Title 8 California Code of Regulations (CCR) section 5204. It is not intended as a legal interpretation of any occupational safety and health regulation. Readers must refer directly to Title 8 CCR section 5204 for more specific details regarding the regulation's scope, specifications, exceptions, and other requirements.

The mention of any organization or company name, or the display or use of products in this guide is for illustrative purposes only and does not constitute an endorsement by the Department of Industrial Relations, Division of Occupational Safety and Health (Cal/OSHA).

Workplace safety and health information is available online at:

- General information: **www.dir.ca.gov/dosh**
- Cal/OSHA regulations: **www.dir.ca.gov/samples/search/query.htm**
- Cal/OSHA safety and health publications: **www.dir.ca.gov/dosh/puborder.asp**
- Cal/OSHA eTools: **www.dir.ca.gov/dosh/etools/etools.htm**

Cal/OSHA Consultation Services offers free telephone, email, and onsite assistance. Find a local office online (**www.dir.ca.gov/dosh/consultation.html**) or with the contact information listed in the back of this document.

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Cover photo: Worker polishing a slab of artificial stone. Credit: NIOSH

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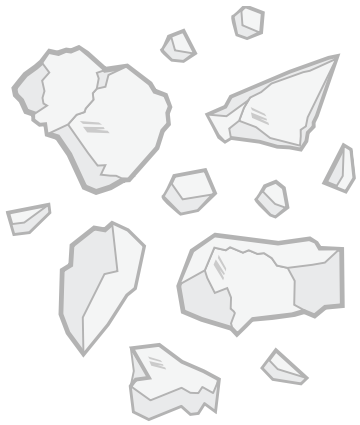
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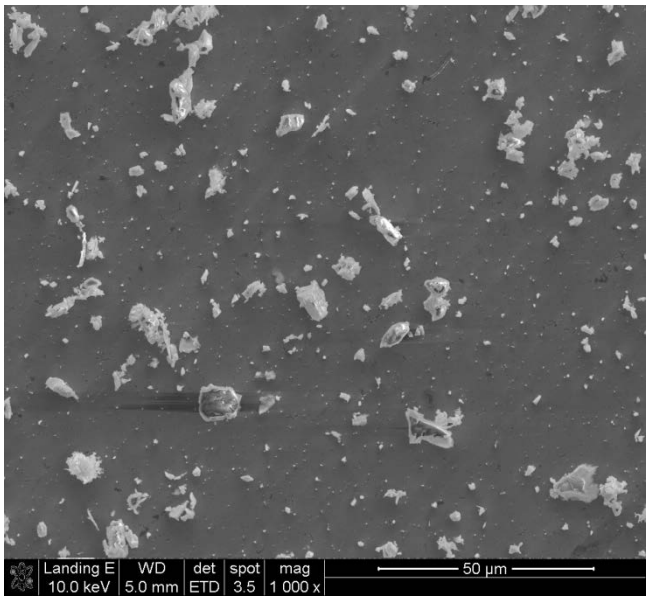
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Scanning electron microscope view showing silica particles in various shapes. Credit: Arthur Miller/NIOSH

Why silica is dangerous

Silica is a mineral found in nature and in many materials, including natural and artificial stone. In recent years, artificial stone has become more popular, especially for kitchen countertops. When artificial stone is cut or shaped during the fabrication process, tiny silica particles become airborne that are smaller than the diameter of a human hair. These particles are known as respirable crystalline silica.

Breathing respirable crystalline silica can cause:

- Silicosis — an incurable, progressive, and fatal lung disease
- Lung cancer
- Kidney and autoimmune disease

Due to artificial stone's unique characteristics, silicosis can progress faster and is more lethal than when working with natural stone. Artificial stone contains about 93% crystalline silica, compared to generally less than 40% with natural stone. The high amount of crystalline silica, along with other chemicals that hold the slab together and give it color, makes the dust more toxic.

California is experiencing a rapidly worsening epidemic, with about 10 new cases of silicosis diagnosed among workers every two weeks.



Image showing illegal dry cutting. Wet methods are required when cutting artificial stone.



Crystalline silica content of materials

Material	Percent Crystalline Silica
Artificial Stone	93% or more
Quartzite	95%
Sandstone	60%
Granite	10 to 45%
Marble	typically less than 5%
Limestone	typically less than 5%

Why artificial stone is the problem

Workers who make countertops from artificial stone are often exposed to high levels of fine silica dust. Breathing in this dust can cause silicosis, a serious lung disease that cannot be cured and can lead to death.

From 2019 through February 2026, 519 California workers who made countertops from artificial stone developed silicosis, resulting in 29 deaths and 55 lung transplants. The average life expectancy after a lung transplant is less than 10 years on average. The number of cases is still growing. These numbers do not include cases that were not reported or were misdiagnosed.

Inspections by Cal/OSHA from 2019 through 2024 found that many artificial stone shops were not following **California Code of Regulations, Title 8 section 5204**, which most employers are required to do when workers are exposed to respirable crystalline silica. In 2023, Cal/OSHA adopted an Emergency Temporary Standard to better protect workers. In February 2025, the standard was made permanent.



"Artificial stone" is any reconstituted, artificial, synthetic, composite, engineered, or manufactured stone product. It is 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. It is often called "quartz."

NOTE: Fired ceramic and porcelain tiles and panels are not artificial stone.

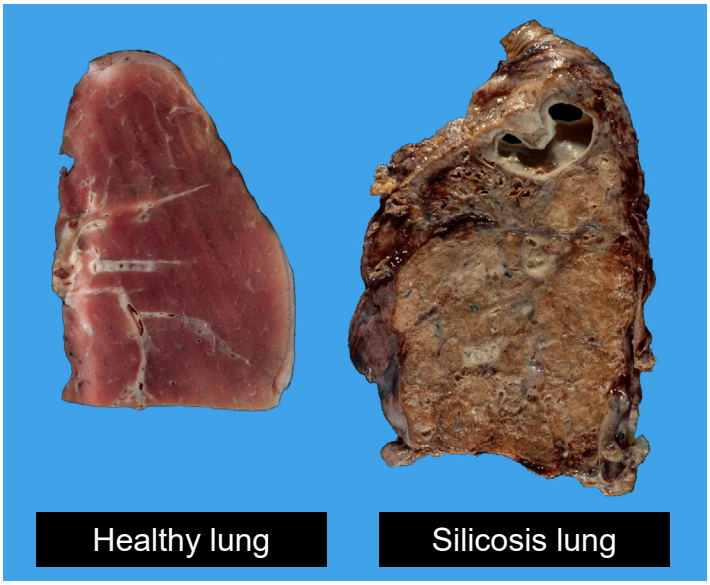


Image at left courtesy of Denis Stewart Pathology Museum, University of Otago Christchurch, circa 1957. The authors gratefully acknowledge the individuals whose tissues have been used for this educational purpose.

Employer requirements

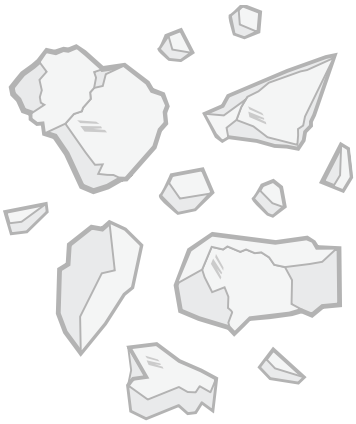
Employers must comply with **section 5204** if their employees are exposed to respirable crystalline silica on the job, with the following exceptions:

- Construction activities covered by **section 1532.3**
- Agricultural operations covered by **section 3436**
- Exposures resulting from the processing of sorptive clays

Section 5204 also does not apply if the employer has objective data showing that worker exposure to respirable crystalline silica will stay below the action level of 25 micrograms per cubic meter of air (25 µg/m³) as an 8-hour average under any foreseeable conditions.

However, if workers perform high-exposure trigger tasks, **section 5204** still applies, even when exposure levels are measured or expected to stay below the limit.

This publication only provides an overview of the requirements. Employers must refer directly to **section 5204** for all requirements.



Engineering controls and safe work practices

High-exposure trigger tasks

High-exposure trigger tasks are specific work activities with materials that contain crystalline silica. These tasks include 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% crystalline silica by weight, or
- Other silica-containing materials, including natural stone, that contain more than 10% crystalline silica by weight.

High-exposure trigger tasks also include cleaning, disturbing, or handling waste, dust, residue, debris, or other materials created during these activities.

Enhanced protections for high-exposure trigger tasks

Employers must implement the following enhanced protections regardless of the exposure levels:

- **Measure employee exposure** at least once every 12 months using a qualified person.
- **Use wet methods at all times.** Dry work is not allowed and can result in a shutdown of the operation. Failure to use effective wet methods during high-exposure trigger tasks is an imminent hazard and may result in an Order Prohibiting Use (OPU) by Cal/OSHA. Water must cover the full surface of the stone whenever a tool, machine, or piece of equipment touches the slab. Wet methods must keep worker exposure below the action level of 25 µg/m³ as an 8-hour time-weighted average (TWA).



Credit: NIOSH

"Qualified person" means a third party independent of the employer who, through extensive instruction, knowledge, training, and experience, can effectively perform and interpret representative air monitoring for respirable crystalline silica. The qualified person must be knowledgeable in **section 5204** and competent in industrial hygiene practice. A Certified Industrial Hygienist (CIH) under California Business and Professions Code sections 20700-20705 is considered competent in industrial hygiene practice.



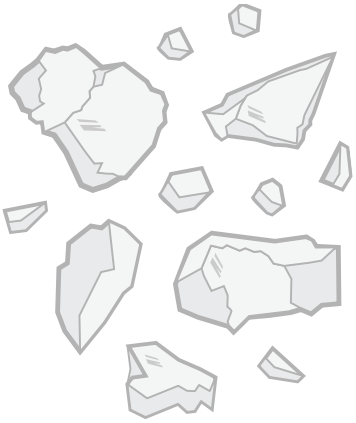
Credit: NIOSH

- **Use required respiratory protection.** Workers who are exposed to high-exposure trigger tasks must wear a powered air-purifying respirator (PAPR) or another respirator with an assigned protection factor of 1,000 or greater, except as allowed under **section 5204**. This requirement also covers employees working in regulated areas where the tasks are being performed. Employees must be medically cleared, fit-tested, and trained to wear a respirator. Workers with confirmed or suspected silicosis must use a full-face, tight-fitting, positive-pressure supplied-air respirator. Refer to **section 5204(h)(3)** for exceptions and specific requirements.
- **Establish a regulated area** for high-exposure trigger tasks. Only authorized employees with the required protective equipment may enter.
- **Control dust during cleanup.** Clean dust, debris, and residue using wet methods or HEPA-filtered vacuums.
- **Do not allow dangerous practices**, including dry sweeping, dry brushing, compressed air cleaning, walking or moving equipment through accumulated dust and debris, or rotating employees to reduce their silica exposure.





"High-efficiency particulate air (HEPA) filter" means a filter that is at least 99.97% efficient in removing mono-dispersed particles of 0.3 micrometers in diameter.



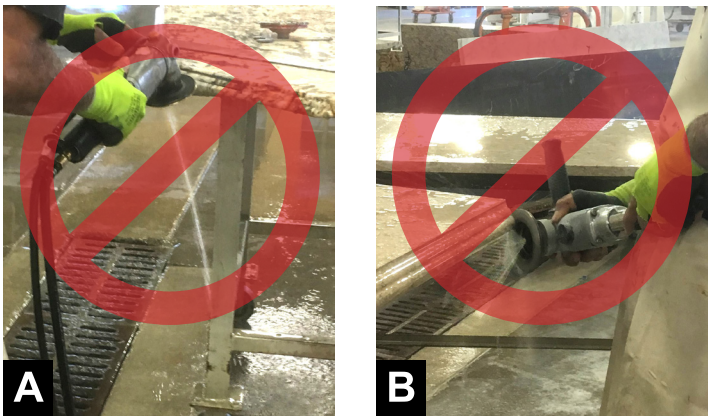
Controls for all tasks involving exposure to respirable crystalline silica

For workplaces with employee exposure to respirable crystalline silica, including workplaces with and without high-exposure trigger tasks, employers must do all of the following:

- **Assess worker exposure.** Have a qualified person measure silica exposure to make sure it stays below the permissible exposure limit (PEL) of 50 µg/m³ as an 8-hour average. Tell employees the results within 15 working days.
- **Use engineering controls to reduce dust**, such as:
  - **Isolation:** Place automated machines in enclosed areas away from workers.
  - **Barriers:** Use walls or partitions to separate cutting, grinding, or polishing areas.
  - **Wet methods:** Use whenever a tool contacts stone by applying water at the point of contact and maintaining a continuously wet work surface to minimize airborne silica dust. Filter recycled water to remove silica. Examples include:
    - Continuous sheet-wetting
    - Tools with built-in water systems
    - Water-jet cutters
    - Wet milling machines or stone routers
    - Automated machines with water systems
  - **Ventilation:** Use local exhaust ventilation to capture dust where it is created. Exhaust air must pass through a HEPA filter.



Credit: NIOSH



(A) and **(B)** are examples of ineffective wet methods. Water is delivered through the center of the tool, but it does not adequately wet the area where the tool contacts the stone. In **(A)**, the water stream misses the work surface entirely and flows directly to the floor. Credit: NIOSH

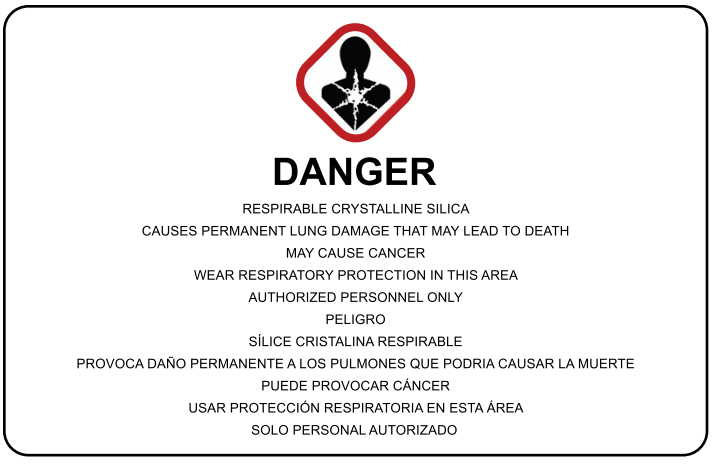




Example of a wet scrubber being used to clean up waste after fabrication of artificial stone products. Credit: NIOSH



- **Follow safe work practices**, by taking these actions:
  - Perform work in regulated areas where silica levels may exceed the PEL.
  - Train workers to use tools, water systems, and ventilation correctly.
  - Schedule high-dust tasks when fewer workers are present.
  - Frequently clean surfaces using wet methods or HEPA-filtered vacuums.
  - Do not allow eating, drinking, or breaks in regulated areas or where dust is present.
  - Clean dust from clothing and protective equipment using wet methods or HEPA vacuums.
  - Do not use compressed air or allow dry sweeping.
  - Remove protective equipment and wash hands and face before taking breaks and leaving work.
- **Post the following warning sign** at entrances to regulated areas.

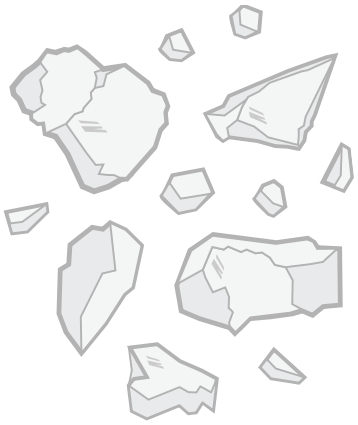


Worker training requirements

Employers must provide training to their employees who might be exposed to respirable crystalline silica. The training must be in a language understood by each employee. Each employee must show knowledge and understanding of the following:

- **Health hazards of silica dust**, including silicosis, immune system effects, kidney effects, lung cancer, and other lung diseases
- **Symptoms of exposure**, such as coughing, shortness of breath, fatigue, and chest pain
- **The increased risk of death** when silica exposure is combined with smoking
- **The increased risk of latent tuberculosis becoming active** due to silica exposure
- **Tasks that create silica dust** and how to perform the work safely
- **Ways to control exposure**, including wet methods, ventilation, safe work practices, and respirator use
- **The employer's written silica exposure control program**
- **The purpose and a description of employer's medical surveillance program** including the availability of medical exams for exposed workers

As of July 1, 2026, employers must submit an electronic written attestation to Cal/OSHA confirming that each employee performing high-exposure trigger tasks has received the required training. Employers must send these training attestations every year through Cal/OSHA's online **Employer Silica Annual Training Attestation Portal**. It is unlawful to submit false information.



Medical surveillance and reporting requirements

Employers must:

- **Provide medical exams** to employees exposed to respirable crystalline silica when:
  - The employee performs high-exposure trigger tasks for 30 or more days per year or
  - The employee is exposed to respirable crystalline silica at or above the action level for 30 or more days per year.

  Employers must then:

  - Offer the initial exam within 30 days of assignment.
  - Provide follow-up exams at least every three years, or sooner if recommended by the physician or other licensed health care professional (PLHCP).
  - Ensure the PLHCP provides required information to the employer, employee, Cal/OSHA, and the California Department of Public Health (CDPH).
- **Provide medical removal benefits**
  - If recommended by the PLHCP, remove the employee from silica exposure and maintain their earnings, seniority, and benefits for up to six months, with limited exceptions.
- **Report cases** of silicosis and silica-related lung cancer immediately to Cal/OSHA and CDPH.
- **Establish a written exposure control plan** that includes:
  - Tasks that may expose workers to silica
  - Engineering controls, work practices, and respirators used to control exposure
  - Housekeeping methods used to prevent dust exposure
  - The following elements, if high-exposure trigger tasks are performed at the workplace:
    - Exposure monitoring results showing whether controls are effective
    - Procedures for putting on and taking off protective equipment to prevent exposure and taking home dust
    - Procedures for employee training, medical surveillance, and medical removal
    - Documentation that crystalline silica use was reported to Cal/OSHA as required by **section 5203**
- **Maintain records**, including exposure monitoring records required by **section 5204**



"Physician or other licensed health care professional (PLHCP)" means an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows them to independently provide or be delegated the responsibility to provide some or all of the particular health care services.

Additional resources

For **California workplace safety regulations**, visit www.dir.ca.gov/samples/search/query.htm.

Some resources below reference federal OSHA regulations. Always refer to the Cal/OSHA equivalents that apply in California.

Cal/OSHA (California Division of Occupational Safety and Health)

- Section 5204: **Occupational Exposures to Respirable Crystalline Silica (General Industry)**
  www.dir.ca.gov/title8/5204.html
- Section 1530.1: **Control of Employee Exposures from Dust-Generating Operations Conducted on Concrete or Masonry Materials (Construction)**
  www.dir.ca.gov/title8/1530_1.html
- Section 1532.3: **Occupational Exposures to Respirable Crystalline Silica (Construction)**
  www.dir.ca.gov/title8/1532_3.html
- Section 3436: **Agricultural Operations - Application**
  www.dir.ca.gov/title8/3436.html
- **"Silica General Industry Exposure Control Model Plan"**
  www.dir.ca.gov/dosh/dosh_publications/Silica-ETS-Model-Plan.docx
- **"Silica Construction Exposure Control Model Plan"**
  www.dir.ca.gov/dosh/dosh_publications/Silica-construction-exposure-control.docx
- **Employer Silica Annual Training Attestation Portal**
  caldir.app.box.com/sign/ready-sign-link/08984ce1-31de-4e90-8902-86111783df22
- **"Respiratory Protection in the Workplace — a Guide for Employers"**
  www.dir.ca.gov/dosh/dosh_publications/respiratory-protection-employer-guide.pdf
- **"Guide to California Hazard Communication Regulation"**
  www.dir.ca.gov/dosh/dosh_publications/hazcom.pdf
- **"Guide to Developing Your Workplace Injury & Illness Prevention Program"**
  www.dir.ca.gov/dosh/dosh_publications/iipp.pdf
- **"Injury & Illness Prevention Model Program for High Hazard Employers"**
  www.dir.ca.gov/dosh/dosh_publications/IIPP-Model-high-hazard.doc

Title 8 **sections 1530.1** and **1532.3** apply to construction-related operations, such as final trimming during installation of an artificial stone countertop at a construction site.

California Department of Public Health (CDPH)

- **"Silica Safety Resources for Stone Fabricators"**
  www.cdph.ca.gov/Programs/CCDPHP/DEODC/OHB/Pages/silicosis.aspx

Other silica safety resources

- **"Work Safely with Silica"** — The Center for Construction Research and Training
  www.silica-safe.org/
- **"Control of Silica Exposure in Engineered Stone Fabrication Facilities"** — Georgia Institute of Technology
  www.oshainfo.gatech.edu/resources/training-materials/control-of-silica-exposure-in-engineered-stone-fabrication-facilities/
- **"Silicosis: An Industry Guide for Awareness and Prevention"** — Natural Stone Institute
  edu.naturalstoneinstitute.org/education/catalog/detail.cfm?id=378
- **"Silica and Worker Health"** — National Institute for Occupational Safety and Health (NIOSH)
  www.cdc.gov/niosh/silica/about/index.html
- **"Stop Silicosis Forever"** — Georgia Tech Enterprise Innovation Institute
  oshapptfiles.s3.amazonaws.com/Brandon/DOL-OSHA-Stop-Silicosis-For-Ever.mp4

Federal OSHA

- **"Crystalline Silica"**
  www.osha.gov/silica-crystalline
- **"Ventilation"**
  www.osha.gov/ventilation

Employers who have questions or need assistance with workplace health and safety programs can call Cal/OSHA's Consultation Services Branch at (800) 963-9424.

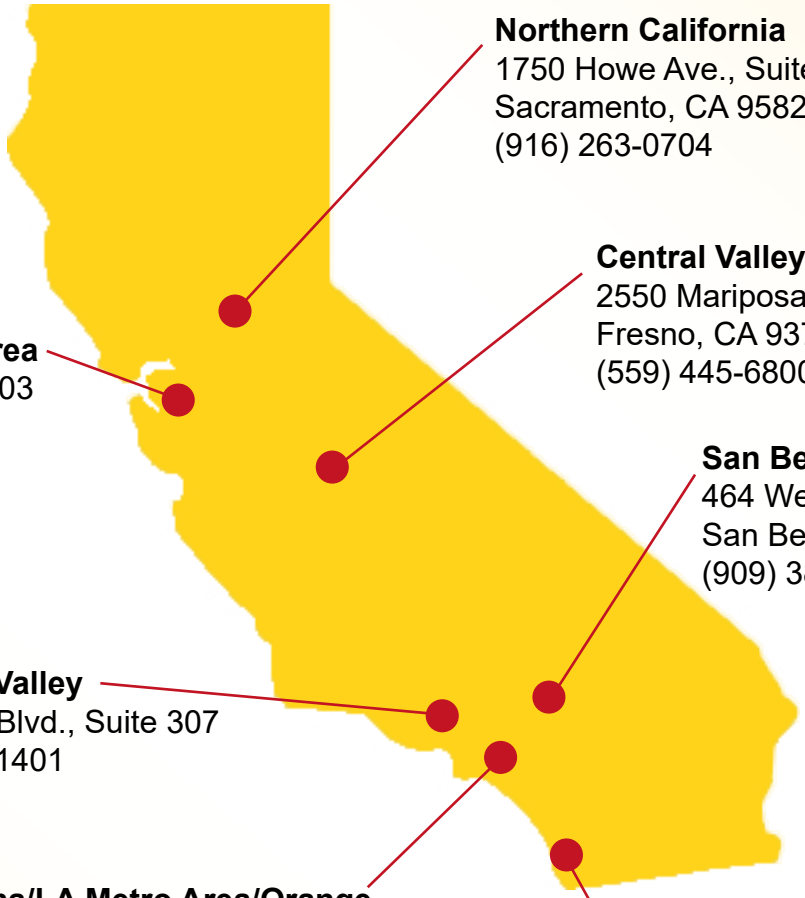
Workers in California are protected regardless of immigration status. Workers who have questions about safety and health in the workplace can call (833) 579-0927 to speak with a live bilingual Cal/OSHA representative between the hours of 9 a.m. and 7 p.m. Monday through Friday.

Workers can file complaints about workplace safety and health hazards with a Cal/OSHA district office (see **www.dir.ca.gov/dosh/districtoffices.htm**).

Cal/OSHA Consultation Programs

Toll-free number: 1-800-963-9424 **www.dir.ca.gov**

On-site assistance program area offices



Northern California
1750 Howe Ave., Suite 490
Sacramento, CA 95825
(916) 263-0704

Central Valley
2550 Mariposa Mall, Room 2005
Fresno, CA 93721
(559) 445-6800

San Francisco Bay Area
1515 Clay St., Suite 1103
Oakland, CA 94612
(510) 622-2891

San Bernardino
464 West 4th St., Suite 339
San Bernardino, CA 92401
(909) 383-4567

San Fernando Valley
6150 Van Nuys Blvd., Suite 307
Van Nuys, CA 91401
(818) 901-5754

La Palma/LA Metro Area/Orange
1 Centerpointe Drive, Suite 150
La Palma, CA 90623
(714) 562-5525

San Diego/Imperial
7575 Metropolitan Drive, Suite 204
San Diego, CA 92108
(619) 767-2060

Voluntary Protection Program

Oakland, CA 94612
(510) 622-1081

This guide is available with active links at: www.dir.ca.gov/dosh/PubOrder.asp