



RESPIRABLE CRYSTALLINE SILICA

Concrete, Masonry, Rock and Dust-Generating Work

POLICY STANDARD

Plan silica-generating work before it begins. Fully implement OSHA Table 1 controls or complete an exposure assessment, use feasible engineering and work-practice controls, and prevent uncontrolled dust from reaching employees or nearby crews.

PHEIFER BROTHERS CONSTRUCTION CO., INC.

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USE OF THIS POLICY

This policy establishes minimum company requirements and is not all-inclusive. The current OSHA Table 1, task-specific equipment instructions, exposure data and project conditions govern. More protective controls may be required.

Primary Regulatory References

- 29 CFR 1926.1153 - Respirable crystalline silica in construction
- 29 CFR 1926.1153 Table 1 - Specified exposure-control methods
- 29 CFR 1910.134 and 1926.103 - Respiratory protection
- 29 CFR 1910.1020 - Access to employee exposure and medical records

1. Purpose, Scope, Health Effects and Responsibilities

Purpose and Scope

This policy applies to occupational exposure to respirable crystalline silica during construction, including cutting, sawing, drilling, coring, grinding, jackhammering, chipping, milling, crushing, demolition, grading, excavation and abrasive blasting of silica-containing concrete, mortar, masonry, rock, soil or coatings/substrates.

Current Exposure Limits

- Action level: 25 micrograms per cubic meter (25 $\mu\text{g}/\text{m}^3$) as an 8-hour time-weighted average (TWA).
- Permissible exposure limit (PEL): 50 $\mu\text{g}/\text{m}^3$ as an 8-hour TWA under the alternative-control method.
- The obsolete formula based on percent silica and 10 mg/m^3 is not used for construction compliance.
- The standard does not apply only when the employer can demonstrate exposure remains below 25 $\mu\text{g}/\text{m}^3$ as an 8-hour TWA under all foreseeable conditions, including foreseeable control failure.

Health Effects

- Respirable particles can penetrate deep into the lungs and cause incurable silicosis.
- Exposure is also associated with lung cancer, chronic obstructive pulmonary disease and kidney disease, and can increase susceptibility to tuberculosis.
- Disease can develop after chronic exposure or more rapidly after very high exposure. Dust may be dangerous even when a visible cloud is not present.

Responsibilities

- Management provides controls, equipment, competent-person authority, exposure assessment, medical surveillance and training.
- The designated silica competent person implements the written plan, identifies hazards, makes frequent/regular inspections and promptly corrects conditions.
- Foremen document the task/control in pre-task planning, verify full implementation and restrict access.
- Employees use controls as trained, inspect equipment, avoid prohibited practices, report failures/symptoms and stop uncontrolled work.

2. Written Exposure Control Plan and Pre-Task Planning

Written Plan Contents

- Identify tasks involving exposure and the materials, tools and work locations involved.
- Describe engineering controls, work practices and respiratory protection used for each task.
- Describe housekeeping measures used to limit exposure.
- Describe procedures restricting access, when necessary, to minimize the number of employees exposed and their level of exposure, including exposures generated by other employers.
- For construction work involving competent-person supervision under OSHA's silica standard, identify the competent person(s) by job title or project designation and their authority.

Task-Specific Planning

- Confirm whether the task/material is covered and choose either full/proper Table 1 implementation or the alternative exposure-control method before work.
- Verify tool/control combination, indoor/outdoor or enclosed conditions, shift duration, respirator/APF, water supply, vacuum capacity, filter and maintenance requirements.
- Locate exhaust so it does not expose other employees; account for wind, traffic, public, work below and adjacent crews.
- Plan access restriction, housekeeping, slurry collection, waste disposal, hygiene, inspections and response to control failure.
- Coordinate host/controlling contractor and subcontractors so one employer's dust does not expose another's employees.

Plan Availability and Review

- Make the plan available to covered employees, their designated representatives, OSHA and NIOSH upon request.
- Review at least annually and update when tasks, materials, equipment, controls, exposure information or experience show the plan is not effective.
- The plan may be company-wide with project/task-specific additions, but it must accurately describe current work and controls.

COMPETENT-PER SON AUTHORITY

The silica competent person may stop work, restrict access, require additional controls or remove defective equipment. Work resumes only after effective controls are restored.

3. Table 1 Compliance Method

When Table 1 Is Used

- Match the exact task/equipment to a Table 1 entry and fully/properly implement every listed engineering control, work practice and respiratory requirement.
- When fully and properly implemented, no silica exposure assessment is required for that task and the alternative-method PEL provisions do not apply to that task.
- If the task, equipment, work condition or control does not match, or the specified control is not fully implemented, use the alternative exposure-control method.
- Apply the Table 1 respirator requirement based on task, location and whether work is four hours or less or more than four hours per shift.

Full and Proper Implementation

- Operate and maintain tools according to manufacturer instructions to minimize dust emissions.
- For wet methods, apply water at the point of dust generation at the required flow and keep nozzles clear; prevent freezing and electrical/slip hazards.
- For local exhaust, use the specified shroud/cowling and commercial dust collector with required airflow/filter and automatic filter-cleaning where specified.
- Use HEPA-filtered vacuums where Table 1 requires them and maintain hoses, seals, filters and collection containers.
- For enclosed cabs/booths, keep seals/gaskets in good condition, doors/windows closed, surfaces free of settled dust and use required filtered intake air.

Table 1 Does Not Eliminate Other Duties

- Maintain the written plan, competent person, housekeeping restrictions, hazard communication/training and medical surveillance when triggered.
- Use respiratory protection under the company Respiratory Protection Program whenever Table 1 requires it.
- Control non-silica hazards including lead, hexavalent chromium, asbestos, noise, flying particles, traffic and electrical/water hazards.

NO PARTIAL CREDIT

Using some water, an unverified shop vacuum or a dust shroud without required airflow does not constitute full Table 1 compliance.

4. Table 1 Controls for Common Bridge/Highway Tasks

This field summary does not replace the complete current OSHA Table 1. The competent person must verify the exact entry and every condition before work.

COMMON TASK	CORE TABLE 1 CONTROL / RESPIRATOR NOTE
Stationary masonry saw	Continuous water to blade; no respirator specified by Table 1.
Handheld power saw	Integrated water delivery. Outdoors: no respirator through 4 hours; APF 10 over 4 hours. Indoors/enclosed: APF 10 for any duration.
Walk-behind saw	Integrated water delivery. Outdoors: no respirator. Indoors/enclosed: no respirator through 4 hours; APF 10 over 4 hours.
Handheld/stand-mounted drill	Commercial shroud/cowling and dust collector with at least 99% efficiency and manufacturer-recommended airflow; HEPA vacuum hoses as required; no respirator specified.
Jackhammer/chipping tool	Continuous water at impact point or specified shroud/dust collector. Outdoors: no respirator through 4 hours, APF 10 over 4. Indoors/enclosed: APF 10 for any duration.
Grinder - mortar removal	Commercial shroud/dust collector with at least 99% efficiency and adequate airflow; APF 10 through 4 hours, APF 25 over 4 hours.
Grinder - other use	Specified water or shroud/dust collector. Outdoor/indoor and duration requirements differ; verify the complete entry before use.
Heavy equipment/demolition or grading	Use enclosed cab meeting Table 1 conditions and/or continuously apply water/wet methods as the applicable entry requires; keep employees outside dust cloud.

Additional Relevant Entries

- Drivable and rig-mounted saws/drills; dowel and vehicle-mounted drilling rigs.
- Walk-behind and drivable milling machines/floor grinders; crushing machines.
- Heavy equipment and utility vehicles used to abrade/fracture silica materials, demolish, grade or excavate.
- Use the exact current Table 1 language for these tasks rather than relying on memory or this summary.

5. Alternative Exposure-Control Method

When Required

- Use when a task is not listed in Table 1, listed controls cannot be fully/properly implemented, or a different control approach is selected.
- Limit exposure to 50 µg/m³ as an 8-hour TWA using feasible engineering/work-practice controls; supplement with respiratory protection when controls cannot reduce exposure to or below the PEL.

Exposure Assessment Options

- Performance option: combine air-monitoring data and/or objective data sufficient to accurately characterize employee exposure.
- Scheduled-monitoring option: conduct initial representative personal breathing-zone monitoring for each job classification/work area/shift where exposure may reasonably be at or above 25 µg/m³.
- Sample the employee(s) expected to have the highest exposure when representative sampling is used. Use a laboratory meeting Appendix A analytical requirements.

Scheduled Monitoring Frequency

RESULT	NEXT STEP
Below 25 µg/m ³	Discontinue monitoring for represented exposures unless a reassessment trigger occurs.
At/above 25 and at/below 50 µg/m ³	Repeat within 6 months.
Above 50 µg/m ³	Repeat within 3 months.
Two consecutive results below AL, at least 7 days apart	May discontinue for represented exposure.

Results and Reassessment

- Notify affected employees in writing, or post results, within five working days after completing the assessment; when above the PEL, describe corrective action.
- Reassess when production, process, control, personnel or work-practice changes may create new/additional exposure, or when other information indicates exposure may have increased.
- Provide affected employees/designated representatives an opportunity to observe monitoring, with required PPE and procedures.

6. Engineering Controls, Work Practices and Restricted Access

Preferred Controls

- Use wet cutting/drilling/chipping systems, on-tool local exhaust, HEPA filtration, isolation/enclosure, remote operation and enclosed filtered cabs as applicable.
- Choose equipment designed for the task and maintain it to manufacturer specifications; inspect before each shift/use.
- Position employees upwind when practical and direct exhaust/slurry away from employees, traffic, waterways and the public.
- Do not rotate employees as a substitute for feasible engineering/work-practice controls.

Restricted Access

- Establish a controlled work zone with cones, barricades, signs, spotters or scheduling sufficient to minimize the number and exposure of employees.
- Only trained/authorized employees with required PPE enter while dust-generating work or cleanup is underway.
- Coordinate traffic control and maintain emergency access; prevent dust migration to active lanes, occupied structures, lower bridge levels or adjacent crews.

Control Failure or Changing Conditions

- Stop when water flow, vacuum, shroud, hose, filter, cab seal or other control is missing, damaged, clogged, frozen or ineffective.
- Stop if visible dust escapes beyond expected control, exposure conditions change, indoor/enclosed work was not planned, or required respirator/access controls are absent.
- Move to clean air, restrict the area and correct/reassess before restart.

Abrasive Blasting

- Do not use sand or another silica-containing abrasive unless specifically assessed and controlled under all applicable programs.
- A substitute abrasive is not automatically safe; evaluate its SDS, metals, nuisance/toxic dust and the substrate/coating being removed.
- Blasting concrete or silica-containing substrates can generate silica regardless of the abrasive used.

7. Respiratory Protection and PPE

Required Respirator Use

- Provide respirators when Table 1 specifies an APF; when feasible alternative-method controls cannot reduce exposure to/below the PEL; during installation/implementation of controls; and for emergencies or other required situations.
- All required use follows the company Respiratory Protection Policy and 29 CFR 1910.134/1926.103.
- Before use: PLHCP medical clearance, training, correct NIOSH-approved respirator, and fit testing for the exact tight-fitting facepiece.
- Use QNFT when a tight-fitting respirator is used at an APF greater than 10. Facial hair or PPE may not interfere with the seal/valves.
- Complete a user seal check each donning; inspect, clean, store and change filters as assigned.

Respirator Selection

- Select by required APF, measured/anticipated concentration, silica and co-contaminants; respect MUC and equipment limitations.
- An N95/filtering facepiece may satisfy an APF 10 assignment only when properly selected, medically cleared, fit tested and used under the full respiratory program; it is not automatically adequate for every silica task.
- Use P100/HEPA or atmosphere-supplying protection when required by exposure, co-contaminants, substance-specific standards or blasting operations.
- Silica respirators do not necessarily protect against lead, chromium, asbestos, gases or vapors.

Other PPE

- Wear required eye/face, hearing, hand, foot, head and high-visibility protection compatible with respirator fit/function.
- Use protective clothing where contaminated dust/slurry could be carried to vehicles, break areas or home.
- Manage heat/cold stress and physical burden; provide clean breaks and hydration without removing respiratory protection inside the exposure area.

RESPIRATORS ARE THE BACKUP LAYER

A respirator does not excuse missing water, ineffective dust collection or other required controls.

8. Housekeeping, Hygiene and Decontamination

Prohibited or Restricted Practices

- Do not dry sweep or dry brush where it could contribute to silica exposure unless wet sweeping, HEPA vacuuming or another method minimizing exposure is not feasible.
- Do not use compressed air to clean clothing or surfaces where it could contribute to exposure unless used with a ventilation system that effectively captures the dust cloud, or no feasible alternative exists.
- Do not use leaf blowers, uncontrolled air wands or vehicle movement to disperse silica dust.

Approved Cleanup

- Use HEPA vacuuming, wet sweeping, wet wiping, low-dust slurry collection or other approved methods.
- Clean frequently enough to prevent buildup; keep filters/containers sealed and avoid dumping that releases dust.
- Collect slurry before it dries when feasible; manage it to prevent slip, environmental and traffic hazards.
- Handle/dispose of dust, filters, bags and slurry under project, environmental and hazardous-material requirements; co-contaminants may change waste classification.

Hygiene

- Do not eat, drink, smoke, vape, chew gum/tobacco or apply cosmetics in contaminated areas.
- Wash hands and face before breaks and at shift end; use clean change/break areas where necessary.
- Remove dust with a HEPA vacuum or other approved method—not compressed air. Keep contaminated clothing/equipment out of personal vehicles and homes.
- Do not allow wet concrete/cement slurry to remain on skin; silica controls do not replace cement-burn precautions.

**KEEP DUST OUT
OF THE TRUCK
AND HOME**

Control it at the source, clean with low-dust methods and prevent take-home exposure.

9. Medical Surveillance

Who Must Be Offered Surveillance

- At no cost and at a reasonable time/place, make medical surveillance available to each employee required under 1926.1153 to use a respirator for 30 or more days per year.
- Count days on which required silica respirator use occurs, even if for only part of the day. Accurately track assignments.

Initial and Periodic Examinations

- Provide the initial examination within 30 days after initial assignment unless the employee received an examination meeting the standard within the previous three years.
- Provide periodic examinations at least every three years, or more frequently when recommended by the PLHCP.
- Required components include medical/work history, physical examination emphasizing the respiratory system, chest X-ray interpreted by a NIOSH-certified B Reader, pulmonary function testing, initial latent-tuberculosis testing and other tests the PLHCP considers appropriate.
- Chest X-ray and spirometry must follow the technical requirements in 1926.1153 and Appendix B.

Information and Written Medical Opinion

- Provide the PLHCP the standard, job duties, exposure levels, PPE/respirator use and prior silica medical information not otherwise available.
- The company receives only the limited written medical opinion allowed by the standard: examination date, confirmation requirements were met and any recommended limitations on respirator use.
- Additional statements regarding silica limitations or specialist referral require the employee's written authorization. Provide the employee the opinion within 30 days after receiving it.
- The PLHCP explains results to the employee and provides a written medical report directly to the employee.

Specialist Examination

- Make a specialist examination available within 30 days after receiving the PLHCP recommendation, and provide the specialist required information.
- Medical records are confidential and retained/accessed under 1910.1020.

10. Training, Records, Review and Stop Work

Training

- Train employees before exposure in health hazards; tasks; controls/work practices/respirators; housekeeping; plan identity/purpose; competent-person identity; and medical-surveillance purpose/description.
- Include hands-on operation/inspection of water and vacuum systems, positioning, cleanup and response to failure.
- Train in a language and vocabulary employees understand; verify understanding with questions/demonstration.
- Retrain when tasks, controls or requirements change, after incidents/deficiencies, or when knowledge/skill is inadequate. Toolbox talks supplement formal training.

Records

- Keep air-monitoring records with date, task, sampling/analytical methods, results, laboratory, PPE, employees represented and sampled employees' identifiers.
- Keep objective-data records identifying material/task, source, testing protocol/results, description and environmental conditions.
- Keep medical-surveillance records under 1910.1020 and the standard; protect confidentiality.
- Maintain the written plan, competent-person designations, training, inspections, respirator-day tracking and corrective actions under document control.

Program Review

- Review the written plan at least annually and after changed work, exposure results, incident, complaint or observed control failure.
- Use job titles as document owner/designations when appropriate. Printed copies are uncontrolled unless formally issued.
- Audit field implementation—not just paperwork—including water flow, vacuum performance, access control, cleanup and employee practices.

Stop-Work Triggers

- Unplanned silica task/material; no selected compliance method; control does not match Table 1; required monitoring unavailable.
- Failed water/vacuum/shroud/cab; uncontrolled dust migration; missing respirator/fit/clearance; improper housekeeping; public/crew exposure; changed indoor/enclosed conditions.

11. Field Control Checklist

Complete through the project pre-task/JHA process before silica-generating work. Attach task-specific Table 1 or alternative-method documentation as needed.

CHECK	VERIFY / DOCUMENT
Task/material	Concrete, mortar, masonry, rock, soil, coating/substrate; exact operation and duration identified.
Compliance method	Exact Table 1 entry selected and attached, or alternative-method assessment/data identified.
Competent person	Name/project designation confirmed; frequent/regular inspection plan established.
Engineering control	Correct water system or shroud/dust collector/cab; inspected and manufacturer requirements verified.
Respirator/PPE	Required APF and exact assembly; medical, fit-test and training status; compatible PPE.
Work zone	Access restricted; employees/public/traffic/adjacent crews protected; exhaust and wind evaluated.
Housekeeping	HEPA/wet method, slurry and waste handling planned; no prohibited dry sweeping/compressed air.
Utilities/environment	Water/electric/freeze/slip hazards, drainage and environmental protection addressed.
Emergency/failure	Stop-work signal, clean-air location, spare controls and correction/reassessment process identified.

PROJECT/JOB:	
DATE / SHIFT:	
FOREMAN / COMPETENT PERSON:	
CORRECTIVE ACTIONS:	

12. Test Your Knowledge

Circle the best answer. Review missed questions with your foreman before silica-generating work.

1. What is OSHA's silica action level? A. 10 mg/m ³ B. 25 µg/m ³ as an 8-hour TWA C. 100 µg/m ³	2. What is the construction PEL? A. 50 µg/m ³ as an 8-hour TWA B. 25 mg/m ³ C. The old percent-silica formula
3. When does Table 1 eliminate exposure assessment for that task? A. Whenever water is nearby B. When a dust mask is worn C. When the exact controls are fully and properly implemented	4. Who implements the written exposure-control plan? A. Any visitor B. The designated competent person C. The equipment dealer
5. Is dry sweeping permitted when HEPA vacuuming or wet methods are feasible? A. No B. Yes C. Only after lunch	6. Does an alternative blasting abrasive automatically eliminate hazards? A. Yes B. Only outdoors C. No; evaluate the abrasive and substrate/coating
7. When is silica medical surveillance offered? A. Required respirator use under the standard for 30+ days/year B. Only after symptoms C. Every employee automatically	8. What should happen when water flow or dust collection fails? A. Work faster B. Stop, restrict the area and correct the control C. Continue with a fan
9. When are exposure results given to affected employees? A. Within five working days after assessment completion B. At annual review only C. Only if below the PEL	10. May respirators replace feasible engineering controls? A. Always B. At employee choice C. No; they supplement required/feasible controls

EMPLOYEE: _____

DATE: _____

ANSWER KEY: 1-B | 2-A | 3-C | 4-B | 5-A | 6-C | 7-A | 8-B | 9-A | 10-C