TITLE 8, DIVISION 1, CHAPTER 4

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

Amend Section 5204 as follows:

5204. Occupational Exposures to Respirable Crystalline Silica.

(a) Scope and application.

(1) This section applies to all occupational exposures to respirable crystalline silica, except:

(A) Construction work covered under Section 1532.3;

(B) Agricultural operations covered under Section 3436; and

(C) Exposures that result from the processing of sorptive clays.

(2) This section does not apply where the employer has objective data demonstrating that employee exposure to respirable crystalline silica will remain below 25 micrograms per cubic meter of air (25 $\mu g/m^3$) as an 8-hour time-weighted average (TWA) under any foreseeable conditions.

EXCEPTION: Subsection (a)(2) does not apply to high-exposure trigger tasks, as defined in subsection (b).

(3) This section applies to high-exposure trigger tasks regardless of employee exposures, exposure assessments, or objective data.

(4~~3~~) This section does not apply if the employer complies with Section 1532.3 and:

(A) The task performed is indistinguishable from a construction task listed on Table 1 in subsection (c) of Section 1532.3; and

(B) The task will not be performed regularly in the same environment and conditions.

(b) Definitions. For the purposes of this section the following definitions apply:

(1) "Action Level" means a concentration of airborne respirable crystalline silica of 25 $\mu g/m^3$, calculated as an 8-hour TWA.

(2) "Artificial Stone" means 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.

(3) "Chief" means the Chief of the Division of Occupational Safety and Health (Division), or designee.

(4) "Confirmed Silicosis" means any one of the following:

(A) A written diagnosis of silicosis is made by a PLHCP accompanied by one or more of the following:

1. A chest X-ray, interpreted by an individual certified by the National Institute for Occupational Safety and Health (NIOSH) as a B Reader, classifying the existence of pneumoconioses of category 1/0 or higher; or

2. Results from a chest computer tomography (CT) scan or other imaging technique that are consistent with silicosis; or

3. Lung histopathology consistent with silicosis; or

(B) Death certificate listing silicosis or pneumoconiosis from silica dust as an underlying or contributing cause of death; or

(C) Exposure to airborne respirable crystalline silica accompanied by one or more of the following:

1. Chest X-ray (or other imaging technique, such as a chest CT scan) showing abnormalities interpreted as consistent with silicosis; or

2. Lung histopathology consistent with silicosis.

(5) "Director" means the Director of the National Institute for Occupational Safety and Health (NIOSH), U.S. Department of Health and Human Services, or designee.

(6) "Employee Exposure" means the exposure to airborne respirable crystalline silica that would occur if the employee were not using a respirator. For high-exposure trigger tasks, employee exposure includes employees performing these tasks and employees working in the regulated area where the high-exposure trigger task is performed.

(7) "High-~~e~~Efficiency Particulate Air (HEPA) Filter" means a filter that is at least 99.97 percent efficient in removing mono-dispersed particles of 0.3 micrometers in diameter.

(8) "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 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.

EXCEPTION: Geologic field research is not considered a high-exposure trigger task when employees work in the field with natural stone for less than 30 days in a 12-month period and use respiratory protection in accordance with Section 5144 during such work.

(9) "Objective Data" means information, such as air monitoring data from industry-wide surveys or calculations based on the composition of a substance, demonstrating employee exposure to respirable crystalline silica associated with a particular product or material or a specific process, task, or activity. The data must reflect workplace conditions closely resembling or with a higher exposure potential than the processes, types of material, control methods, work practices, and environmental conditions in the employer's current operations.

(10) "Physician or Other Licensed Health Care Professional (PLHCP)" means an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows ~~him or her~~ them to independently provide or be delegated the responsibility to provide some or all of the particular health care services required by subsection (j~~i~~).

(11) "Qualified Person", for purposes of this section only, means a person 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.

(12) "Regulated Area" means an area, demarcated by the employer, where an employee's exposure to airborne concentrations of respirable crystalline silica exceeds, or can reasonably be expected to exceed, the permissible exposure limit (PEL)as described in subsection (c).

(13) "Respirable Crystalline Silica" means quartz, cristobalite, and/or tridymite contained in airborne particles that are determined to be respirable by a sampling device designed to meet the characteristics for respirable-particle-size-selective samplers specified in the International Organization for Standardization (ISO) 7708:1995: Air Quality - Particle Size Fraction Definitions for Health-Related Sampling.

(14) "Specialist" means an American Board Certified Specialist in Pulmonary Disease or an American Board Certified Specialist in Occupational Medicine.

(15) "Suspected Silicosis" means any one of the following:

(A) An employee with respirable crystalline silica exposure who has one or more of the following symptoms for 14 or more days unless the symptom is explained by another illness: cough, difficulty breathing, fatigue, shortness of breath, chest pain, weakness, fever, or unexplained weight loss; or

(B) An employee with clinical findings suggestive of silicosis; or

(C) An employee with respirable crystalline silica exposure with abnormal spirometry regardless of symptoms that is not yet a confirmed silicosis case.

(16) "This Section" means this respirable crystalline silica standard, Section 5204.

(17) "Wet Methods" means effectively suppressing dust by one of the methods listed below, such that exposures do not exceed the action level at any time. Regardless of the method used, water shall cover the entire surface of the work object where a tool, equipment, or machine contacts the work object.

(A) Applying a constant, continuous, and appropriate volume of running water directly onto the surface of the work object. When water flow is integrated with a tool, machine, or equipment, water flow rates shall equal or exceed manufacturer recommendations and specifications to ensure effective dust suppression.

(B) Submersing the work object underwater.

(C) Water jet cutting (use of high-pressure water to cut material).

(c) Permissible exposure limit (PEL). The employer shall ensure that no employee is exposed to an airborne concentration of respirable crystalline silica in excess of 50 $\mu g/m^3$, calculated as an 8-hour TWA.

(d) Exposure assessment.

(1) General. The employer shall assess the exposure of each employee who is or may reasonably be expected to be exposed to respirable crystalline silica at or above the action level in accordance with either the performance option in subsection (d)(2) or the scheduled monitoring option in subsection (d)(3). Regardless of exposures or expected exposures, all high-exposure trigger tasks shall be assessed by scheduled monitoring in accordance with subsection (d)(3).

(2) Performance option. The employer shall assess the 8-hour TWA exposure for each employee on the basis of any combination of air monitoring data or objective data sufficient to accurately characterize employee exposures to respirable crystalline silica. Subsection (d)(2) does not apply to high-exposure trigger tasks; these tasks shall be assessed by scheduled monitoring in accordance with subsection (d)(3).

(3) Scheduled monitoring option.

(A) The employer shall perform initial monitoring to assess the 8-hour TWA exposure for each employee on the basis of one or more personal breathing zone air samples that reflect the exposures of employees on each shift, for each job classification, in each work area. Where several employees perform the same tasks on the same shift, on the same material, and in the same work area, the employer may sample a representative fraction of these employees in order to meet this requirement. In representative sampling, the employer shall sample the employee(s) who are expected to have the highest exposure to respirable crystalline silica.

(B) If initial monitoring indicates that employee exposures are below the action level, the employer may discontinue monitoring for those employees whose exposures are represented by such monitoring. Monitoring shall not be discontinued for high-exposure trigger tasks. High-exposure trigger tasks shall be monitored by a qualified person, as defined under subsection (b), at least every 12 months, or more frequently as required in this section.

(C) Where the most recent exposure monitoring indicates that employee exposures are at or above the action level but at or below the PEL, the employer shall repeat such monitoring within six months of the most recent monitoring.

(D) Where the most recent exposure monitoring indicates that employee exposures are above the PEL, the employer shall repeat such monitoring within three months of the most recent monitoring.

(E) Where the most recent (non-initial) exposure monitoring indicates that employee exposures are below the action level, the employer shall repeat such monitoring within six months of the most recent monitoring until two consecutive measurements, taken 7 or more days apart, are below the action level, at which time the employer may discontinue monitoring for those employees whose exposures are represented by such monitoring, except as otherwise provided in subsection (d)(4). Monitoring shall not be discontinued for high-exposure trigger tasks. High-exposure trigger tasks shall be monitored by a qualified person, as defined under subsection (b), at least every 12 months or more frequently as required in this section.

(4) Reassessment of exposures. The employer shall reassess exposures whenever a change in the production, process, control equipment, personnel, or work practices may reasonably be expected to result in new or additional exposures at or above the action level, or when the employer has any reason to believe that new or additional exposures at or above the action level have occurred.

(5) Methods of sample analysis. The employer shall ensure that all samples taken to satisfy the monitoring requirements of subsection (d) are evaluated by a laboratory that analyzes air samples for respirable crystalline silica in accordance with the procedures in Appendix A to this section.

(6) Employee notification of assessment results.

(A) Within 15 working days after completing an exposure assessment in accordance with subsection (d), the employer shall individually notify each affected employee in writing of the results of that assessment or post the results in an appropriate location accessible to all affected employees.

(B) Whenever an exposure assessment indicates that employee exposure is above the PEL, the employer shall describe in the written notification the corrective action being taken to reduce employee exposure to or below the PEL.

(7) Observation of monitoring.

(A) Where air monitoring is performed to comply with the requirements of this section, the employer shall provide affected employees or their designated representatives an opportunity to observe any monitoring of employee exposure to respirable crystalline silica.

(B) When observation of monitoring requires entry into an area where the use of protective clothing or equipment is required for any workplace hazard, the employer shall provide the observer with protective clothing and equipment at no cost and shall ensure that the observer uses such clothing and equipment.

(e) Regulated areas.

(1) Establishment. The employer shall establish a regulated area wherever an employee's exposure to airborne concentrations of respirable crystalline silica is, or can reasonably be expected to be, in excess of the PEL. All high-exposure trigger tasks shall be conducted within a regulated area regardless of employee exposure, exposure assessments, or other objective data.

(2) Demarcation.

(A) The employer shall demarcate regulated areas from the rest of the workplace in a manner that minimizes the number of employees exposed to respirable crystalline silica within the regulated area.

(B) The employer shall post signs at all entrances to regulated areas that bear the legend specified in subsection (~~j~~)(~~2~~3).

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(3) Access. The employer shall limit access to regulated areas to:

(A) Persons authorized by the employer and required by work duties to be present in the regulated area;

(B) Any person entering such an area as a designated representative of employees for the purpose of exercising the right to observe monitoring procedures under subsection (d); and

(C) Any person authorized by the Occupational Safety and Health Act or regulations issued under it to be in a regulated area.

(4) Provision of respirators. The employer shall provide each employee and the employee's designated representative entering a regulated area with an appropriate respirator in accordance with subsection (h~~g~~) and shall require each employee and the employee's designated representative to use the respirator while in a regulated area.

(f) Methods of compliance.

(1) Engineering and work practice controls. The employer shall use engineering and work practice controls to reduce and maintain employee exposure to respirable crystalline silica to or below the PEL, unless the employer can demonstrate that such controls are not feasible. Wherever such feasible engineering and work practice controls are not sufficient to reduce employee exposure to at or below the PEL, the employer shall nonetheless use them to reduce employee exposure to the lowest feasible level and shall supplement them with the use of respiratory protection that complies with the requirements of subsection (h~~g~~). Subsection (f)(1) does not apply to high-exposure trigger tasks. High-exposure trigger tasks shall comply with subsection (f)(2).

(2) The employer shall use the following engineering controls and work practices for all high-exposure trigger tasks, regardless of employee exposures, exposure assessments, or objective data.

(A) Engineering Controls. Effective wet methods that reduce exposure levels below the action level, as defined in subsection (b), shall be used.

(B) Housekeeping and Hygiene.

1. 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.

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 respiratory 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.

(3~~2~~) Written exposure control plan.

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

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

2. A description of the engineering controls, work practices, and respiratory protection used to limit employee exposure to respirable crystalline silica for each task; and

3. A description of the housekeeping measures used to limit employee exposure to respirable crystalline silica.

(B) The employer shall review and evaluate the effectiveness of the written exposure control plan at least annually and update it as necessary.

(C) The employer shall make the written exposure control plan readily available for examination and copying, upon request, to each employee covered by this section, their designated representatives, the Chief, and the Director.

(D) In addition to the requirements of subsections (f)(3)(A) through (f)(3)(C), workplaces where high-exposure trigger tasks occur shall also include the following in their written exposure control plan:

1. Results of air monitoring conducted by a qualified person, as defined under subsection (b), demonstrating whether engineering controls are effective at continuously maintaining exposure levels below the action level.

2. Procedures for the proper donning and doffing of personal protective equipment, including work clothing and respiratory protection, to effectively prevent exposures to respirable crystalline silica above the action level and prevent take-home exposures.

3. Documentation of proper reporting to the Division, pursuant to Section 5203 (Carcinogen Report of Use Requirements).

4. The procedures the employer will use to ensure that employees are properly trained to prevent respirable crystalline silica exposures, in accordance with subsection (l)(4).

5. The procedures the employer will use to provide medical surveillance in accordance with subsection (j) and medical removal, if necessary, in accordance with subsection (k).

(4~~3~~) Abrasive blasting. In addition to the requirements of subsection (f)(1), the employer shall comply with other Title 8 standards, when applicable, such as Section 5143 (General Requirements of Mechanical Ventilation Systems) and Section 5151 (Ventilation and

Personal Protective Equipment Requirements for Abrasive Blasting Operations), where abrasive blasting is conducted using crystalline silica-containing blasting agents, or where abrasive blasting is conducted on substrates that contain crystalline silica.

(g) Imminent Hazards.

(1) Failure to comply with subsection (f)(2)(A), Engineering Controls, shall be considered an imminent hazard and shall be subject to an Order Prohibiting Use (issued pursuant to Labor Code Section 6325) by the Division.

(2) Failure to comply with any of the following shall be considered an imminent hazard and may be subject to an Order Prohibiting Use from the Division:

(A) Subsection (f)(2)(D) Prohibitions;

(B) Subsection (h) Respiratory protection;

(C) Subsection (m) Reporting of silicosis; and

(D) Section 5203 Carcinogen Report of Use Requirements.

(hg) Respiratory protection.

(1) General. Where respiratory protection is required by this section, the employer must provide each employee an appropriate respirator that complies with the requirements of this subsection and Section 5144. Respiratory protection is required:

(A) Where exposures exceed the PEL during periods necessary to install or implement feasible engineering and work practice controls;

(B) Where exposures exceed the PEL during tasks, such as certain maintenance and repair tasks, for which engineering, and work practice controls are not feasible;

(C) During tasks for which an employer has implemented all feasible engineering and work practice controls and such controls are not sufficient to reduce exposures to or below the PEL; and

(D) During periods when the employee is in a regulated area.

(2) Subsection (h)(1) does not apply to high-exposure trigger tasks. High-exposure trigger tasks shall comply with subsection (h)(3).

(3) For all employees exposed to a high-exposure trigger task the employer shall provide, and shall ensure employees properly use, the following respiratory protection, in accordance with Section 5144:

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(A) A full face, tight-fitting powered-air purifying respirator (PAPR), a helmet or hood PAPR with an Assigned Protection Factor (APF) of 1000 pursuant to section 5144, or another respirator providing equal or greater protection (APF of 1000 or greater) equipped with a HEPA, N100, R100, or P100 filter shall be used.

EXCEPTION: The employer may provide employees with a loose-fitting PAPR (APF of 25), a half-face PAPR (APF of 50), a full facepiece air-purifying respirator (APF of 50), or another respirator providing equal or greater protection where the employer demonstrates that employee exposures to respirable crystalline silica are continuously maintained below the action level through representative air sampling conducted by a qualified person, as defined under subsection (b), at least once every six months, in accordance with subsection (d)(3)(A). This exception does not apply if the PLHCP or specialist recommends use of a full face, tight-fitting PAPR or other more protective respirator.

(B) A full face, tight-fitting supplied-air respirator in pressure-demand or other positive pressure mode for any employees known to the employer to be diagnosed with confirmed silicosis, or who meet the definition of suspected silicosis, or whenever the PLHCP or specialist recommends use of a supplied-air respirator. The air source for the supplied-air respirator shall be located outside the regulated area and in an area that is free of respirable crystalline silica and other airborne contaminants.

(4~~2~~) Respiratory protection program. Where respirator use is required by this section, the employer shall institute a respiratory protection program in accordance with Section 5144.

(i~~h~~) Housekeeping.

(1) The employer shall not allow dry sweeping or dry brushing where such activity could contribute to employee exposure to respirable crystalline silica unless wet sweeping, HEPA-filtered vacuuming or other methods that minimize the likelihood of exposure are not feasible.

(2) The employer shall not allow compressed air to be used to clean clothing or surfaces where such activity could contribute to employee exposure to respirable crystalline silica unless:

(A) The compressed air is used in conjunction with a ventilation system that effectively captures the dust cloud created by the compressed air; or

(B) No alternative method is feasible.

(3) The exceptions for feasibility in subsection (i) do not apply to high-exposure trigger tasks. High-exposure trigger tasks shall comply with subsection (f)(2).

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(j~~i~~) Medical surveillance.

(1) General.

(A) The employer shall make the initial and periodic medical examinations ~~surveillance~~ that are required by this subsection available at no cost to the employee, and at a reasonable time and place.~~,~~ ~~for each employee who will be occupationally exposed to respirable crystalline silica at or above the action level for 30 or more days per year.~~

(B) The employer shall ensure that all initial and periodic medical examinations and procedures required by this section are performed by a PLHCP, as defined in subsection (b).

(2) Initial medical examination.

(A) For each employee exposed to a high-exposure trigger task for at least 10 days each year, ~~T~~the employer shall make available, ~~an~~ and shall inform employees of their right to, an initial (baseline) medical examination within 30 days after initial assignment, unless the employee has received a medical examination that meets the requirements of ~~this~~ subsection (j)(4) within the last ~~three~~ years. ~~The examination shall consist of:~~

~~(A) A medical and work history, with emphasis on: Past, present, and anticipated exposure to respirable crystalline silica, dust, and other agents affecting the respiratory system; any history of respiratory system dysfunction, including signs and symptoms of respiratory disease (e.g., shortness of breath, cough, wheezing); history of tuberculosis; and smoking status and history;~~

~~(B) A physical examination with special emphasis on the respiratory system;~~

~~(C) A chest X-ray (a single posteroanterior radiographic projection or radiograph of the chest at full inspiration recorded on either film (no less than 14 x 17 inches and no more than 16 x 17 inches) or digital radiography systems), interpreted and classified according to the International Labour Office (ILO) International Classification of Radiographs of Pneumoconioses by a NIOSH-certified B-Reader;~~

~~(D) A pulmonary function test to include forced vital capacity (FVC) and forced expiratory volume in one second (FEV1) and FEV1/FVC ratio, administered by a spirometry technician with a current certificate from a NIOSH-approved spirometry course;~~

~~(E) Testing for latent tuberculosis infection; and~~

~~(F) Any other tests deemed appropriate by the PLHCP~~

(B) For each employee who is occupationally exposed to respirable crystalline silica at or above the action level for 30 or more days per year, and who is not covered by subsection (j)(2)(A), the employer shall make available, and shall inform employees of their right to, an initial (baseline) medical examination within 30 days after initial assignment, unless the employee has received a medical examination that meets the requirements of this section within the last three years.

(3) Periodic medical examinations.

(A) For each employee covered by subsection (j)(2)(A), ~~T~~the employer shall make available, and shall inform employees of their right to, a medical examination~~s~~ once a year, or more frequently if recommended by the PLHCP, that ~~include~~ meets the requirements of ~~procedures described in~~ subsection (j~~i~~)(~~2~~4) ~~(except subsection (ji)(2)(E)) at least every three years, or more frequently if recommended by the PLHCP~~.

EXCEPTION: This subsection (j)(3)(A) does not apply where the employer demonstrates that employee exposures to respirable crystalline silica during high-exposure trigger tasks are continuously maintained below the action level through representative air sampling conducted by a qualified person, as defined in subsection (b), at least once every six months, in accordance with subsection (d)(3)(A). This exception does not apply if the PLHCP or specialist recommends periodic medical examinations. Employers who meet the requirements of this Exception shall still make available, and inform employees of their right to, medical examinations that meet the requirements of subsection (j)(4) every three years, regardless of measured exposure levels or objective data.

(B) For each employee covered by subsection (j)(2)(B), the employer shall make available, and shall inform employees of their right to, medical examinations that meet the requirements of subsection (j)(4) at least every three years, or more frequently if recommended by the PLHCP or specialist.

(4) Medical examination procedures

(A) Except as noted in (j)(4)(A)5., the initial and periodic medical examinations required by this subsection shall consist of the following:

1. A medical and work history that includes past, present, and anticipated exposure to respirable crystalline silica, dust, and other agents affecting the respiratory system, including as a result of performing high-exposure trigger

tasks; the approximate percentage of time the employee performed high-exposure trigger tasks, if any, over their working lifetime; the type of respiratory protection used by the employee for protection against respirable crystalline silica, if any, over their working lifetime, and the approximate percentage of time the employee used the respiratory protection; current or preexisting respiratory system health conditions or impairment, including signs and symptoms of respiratory disease (e.g., shortness of breath, cough, wheezing); history of tuberculosis; and smoking status and history;

2. A physical examination with special emphasis on the respiratory system;

3. A chest X-ray (a single posteroanterior radiographic projection or radiograph of the chest at full inspiration recorded on either film (no less than 14 x 17 inches and no more than 16 x 17 inches) or digital radiography systems), interpreted and classified according to the International Labour Organization (ILO) International Classification of Radiographs of Pneumoconioses by a NIOSH-certified B Reader. A chest computed tomography (CT) scan at the lowest possible dose may be substituted for the chest X-ray when deemed appropriate by the PLHCP or specialist;

4. A pulmonary function test to include forced vital capacity (FVC) and forced expiratory volume in one second (FEV_1) and FEV_1/FVC ratio, administered by a spirometry technician with a current certificate from a NIOSH-approved spirometry course;

5. Testing for latent tuberculosis infection as part of the initial medical examination only; and

6. Any other tests deemed appropriate by the PLHCP or specialist.

(B) For each employee covered by subsection (j)(2)(A), a chest CT scan shall be performed at the lowest dose possible, as well as a test of lung diffusing capacity for carbon monoxide, and any additional recommended pulmonary function testing, shall be included in initial and periodic examinations for all the following:

1. For any employee when deemed appropriate by the PLHCP.

2. For any employee with suspected silicosis, as defined under subsection (b).

3. For any employee who has been exposed to a high-exposure trigger task for at least 30 days each year for at least three consecutive prior years, regardless of exposure assessments or objective data.

EXCEPTION: Subsection (j)(4)(B)3. does not apply where the employer demonstrates that employee exposures to respirable crystalline silica have been continuously maintained below the action level through representative air sampling conducted by a qualified person, as defined in subsection (b), at least once every six months, in accordance with subsection (d)(3)(A) for the entirety of the three years.

(5~~4~~) Information provided to the PLHCP. The employer shall ensure that the examining PLHCP has a copy of this standard, and shall provide the PLHCP with the following information:

(A) A description of the employee's former, current, and anticipated duties, including high-exposure trigger tasks, as they relate to the employee's occupational exposure to respirable crystalline silica;

(B) The employee's former, current, and anticipated levels of occupational exposure to respirable crystalline silica;

(C) A description of the type of respiratory protection ~~any personal protective equipment~~ used ~~or to be used~~ by the employee, if any, ~~including when~~ and ~~for~~ how ~~long~~ often the employee used it ~~has used or will use that equipment~~; and

(D) Information from records of employment-related medical examinations previously provided to the employee and currently within the control of the employer.

(E) Name, phone number, email, and physical address of any previous PLHCP or Specialist.

(F) The obligation of PLHCPs and specialists to report confirmed silicosis and lung cancer cases to the Division, in accordance with subsection (m)(2), in addition to complying with the silicosis reporting requirements under California Code of Regulations (CCR) Title 17.

(5~~5~~6) PLHCP's written medical report for the employee. The employer shall ensure that the PLHCP explains to the employee the results of initial and periodic ~~the~~ medical examinations and provides each employee with a written medical report within ~~30~~ 14 days of each medical examination performed. The written report shall contain:

(A) A statement indicating the results of the medical examination, including any medical condition(s) that would place the employee at increased risk of material impairment to health from exposure to respirable crystalline silica and any medical conditions that require further evaluation or treatment;

(B) Any recommended limitations on the employee's use of respirators;

(C) Any recommended limitations on the employee's exposure to respirable crystalline silica~~;~~ including during high-exposure trigger tasks; ~~and~~

(D) A statement that the employee should be examined by a specialist ~~(pursuant to subsection (i)(7))~~ if the chest X-ray provided in accordance with this section is classified as 1/0 or higher by the B Reader, if applicable, or if referral to a specialist is otherwise deemed appropriate by the PLHCP.

(E) If applicable, a statement describing the findings of a chest CT scan or equivalent; a lung diffusing capacity exam; and any additional pulmonary function testing.

(F) For each employee covered by subsection (j)(2)(A), a recommendation on whether a supplied-air respirator is needed for the employee.

(~~6~~7) PLHCP's written medical opinion for the employer.

~~(A)~~ The employer shall obtain a written medical opinion from the PLHCP within ~~30~~ 14 calendar days of each initial or periodic ~~the~~ medical examination~~.~~ and shall immediately provide it to the employee. The written opinion shall contain only the following:

~~1.~~(A) The date of the examination;

~~2.~~(B) A statement that the examination has met the requirements of this section; ~~and~~

~~3.~~(C) Any recommended limitations on the employee's use of respirators;

(D) For each employee covered by subsection (j)(2)(A), an opinion on whether a supplied-air respirator is needed for the employee; and

~~(B) If the employee provides written authorization, the written opinion shall also contain either or both of the following:~~

~~1.~~(E) Any recommended limitations on the employee's exposure to respirable crystalline silica~~;~~ including during high-exposure trigger tasks.

~~2. A statement that the employee should be examined by a specialist (pursuant to subsection (ji)(7)) if the chest X-ray provided in accordance with this section is classified as 1/0 or higher by the B Reader, or if referral to a specialist is otherwise deemed appropriate by the PLHCP.~~

~~(C) The employer shall ensure that each employee receives a copy of the written medical opinion described in subsection (ji)(6)(A) and (B) within 30 days of each medical examination performed.~~

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(~~7~~8) Additional examinations.

(A) If the PLHCP's written medical opinion indicates that an employee should be examined by a specialist, the employer shall make available a medical examination by a specialist within 30 days after receiving the PLHCP's written opinion.

(B) The employer shall ensure that the examining specialist is provided with all of the information that the employer is obligated to provide to the PLHCP in accordance with subsection (~~i~~j)(~~4~~5).

(C) The employer shall ensure that the specialist explains to the employee the results of the medical examination and provides each employee with a written medical report within ~~30~~ 14 days of the examination. The written report shall meet the requirements of subsection (~~i~~j)(~~5~~6) (except subsection (j~~i~~)(~~5~~6)(D)).

(D) The employer shall obtain a written opinion from the specialist within ~~30~~ 14 days of the medical examination. The written opinion shall meet the requirements of subsection (j~~i~~)(~~6~~7) ~~(except subsection (i)(6)(A)2 and (i)(6)(B)2.)~~.

(k) Medical Removal

(1) When the PLHCP recommends that an employee covered by subsection (j)(2)(A) be removed from a job assignment or that the employee's job be modified to reduce exposure to respirable crystalline silica, the employer shall modify the employee's job or transfer the employee to comparable work for which the employee is qualified, or for which the employee can be trained within a period of six months.

(2) The employer shall maintain the employee's current earnings, seniority, and other benefits for up to six months. If there is no work available that meets the PLHCP's recommended restrictions, the employer shall maintain the employee's current earnings, seniority, and other benefits until any of the following occurs:

(A) Such work becomes available.

(B) The employee is determined by the PLHCP, or in accordance with subsection (k)(5), to be able to return to their original job status.

(C) The employee is determined by the PLHCP, or is determined in accordance with subsection (k)(5), to be permanently unable to return to work that could involve exposure to respirable crystalline silica during high-exposure trigger tasks.

(D) Six months have elapsed since the beginning of the current medical removal period.

(3) Workers' Compensation Claims. If a removed employee files a claim for workers' compensation for a silica-related disability, the employer shall provide medical removal

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benefits to the employee at the employee's normal hourly wage and weekly work schedule for a period of up to six months, pending final disposition of the claim.

(4) Other Credits. The employer's obligation to provide medical removal benefits to a removed employee may only be reduced by the amount that the employee receives in compensation for:

(A) Earnings lost during the period of removal from a public or employer-funded compensation program, including a workers compensation program, or

(B) Income received from employment with another employer made possible by virtue of the employee's removal.

(5) Independent Medical Review.

(A) For each employee covered by subsection (j)(2)(A), after any medical evaluation or consultation conducted pursuant to subsections (j) or (k), the employee may designate an independent PLHCP to review any findings, determinations, or recommendations and to conduct such examinations, consultations, and laboratory tests as this second PLHCP deems necessary and appropriate to facilitate this review.

(B) The costs of this review shall be borne by the employer.

(C) The determination of the second PLHCP shall be binding on all parties.

(l~~i~~) Communication of respirable crystalline silica hazards to employees.

(1) Any training, communications, signs, labels, and written information required by subsection (l) shall be provided in a language understood by employees and shall be appropriate for their level of education and literacy.

(2~~1~~) Hazard communication. The employer shall include respirable crystalline silica in the program established to comply with the hazard communication standard (HCS) (Section 5194). The employer shall ensure that each employee has access to labels on containers of crystalline silica and safety data sheets, and is trained in accordance with the provisions of HCS and subsection (l~~i~~)(3~~4~~). The employer shall ensure that at least the following hazards are addressed: Cancer, lung effects, immune system effects, and kidney effects.

(3~~2~~) Signs. The employer shall post signs at all entrances to regulated areas that bear the following legend:

DANGER

RESPIRABLE CRYSTALLINE SILICA

CAUSES PERMANENT LUNG DAMAGE THAT MAY LEAD TO DEATH

MAY CAUSE CANCER

~~CAUSES DAMAGE TO LUNGS~~

WEAR RESPIRATORY PROTECTION IN THIS AREA

AUTHORIZED PERSONNEL ONLY

PELIGRO

SÍLICE CRISTALINA RESPIRABLE

PROVOCA DAÑO PERMANENTE A LOS PULMONES QUE PODRIA CAUSAR LA MUERTE

PUEDE PROVOCAR CÁNCER

USAR PROTECCIÓN RESPIRATORIA EN ESTA ÁREA

SOLO PERSONAL AUTORIZADO

(4~~3~~) Employee information and training.

(A) The employer shall ensure that each employee covered by this section can demonstrate knowledge and understanding of at least the following:

1. The health hazards associated with exposure to respirable crystalline silica;

2. Symptoms related to exposure to respirable crystalline silica such as cough, difficult breathing, fatigue, shortness of breath, weakness, fever, chest pain, or unexplained weight loss;

~~2~~3. Specific tasks in the workplace that could result in exposure to respirable crystalline silica, including high-exposure trigger tasks, and how to prevent respirable crystalline silica exposure while performing those tasks;

~~3~~4. Specific measures the employer has implemented to ~~protect~~ prevent employee~~s from~~ exposure to respirable crystalline silica, including engineering controls, work practices, and respirators to be used, including for high-exposure trigger tasks;

5. How to properly use and implement engineering controls, work practices, and respiratory protection in order to prevent employee exposure to respirable crystalline silica;

~~4~~6. The contents of this section; ~~and~~

~~5~~7. The purpose and a description of the medical surveillance program required by subsection (ji)~~.~~;

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8. The increased risk of death that results from the combined effects of smoking and respirable crystalline silica exposure; and

9. The increased risk of a latent tuberculosis infection becoming active that results from the effects of respirable crystalline silica exposure.

(B) The employer shall make a copy of this section readily available without cost to each employee covered by this section.

(C) The employer shall encourage employees to report any symptoms related to exposure to respirable crystalline silica without fear of reprisal. Employers are prohibited from taking or threatening to take any adverse action against employees who report symptoms or who suffer from a silica-related illness.

(m) Reporting of silicosis.

(1) Within 24 hours of receiving information regarding a confirmed silicosis case or lung cancer related to respirable crystalline silica exposure, the employer shall report the following information to the California Department of Public Health (CDPH) and to the Division by phone or a specified online mechanism established by these agencies:

(A) The name, phone number, email, and mailing address of each employee identified with silicosis or lung cancer, or their next of kin;

(B) Date of birth of employee;

(C) The employer's business name, including any aliases or dba identifiers, and the employer's phone number, email, and mailing address;

(D) The name, phone number, email, physical address, and mailing address of the manager responsible for the facility where each employee with silicosis or lung cancer is, or was, employed;

(E) The name, phone number, email, and mailing address of the diagnosing PLHCP, and the date of diagnosis;

(F) The number of years each employee identified with silicosis has been, or was, employed by the employer, and the tasks the employee engaged in during this time period, including the number and frequency of high-exposure trigger tasks;

(G) The specific protections, if any, that were implemented by the employer throughout the employee's period of employment, to prevent exposure to respirable crystalline silica;

(H) Results of any and all air monitoring for respirable crystalline silica at the workplace throughout the employee's period of employment;

(I) A description of any personal protective equipment provided by the employer and used by the employee throughout the employee's period of employment;

(J) Whether or not the employer has reported the facility with the Division as required by Section 5203; and

(K) Prior employers, if known, where employee had respirable crystalline silica exposure.

(2) Within 24 hours of identifying a confirmed silicosis or lung cancer case, PLHCPs and specialists shall report the case to the Division by phone or a specified online mechanism, in addition to complying with the silicosis reporting requirements under CCR Title 17. The report shall contain the following information:

(A) Name of employer;

(B) Name of employer representative;

(C) Phone number and email for the employer;

(D) Physical and mailing address of the workplace;

(E) The employee's levels of occupational exposure to respirable crystalline silica, if known;

(F) A description of any personal protective equipment used by the employee, if known; and

(G) Name, date of birth, phone number, email, and physical address of affected employee.

(n~~k~~) Recordkeeping.

(1) Air monitoring data.

(A) The employer shall make and maintain an accurate record of all exposure measurements taken to assess employee exposure to respirable crystalline silica, as prescribed in subsection (d).

(B) This record shall include at least the following information:

1. The date of measurement for each sample taken;

2. The task monitored;

3. Sampling and analytical methods used;

4. Number, duration, and results of samples taken;

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5. Identity of the laboratory that performed the analysis;

6. Type of personal protective equipment, such as respirators, worn by the employees monitored; and

7. Name, social security number, and job classification of all employees represented by the monitoring, indicating which employees were actually monitored.

(C) The employer shall ensure that exposure records are maintained and made available in accordance with Section 3204.

(2) Objective data.

(A) The employer shall make and maintain an accurate record of all objective data relied upon to comply with the requirements of this section.

(B) This record shall include at least the following information:

1. The crystalline silica-containing material in question;

2. The source of the objective data;

3. The testing protocol and results of testing;

4. A description of the process, task, or activity on which the objective data were based; and

5. Other data relevant to the process, task, activity, material, or exposures on which the objective data were based.

(C) The employer shall ensure that objective data are maintained and made available in accordance with Section 3204.

(3) Medical surveillance.

(A) The employer shall make and maintain an accurate record for each employee covered by medical surveillance under subsection (j~~i~~).

(B) The record shall include the following information about the employee:

1. Name and social security number;

2. A copy of the PLHCPs' and specialists' written medical opinions; and

3. A copy of the information provided to the PLHCPs and specialists.

(C) The employer shall ensure that medical records are maintained and made available in accordance with Section 3204.

~~(*l*) Dates.~~

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~~(1) This section is effective October 17, 2016.~~

~~(2) Except as provided for in subsections (l)(3) and (4), all obligations of this section commence June 23, 2018.~~

~~(3) For hydraulic fracturing operations in the oil and gas industry:~~

~~(A) All obligations of this section, except obligations for medical surveillance in subsection (i)(1)(A) and engineering controls in subsection (f)(1), commence June 23, 2018;~~

~~(B) Obligations for engineering controls in subsection (f)(1) commence June 23, 2021; and~~

~~(C) Obligations for medical surveillance in subsection (i)(1)(A) commence in accordance with subsection (l)(4).~~

~~(4) The medical surveillance obligations in subsection (i)(1)(A) commence on June 23, 2018, for employees who will be occupationally exposed to respirable crystalline silica above the PEL for 30 or more days per year. Those obligations commence June 23, 2020, for employees who will be occupationally exposed to respirable crystalline silica at or above the action level for 30 or more days per year.~~

NOTE: Authority cited: Sections 142.3, 144.6, 9020, 9030 and 9040, Labor Code. Reference: Sections 142.3, 144.6, 9004(d), 9009, 9020, 9030, 9031 and 9040, Labor Code.

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Appendix B to Section 5204 - Medical Surveillance Guidelines (Non-Mandatory)

Introduction

The purpose of this Appendix is to provide medical information and recommendations to aid physicians and other licensed health care professionals (PLHCPs) regarding compliance with the medical surveillance provisions of the respirable crystalline silica standard (Section 5204). Appendix B is for informational and guidance purposes only and none of the statements in Appendix B should be construed as imposing a mandatory requirement on employers that is not otherwise imposed by the standard. Specific references to section 5204 and its subsection are made throughout the Appendix to help clarify for the PLHCPs and specialists what the regulation requires that can impact an employee's health and exposure to respirable crystalline silica.

Medical screening and surveillance allow for early identification of exposure-related health effects in individual employees and groups of employees, so that actions can be taken to both avoid further exposure and prevent or address adverse health outcomes. Silica-related diseases can be fatal, encompass a variety of target organs, and may have public health consequences when considering the increased risk of a latent tuberculosis (TB) infection becoming active. Thus, medical surveillance of silica-exposed employees requires that PLHCPs have a thorough knowledge of silica-related health effects.

This Appendix is divided into seven sections. Section 1 reviews silica-related diseases, medical responses, and public health responses. Section 2 outlines the components of the medical surveillance program for employees exposed to silica. Section 3 describes the roles and responsibilities of the PLHCP implementing the program and of other medical specialists and public health professionals. Section 4 provides a discussion of considerations, including confidentiality. Section 5 provides a list of additional resources and Section 6 lists references. Section 7 provides sample forms for the written medical report for the employee, the written medical opinion for the employer and the written authorization.

1. Recognition of Silica-Related Diseases

1.1. Overview. The term "silica" refers specifically to the compound silicon dioxide (SiO_2). Silica is a major component of sand, rock, and mineral ores. Exposure to fine (respirable size) particles of crystalline forms of silica is associated with severe adverse health effects, such as silicosis, lung cancer, chronic obstructive pulmonary disease (COPD), and activation of latent TB infections. Exposure to respirable crystalline silica can occur in industry settings such as foundries, abrasive blasting operations, paint manufacturing, glass and concrete product manufacturing, brick making, china and pottery manufacturing, manufacturing of

plumbing fixtures, and many construction activities including highway repair, masonry, concrete work, rock drilling, and tuck-pointing. New uses of silica continue to emerge. These include countertop manufacturing, finishing, and installation (Kramer et al. 2012; OSHA 2015) and hydraulic fracturing in the oil and gas industry (OSHA 2012).

Silicosis is an irreversible, often disabling, and sometimes fatal fibrotic lung disease. Progression of silicosis can occur despite removal from further exposure. Diagnosis of silicosis requires a history of exposure to silica and radiologic findings characteristic of silica exposure. Three different presentations of silicosis (chronic, accelerated, and acute) have been defined. Accelerated and acute silicosis are ~~much~~ less common than chronic silicosis. However, an epidemic of silicosis cases (Hoy et al., 2022, Hua et al., 2023, Fazio et al., 2023) has emerged associated with artificial stone countertop manufacturing and installation, and it is critical to recognize all cases of accelerated and acute silicosis because these are life-threatening illnesses and because they are caused by substantial overexposures to respirable crystalline silica. Although any case of silicosis indicates a breakdown in prevention, a case of acute or accelerated silicosis implies current high exposure and a very marked breakdown in prevention.

In addition to silicosis, employees exposed to respirable crystalline silica, especially those with accelerated or acute silicosis, are at increased risks of contracting active TB and other infections (ATS 1997; Rees and Murray 2007). Exposure to respirable crystalline silica also increases an employee's risk of developing lung cancer, and the higher the cumulative exposure, the higher the risk (Steenland et al. 2001; Steenland and Ward 2014). Symptoms for these diseases and other respirable crystalline silica-related diseases are discussed below.

1.1.1 Exceptional risk of artificial stone

The respirable crystalline silica particles generated from artificial stone have a more severe toxicologic profile than respirable crystalline silica particles generated from natural stone.

Artificial stone associated silicosis is characterized by a shorter latency, more rapid radiological progression, more accelerated decline in lung function, and higher mortality rate than natural stone associated silicosis (Wu et al, 2020, Rose et al. 2019, Fazio et al. 2023).

The toxicological characteristics of artificial stone include the following:

- High concentration of respirable particles: Cutting artificial stones generates much high concentrations of respirable crystalline silica content (>80%), whereas cutting

natural stones produces respirable crystalline silica content of only 4-30% (Carrieri 2020)

- Ultrafine particles: Cutting artificial stone produces high concentrations of ultrafine particles (< 0.1um in diameter), which exhibit very large reactive surface areas and enter the deep lung (Ramkissoon 2022).
- Irregular shapes: Artificial stone particles show more irregular shapes with sharp edges and fractures along the surface compared to natural stone dust particles, which exhibit far fewer surface fractures. (Ramkissoon 2022).
- Sensitizing VOCs: During active cutting, the predominant volatile organic compound (VOC) emitted is styrene, with phthalic anhydride, benzene, ethylbenzene, and toluene also detected. Phthalic anhydride has a Respiratory Sensitization (RSEN) Notation by the ACGIH and has been the most abundant VOC identified, at 26–85% of the total VOC composition of artificial stone emissions Benzaldehyde and styrene were also present in all twelve samples. Styrene is a respiratory irritant. (Ramkissoon 2023).
- Free radicals. Freshly cut RCS dust contains a high concentration of free radicals. A free radical is an atom or molecule containing one or more unpaired electrons in its outer orbit. This makes it unstable, short lived and highly reactive (Pavan 2016).

1.2. Chronic Silicosis. Chronic silicosis is the most common presentation of silicosis and usually occurs after at least 10 years of exposure to respirable crystalline silica. The clinical presentation of chronic silicosis is:

1.2.1. Symptoms - shortness of breath and cough, although employees may not notice any symptoms early in the disease. Constitutional symptoms, such as fever, loss of appetite and fatigue, may indicate other diseases associated with silica exposure, such as TB infection or lung cancer. Employees with these symptoms should immediately receive further evaluation and treatment.

1.2.2. Physical Examination - may be normal or disclose dry rales or rhonchi on lung auscultation.

1.2.3. Spirometry - may be normal or may show only a mild restrictive or obstructive pattern.

1.2.4. Chest X-ray - classic findings are small, rounded opacities in the upper lung fields bilaterally. However, small irregular opacities and opacities in other lung areas can also occur. Rarely, “eggshell calcifications” in the hilar and mediastinal lymph nodes are seen.

1.2.5. Clinical Course-chronic silicosis in most cases is a slowly progressive disease. Under the respirable crystalline silica standard, the PLHCP is to recommend that employees with a 1/0 category X-ray be referred to an American Board Certified Specialist in Pulmonary Disease or Occupational Medicine. The PLHCP and/or Specialist should counsel employees regarding work practices and personal habits that could affect employees' respiratory health.

1.3. Accelerated Silicosis. Accelerated silicosis generally occurs within 5-10 years of exposure and results from high levels of exposure to respirable crystalline silica. The clinical presentation of accelerated silicosis is:

1.3.1. Symptoms - shortness of breath, cough, and sometimes sputum production. Employees with exposure to respirable crystalline silica, and especially those with accelerated silicosis, are at high risk for activation of TB infections, atypical mycobacterial infections, and fungal superinfections. Constitutional symptoms, such as fever, weight loss, hemoptysis (coughing up blood), and fatigue may herald one of these infections or the onset of lung cancer.

1.3.2. Physical Examination - rales, rhonchi, or other abnormal lung findings in relation to illnesses present. Clubbing of the digits, signs of heart failure, and cor pulmonale may be present in severe lung disease.

1.3.3. Spirometry – restrictive~~, or~~ mixed restrictive/obstructive and/or obstructive pattern.

1.3.4. Chest X-ray - small rounded and/or irregular opacities bilaterally. Large opacities and lung abscesses may indicate infections, lung cancer, or progression to complicated silicosis, also termed progressive massive fibrosis.

1.3.5. Clinical Course - accelerated silicosis has a rapid, severe course. Under the respirable crystalline silica standard, the PLHCP can recommend referral to a Board Certified Specialist in either Pulmonary Disease or Occupational Medicine, as deemed appropriate, and referral to a Specialist is recommended whenever the diagnosis of accelerated silicosis is being considered.

1.4. Acute Silicosis. Acute silicosis is a rare disease caused by inhalation of extremely high levels of respirable crystalline silica particles. The pathology is similar to alveolar proteinosis with lipoproteinaceous material accumulating in the alveoli. Acute silicosis develops rapidly, often, within a few months to less than 2 years of exposure and is almost always fatal. The clinical presentation of acute silicosis is as follows:

1.4.1. Symptoms - sudden, progressive, and severe shortness of breath. Constitutional symptoms are frequently present and include fever, weight loss, fatigue, productive cough, hemoptysis (coughing up blood), and pleuritic chest pain.

1.4.2. Physical Examination - dyspnea at rest, cyanosis, decreased breath sounds, inspiratory rales, clubbing of the digits, and fever.

1.4.3. Spirometry restrictive, ~~or~~ mixed restrictive/obstructive, and/or obstructive pattern.

1.4.4. Chest X-ray - diffuse haziness of the lungs bilaterally early in the disease. As the disease progresses, the "ground glass" appearance of interstitial fibrosis will appear.

1.4.5. Clinical Course - employees with acute silicosis are at especially high risk of TB activation, nontuberculous mycobacterial infections, and fungal superinfections. Acute silicosis is immediately life-threatening. The employee should be urgently referred to a Board Certified Specialist in Pulmonary Disease or Occupational Medicine for evaluation and treatment. Although any case of silicosis indicates a breakdown in prevention, a case of acute or accelerated silicosis implies a profoundly high level of silica exposure and may mean that other employees are currently exposed to dangerous levels of silica.

1.4.6. Suspected Silicosis. The Standard defines "suspected silicosis" to mean any one of the following:

1.4.6.1. An employee with respirable crystalline silica exposure who has one or more of the following symptoms for 14 or more days unless the symptom is explained by another illness: cough, difficulty breathing, fatigue, shortness of breath, chest pain, weakness, fever, or unexplained weight loss; or

1.4.6.2. An employee with clinical findings suggestive of silicosis; or

1.4.6.3. An employee with respirable crystalline silica exposure with abnormal spirometry regardless of symptoms that is not yet a confirmed silicosis case.

1.4.7. Confirmed Silicosis. The Standard defines "confirmed silicosis" to mean any one of the following:

1.4.7.1. A written diagnosis of silicosis made by a PLHCP that is accompanied by one or more of the following:

1.4.7.1.1. A chest x-ray, interpreted by an individual certified by the National Institute for Occupational Safety and Health (NIOSH) as a B-Reader, classifying the existence of pneumoconiosis of category 1/0 or higher; or

1.4.7.1.2. Results from a chest x-ray, chest computer tomography (CT) scan or other imaging technique that are consistent with silicosis; or

1.4.7.1.3. Lung histopathology consistent with silicosis; or

1.4.7.2. Death certificate listing silicosis or pneumoconiosis from silica dust as an underlying or contributing cause of death; or

1.4.7.3. Exposure to airborne respirable crystalline silica accompanied by one or more of the following:

1.4.7.3.1. Chest x-ray (or other imaging technique, such as chest CT scan) showing abnormalities interpreted as consistent with silicosis; or

1.4.7.3.2. Lung histopathology consistent with silicosis.

1.5. COPD. COPD, including chronic bronchitis and emphysema, has been documented in silica-exposed employees, including those who do not develop silicosis. Periodic spirometry tests are performed to evaluate each employee for progressive changes consistent with the development of COPD. In addition to evaluating spirometry results of individual employees over time, PLHCPs may want to be aware of general trends in spirometry results for groups of employees from the same workplace to identify possible problems that might exist at that workplace. (See Section 2 of this Appendix on Medical Surveillance for further discussion.) Heart disease may develop secondary to lung diseases such as COPD. A ~~recent~~ study by Liu et al. 2014 noted a significant exposure-response trend between cumulative silica exposure and heart disease deaths, primarily due to pulmonary heart disease, such as cor pulmonale.

1.6. Renal and Immune System. Silica exposure has been associated with several types of kidney disease, including glomerulonephritis, nephrotic syndrome, and end stage renal disease requiring dialysis. Silica exposure has also been associated with other autoimmune conditions, including progressive systemic sclerosis, systemic lupus erythematosus, and rheumatoid arthritis. Studies note an association between employees with silicosis and serologic markers for autoimmune diseases, including antinuclear antibodies, rheumatoid factor, and immune complexes (Jalloul and Banks 2007; Shtraichman et al. 2015).

1.7. TB and Other Infections. Silica-exposed employees with latent TB are 3 to 30 times more likely to develop active pulmonary TB infection (ATS 1997; Rees and Murray 2007). Although respirable crystalline silica exposure does not cause TB infection, individuals with latent TB infection are at increased risk for activation of disease if they have higher levels of respirable crystalline silica exposure, greater profusion of radiographic abnormalities, or a diagnosis of silicosis. Demographic characteristics, such as immigration from some countries, are associated with increased rates of latent TB infection. PLHCPs can review the latest Centers for Disease Control and Prevention (CDC) information on TB incidence rates

and high risk populations online (See Section 5 of this Appendix). Additionally, silica-exposed employees are at increased risk for contracting nontuberculous mycobacterial infections and other mycotic infections, including Mycobacterium avium-intracellulare and Mycobacterium kansaii, coccidioidomycosis, and aspergillosis (Iossifova et al. 2010).

1.8. Lung Cancer. The National Toxicology Program has listed respirable crystalline silica as a known human carcinogen since 2000 (NTP 2014). The International Agency for Research on Cancer (2012) has also classified silica as Group 1 (carcinogenic to humans). Several studies have indicated that the risk of lung cancer from exposure to respirable crystalline silica and smoking is greater than additive (Brown 2009; Liu et al. 2013). Employees should be counseled on smoking cessation.

2. Medical Surveillance

PLHCPs who manage silica medical surveillance programs required by section 5204, should have a thorough understanding of the many silica-related diseases and health effects outlined in Section 1 of this Appendix. The employer must make available initial and periodic medical examinations that are required by this standard. At each ~~clinical encounter~~ initial and periodic examination, the PLHCP should consider silica-related health outcomes, with particular vigilance for acute and accelerated silicosis. In this s~~S~~ection, the required components of medical surveillance under the respirable crystalline silica standard are reviewed, along with additional guidance and recommendations for PLHCPs performing medical surveillance examinations for silica-exposed employees.

2.1. History

2.1.1. The respirable crystalline silica standard requires the following: A medical and work history that includes ~~, with emphasis on:~~ ~~P~~past, present, and anticipated exposure to respirable crystalline silica~~, dust,~~ and other agents affecting the respiratory system~~;~~, including as a result of performing high-exposure trigger tasks; the approximate percentage of time the employee performed high-exposure trigger tasks, if any, over their working lifetime; the type of respiratory protection used by the employee for protection against respirable crystalline silica, if any, over their working lifetime, and the approximate percentage of time the employee used the respiratory protection; current or preexisting ~~any history of~~ respiratory system health conditions or ~~dysfunction~~ impairment, including signs and symptoms of respiratory disease (e.g., shortness of breath, cough, wheezing); history of TB; and smoking status and history. Taking the time to create a detailed timeline of relevant exposure to respirable crystalline silica, available respiratory protection, and development of other known health conditions is critical to understanding the employee's cumulative impact from current, past and anticipated exposures.

2.1.2. Further, the employer must ~~provide~~ ensure that the examining PLHCP has a copy of this standard, and shall provide the PLHCP with the following information:

2.1.2.1. A description of the employee's former, current, and anticipated duties, including high-exposure trigger tasks, as they relate to the employee's occupational exposure to respirable crystalline silica;

2.1.2.2. The employee's former, current, and anticipated levels of occupational exposure to respirable crystalline silica;

2.1.2.3. A description of the type of respiratory protection ~~any personal protective equipment~~ used ~~or to be used~~ by the employee, if any, ~~including when~~ and ~~for~~ how ~~long~~ often the employee ~~has used or will use that equipment~~ uses it; and

2.1.2.4. Information from records of employment-related medical examinations previously provided to the employee and currently within the control of the employer.

2.1.2.5 Name, phone number, email, and physical address of any previous PLHCP or Specialist.

2.1.2.6 The obligation of PLHCPs and specialists to report confirmed silicosis and lung cancer cases to the Division, in accordance with subsection (m)(2), detailed below in Section 3.2.7., in addition to complying with the silicosis reporting requirements under California Code of Regulations (CCR) Title 17.

2.1.3. Additional guidance and recommendations: A history is particularly important both in the initial evaluation and in periodic examinations. A history of and ~~I~~information on past and current medical conditions (particularly a history of kidney disease, cardiac disease, pulmonary disease, connective tissue disease, and other immune diseases), medications, hospitalizations and surgeries may uncover health risks, such as immune suppression, that could put an employee at increased health risk from exposure to silica. This information is important when counseling the employee on risks and safe work practices related to silica exposure.

2.2. Physical Examination

2.2.1. The respirable crystalline silica standard requires the following:

INITIAL EXAMINATIONS: An initial physical examination, with special emphasis on the respiratory system, for each employee occupationally exposed to high-exposure trigger tasks for at least 10 days each year. This examination shall be made available within 30 days after initial assignment, unless the employee has received a medical examination that meets the requirements of subsection (j)(4) within the last calendar year.

PERIODIC EXAMINATIONS: For each employee covered by subsection (j)(2)(A), a medical examination must be offered once a year, or more frequently if recommended by the PLHCP, that meets the requirement of subsection (j)(4). For each employee covered by subsection (j)(2)(B), medical examinations meeting the requirements of subsection (j)(4) shall be made available at least every three years, or more frequently if recommended by the PLHCP.

2.2.2. Additional guidance and recommendations: Elements of the physical examination that can assist the PHLCP include: An examination of the cardiac system, an extremity examination (for clubbing, cyanosis, edema, or joint abnormalities), and an examination of other pertinent organ systems identified during the history.

2.3. TB Testing

2.3.1. The respirable crystalline silica standard requires the following: Baseline testing for TB on initial examination only.

2.3.2. Additional guidance and recommendations:

2.3.2.1. Current CDC guidelines (See Section 5 of this Appendix) should be followed for the application and interpretation of Tuberculin skin tests (TST). The interpretation and documentation of TST reactions should be performed within 48 to 72 hours of administration by trained PLHCPs.

2.3.2.2. PLHCPs may use alternative TB tests, such as interferon-γ release assays (IGRAs), if sensitivity and specificity are comparable to TST (Mazurek et al. 2010; Slater et al. 2013). PLHCPs can consult the current CDC guidelines for acceptable tests for latent TB infection.

2.3.2.3. The silica standard allows the PLHCP to order additional tests or test at a greater frequency than required by the standard, if deemed appropriate. Therefore, PLHCPs might perform periodic (e.g., annual) TB testing as appropriate, based on employees' risk factors. For example, according to the American Thoracic Society (ATS), the diagnosis of silicosis or exposure to silica for 25 years or more are indications for annual TB testing (ATS 1997). PLHCPs should consult the current CDC guidance on risk factors for TB (See Section 5 of this Appendix).

2.3.2.4. Employees with positive TB tests and those with indeterminate test results should be referred to the appropriate agency or specialist, depending on the test results and clinical picture. Agencies, such as local public health departments, or specialists, such as a pulmonary or infectious disease specialist, may be the appropriate referral. Active TB is a nationally notifiable disease. PLHCPs should be aware of the reporting requirements for their region. All States have TB Control Offices that can be contacted for further

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information. (See Section 5 of this Appendix for links to CDC's TB resources and State TB Control Offices.)

2.3.2.5. The following public health principles are key to TB control in the U.S. (ATS-CDC-IDSA 2005):

(1) Prompt detection and reporting of persons who have contracted active TB;

(2) Prevention of TB spread to close contacts of active TB cases;

(3) Prevention of active TB in people with latent TB through targeted testing and treatment; and

(4) Identification of settings at high risk for TB transmission so that appropriate infection-control measures can be implemented.

2.4. Pulmonary Function Testing

2.4.1. The respirable crystalline silica standard requires the following: Pulmonary function testing must be performed at ~~on~~ both the initial examination and ~~every three years thereafter~~ periodic examinations referenced above. The required pulmonary function test is spirometry and must include forced vital capacity (FVC), forced expiratory volume in one second (FEV1), and FEV1/FVC ratio. Testing must be administered by a spirometry technician with a current certificate from a National Institute for Occupational Health and Safety (NIOSH)-approved spirometry course.

2.4.2. Additional guidance and recommendations: Spirometry provides information about individual respiratory status and can be used to track an employee's respiratory status over time or as a surveillance tool to follow individual and group respiratory function. For reference ~~quality results~~, the ATS and the American College of Occupational and Environmental Medicine (ACOEM) recommend use of the third National Health and Nutrition Examination Survey (NHANES III) values, and ATS publishes recommendations for spirometry equipment (Miller et al. 2005; Townsend 2011; Redlich et al. 2014). OSHA's publication 3637, Spirometry Testing in Occupational Health Programs: Best Practices for Healthcare Professionals, provides helpful guidance (See Section 5 of this Appendix). Abnormal spirometry results may warrant further clinical evaluation and possible recommendations for limitations on the employee's exposure to respirable crystalline silica.

2.5. Chest X-ray

2.5.1. The respirable crystalline silica standard requires the following: A single posteroanterior (PA) radiographic projection or radiograph of the chest at full inspiration

recorded on either film (no less than 14 x 17 inches and no more than 16 x 17 inches) or digital radiography systems. A chest X-ray must be performed on the initial examination and every three years thereafter. The chest X-ray must be interpreted and classified according to the International Labour ~~Office~~ Organization (ILO) International Classification of Radiographs of Pneumoconioses by a NIOSH-certified B Reader.

Chest radiography is necessary to diagnose silicosis, monitor the progression of silicosis, and identify associated conditions such as TB. If the B reading indicates small opacities in a profusion of 1/0 or higher, the employee is to receive a recommendation for referral to a Board Certified Specialist in Pulmonary Disease or Occupational Medicine.

2.5.2. Additional guidance and recommendations: Medical imaging has largely transitioned from conventional film-based radiography to digital radiography systems. The ILO Guidelines for the Classification of Pneumoconioses has historically provided film-based chest radiography as a referent standard for comparison to individual exams. However, in 2011, the ILO revised the guidelines to include a digital set of referent standards that were derived from the prior film-based standards. To assist in assuring that digitally-acquired radiographs are at least as safe and effective as film radiographs, NIOSH has prepared guidelines, based upon accepted contemporary professional recommendations (See Section 5 of this Appendix). Current research from Laney et al. 2011 and Halldin et al. 2014 validate the use of the ILO digital referent images. Both studies conclude that the results of pneumoconiosis classification using digital references are comparable to film-based ILO classifications. Current ILO guidance on radiography for pneumoconioses and B-reading should be reviewed by the PLHCP periodically, as needed, on the ILO or NIOSH Web sites (See Section 5 of this Appendix).

2.6. A chest computed tomography (CT) scan at the lowest dose possible, as well as, a test of lung diffusing capacity from carbon monoxide, and any additional recommended pulmonary function testing, shall be included in initial and periodic examinations when deemed appropriate by the PLHCP or specialist. The chest CT can be offered in lieu of the CXR at the discretion of the PLHCP or specialist. It must be included for any employee with suspected silicosis, as defined in the standard, or for any employee who has performed, or been exposed to, high-exposure trigger tasks for at least 30 days each year during a total of at least three prior years, regardless of exposure assessment or objective data, unless detailed exposure data is available as outlined in EXCEPTION under subsection (j)(4)(B)(3). There is growing evidence that chest radiography and spirometry are inadequately sensitive for early detection of silicosis. Australian and Italian cases series have documented superior identification of abnormalities consistent with silicosis with the addition of chest computed tomography (CT) (Newbigin et al., 2019; Hoy et al., 2020) and

with Chest CT and diffusing capacity of lung for carbon monoxide (DLCO) (Guarnieri et al., 2020), compared to chest radiographs and routine spirometry alone. A recent study has indicated that chest CTs can identify cases of simple silicosis not identified by CXRs evaluated according to the International Labour Organization(ILO) classifications (Hoy et al. 2023) Such findings have prompted the Thoracic Society of Australia and New Zealand to recently recommend the addition of low-dose CT of the Chest and DLCO to screening protocols for countertop fabrication workers (Perret et al., 2020).

2.~~7~~6. Other Testing. Under the respirable crystalline silica standards, the PLHCP has the option of ordering additional testing ~~he or she~~ they deem~~s~~ appropriate. Additional tests can be ordered on a case-by-case basis depending on individual signs or symptoms and clinical judgment. For example, if an employee reports a history of abnormal kidney function tests, the PLHCP may want to order a baseline renal function test~~s~~ (e.g., serum creatinine and urinalysis). As indicated above, the PLHCP may order annual TB testing for silica-exposed employees who are at high risk of developing active TB infections. Additional tests that PLHCPs may order based on findings of medical examinations include, but are not limited to, chest computerized tomography (CT) scan for silicosis, lung cancer, or COPD, in addition to suspected silicosis, testing for immunologic diseases, and cardiac testing for pulmonary-related heart disease, such as cor pulmonale.

3. Roles and Responsibilities

3.1. PLHCP. The PLHCP designation refers to “an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide or be delegated the responsibility to provide some or all of the particular health care services required” by the respirable crystalline silica standard. The legally permitted scope of practice for the PLHCP is determined by each State. PLHCPs who perform clinical services for a silica medical surveillance program should have a thorough knowledge of respirable crystalline silica-related diseases and symptoms. Suspected cases of silicosis, as defined in the standard, advanced COPD, or other respiratory conditions causing impairment should be promptly referred to a Board Certified Specialist in Pulmonary Disease or Occupational Medicine.

Once the medical surveillance examination is completed, the employer must ensure that the PLHCP explains to the employee the results of the initial and periodic medical examinations and provides the employee with a written medical report within 30 days of the examination. The written medical report must contain a statement indicating the results of the medical examination, including any medical condition(s) that would place the employee at increased risk of material impairment to health from exposure to respirable

crystalline silica and any medical conditions that require further evaluation or treatment. In addition, the PLHCP's written medical report must include any recommended limitations on the employee's use of respirators, any recommended limitations on the employee's exposure to respirable crystalline silica; including during high-exposure trigger tasks; and a statement that the employee should be examined by a Board Certified Specialist in Pulmonary Disease or Occupational medicine if the chest X-ray is classified as 1/0 or higher by the B Reader, if applicable, or if referral to a Specialist is otherwise deemed appropriate by the PLHCP. The written report must also include a statement describing the findings of a chest CT scan or equivalent; a lung diffusing capacity exam; and any additional pulmonary function testing, if applicable; and a recommendation on whether a supplied-air respirator is needed for the employee.

The PLHCP should discuss all findings and test results and any recommendations regarding the employee's health, worksite safety and health practices, and medical referrals for further evaluation, if indicated. In addition, it is suggested that the PLHCP offer to provide the employee with a complete copy of their examination and test results, as some employees may want this information for their own records or to provide to their personal physician or a future PLHCP. Employees are entitled to access their medical records.

Under the respirable crystalline silica standard, the employer must ensure that the PLHCP provides the employer with a written medical opinion within ~~30~~14 days of each initial and periodic ~~the~~ employee examination, and that the employee also gets a copy of the written medical opinion ~~for the employer within 30 days~~ immediately. The PLHCP may choose to directly provide the employee a copy of the written medical opinion. This can be particularly helpful to employees, such as construction employees, who may change employers frequently. The written medical opinion can be used by the employee as proof of up-to-date medical surveillance. The following lists the elements of the written medical report for the employee and written medical opinion for the employer. (Sample forms for the written medical report for the employee, the written medical opinion for the employer, and the written authorization are provided in Section 7 of this Appendix.)

3.1.1. PLHCP's ~~The~~ written medical report for the employee must include the following information:

3.1.1.1. A statement indicating the results of the medical examination, including any medical condition(s) that would place the employee at increased risk of material impairment to health from exposure to respirable crystalline silica and any medical conditions that require further evaluation or treatment;

3.1.1.2. Any recommended limitations upon the employee's use of a respirator;

3.1.1.3. Any recommended limitations on the employee's exposure to respirable crystalline silica; including during high-exposure trigger tasks; and

3.1.1.4. A statement that the employee should be examined by a Board Certified Specialist in Pulmonary Disease or Occupational Medicine, where the standard requires or where the PLHCP has determined such a referral is necessary. The standard requires referral to a Board Certified Specialist in Pulmonary Disease or Occupational Medicine for a chest X-ray B reading indicating small opacities in a profusion of 1/0 or higher, or if the PHLCP determines that referral to a Specialist is necessary for other silica-related findings.

3.1.1.5 A statement describing the finding of a chest computed tomography (CT) scan or equivalent; a lung diffusing capacity exam; and any additional pulmonary function testing, if applicable.

3.1.1.6 A recommendation on whether a supplied-air respirator is needed for the employee.

3.1.2. The PLHCP's written medical opinion for the employer must include ~~only~~ the following information:

3.1.2.1. The date of the examination;

3.1.2.2. A statement that the examination has met the requirements of this section; ~~and~~

3.1.2.3. Any recommended limitations on the employee's use of respirators.

3.1.2.4 An opinion on whether a supplied-air respirator is needed for the employee; and

3.1.2.5 Any recommended limitations on the employee’s exposure to respirable crystalline silica, including during high-exposure trigger tasks.

3.1.2.6 Note on respirators. When employees perform high-exposure trigger tasks or work within a regulated area where high-risk exposure tasks occur, the regulation specifies the type and conditions under which a powered-air purifying respirator (PAPR). Also specified in the Standard is the use of a supplied-air respirator for any employees known to the employer to be diagnosed with confirmed silicosis, or who meet the definition of suspected silicosis, or whenever the PLHCP or specialist recommends the use of a supplied-air respirator. This specified higher level of protection is critical for minimizing the exposure to hazardous respirable crystalline silica while performing high-exposure trigger tasks and associated work duties. Research on exposures and emissions involving workers exposed to respirable crystalline silica (Cooper at al., 2015; Salamon et al., 2021; Ramkisson et al., 2022), including a “real-world” study on measured exposures amongst engineered stone

workers in California (Surasi et al., 2022) support the need for higher levels of respiratory protection for these workers.

3.1.2.74. If the employee provides the PLHCP with written authorization, the written opinion for the employer shall also contain either or both of the following:

(1) Any recommended limitations on the employee's exposure to respirable crystalline silica; and

(2) A statement that the employee should be examined by a Board Certified Specialist in Pulmonary Disease or Occupational Medicine if the chest X-ray provided in accordance with this section is classified as 1/0 or higher by the B Reader, or if referral to a Specialist is otherwise deemed appropriate.

3.1.2.58. In addition to the above referral for abnormal chest X-ray, the PLHCP may refer an employee to a Board Certified Specialist in Pulmonary Disease or Occupational Medicine for other findings of concern during the medical surveillance examination if these findings are potentially related to silica exposure.

3.1.2.69. Although the respirable crystalline silica standard requires the employer to ensure that the PLHCP explains the results of the medical examination to the employee, the standard does not mandate how this should be done. The written medical opinion for the employer could contain a statement that the PLHCP has explained the results of the medical examination to the employee.

3.2. Medical Specialists. The silica standard requires that all employees with chest X-ray B readings of 1/0 or higher be referred to a Board Certified Specialist in Pulmonary Disease or Occupational Medicine. Referrals can also be made for other relevant findings or concerns at the discretion of the PLHCP. If the employee has given written authorization for the employer to be informed, then the PLHCP's written medical opinion indicates that an employee should be examined by a specialist, the employer shall make available a medical examination by a sSpecialist within 30 days after receiving the PLHCP's written medical opinion.

3.2.1. The employer must provide ensure that the examining specialist is provided with all the information that the employer is obligated to provide the PLHCP, which includes the following information: to the Board Certified Specialist in Pulmonary Disease or Occupational Medicine:

3.2.1.1. A description of the employee's former, current, and anticipated duties, including high-exposure trigger tasks, as they relate to the employee's occupational exposure to respirable crystalline silica;

3.2.1.2. The employee's former, current, and anticipated levels of occupational exposure to respirable crystalline silica;

3.2.1.3. A description of ~~any personal protective equipment~~ the type of respiratory protection used ~~or to be used~~ by the employee, if any, and how often the employee uses it; ~~including when and for how long the employee has used or will use that equipment;~~ and

3.2.1.4. Information from records of employment-related medical examinations previously provided to the employee and currently within the control of the employer.

3.2.1.5 Name, phone number, email, and physical address of any previous PLHCP or Specialist.

3.2.1.6. The obligation of PLHCPs and specialist to report (see section 3.2.7. below for details) confirmed silicosis and lung cancer cases to the Division, in accordance with the Standard, in addition to complying with the silicosis reporting requirements under California Code of Regulations (CCR) Title 17.

3.2.2. The PLHCP should make certain that, with written authorization from the employee, the Board Certified Specialist in Pulmonary Disease or Occupational Medicine has any other pertinent medical and occupational information necessary for the specialist's evaluation of the employee's condition.

3.2.3. Once the Board Certified Specialist in Pulmonary Disease or Occupational Medicine has evaluated the employee, the employer must ensure that the Specialist explains to the employee the results of the medical examination and provides the employee with a written medical report within 30 days of the examination. The employer must also ensure that the Specialist provides the employer with a written medical opinion within 30 days of the employee examination. (Sample forms for the written medical report for the employee, the written medical opinion for the employer and the written authorization are provided in Section 7 of this Appendix.)

3.2.4. The Specialist's written medical report for the employee must include the following information:

3.2.4.1. A statement indicating the results of the medical examination, including any medical condition(s) that would place the employee at increased risk of material impairment to health from exposure to respirable crystalline silica and any medical conditions that require further evaluation or treatment;

3.2.4.2. Any recommended limitations upon the employee's use of a respirator; ~~and~~

3.2.4.3. Any recommended limitations on the employee's exposure to respirable crystalline silica~~.~~, including during high-exposure trigger tasks;

3.2.4.4. A statement describing the findings of a chest computed tomography (CT) scan or equivalent; a lung diffusing capacity exam; and any additional pulmonary function testing, if applicable; and

3.2.4.5. A recommendation on whether a supplied-air respirator is needed for the employee.

3.2.5. The Specialist's written medical opinion for the employer must include the following information:

3.2.5.1. The date of the examination; ~~and~~

3.2.5.2. A statement that the examination has met the requirements of the standard;

3.2.5.3~~2~~. Any recommended limitations on the employee's use of respirators~~.~~;

3.2.5.4. An opinion on whether a supplied-air respirator is needed for the employee; and

3.2.5.5. Any recommended limitation on the employee's exposure to respirable crystalline silica.

~~3.2.5.3. If the employee provides the Board Certified Specialist in Pulmonary Disease or Occupational Medicine with written authorization, the written medical opinion for the employer shall also contain any recommended limitations on the employee's exposure to respirable crystalline silica.~~

3.2.5.6~~4~~. Although the respirable crystalline silica standard requires the employer to ensure that the Board Certified Specialist in Pulmonary Disease or Occupational Medicine explains the results of the medical examination to the employee, the standard does not mandate how this should be done. The written medical opinion for the employer could contain a statement that the Specialist has explained the results of the medical examination to the employee.

3.2.6. After evaluating the employee, the Board Certified Specialist in Pulmonary Disease or Occupational Medicine should provide feedback to the PLHCP as appropriate, depending on the reason for the referral. OSHA believes that because the PLHCP has the primary relationship with the employer and employee, the Specialist may want to communicate his or her findings to the PLHCP and have the PLHCP simply update the original medical report for the employee and medical opinion for the employer. This is permitted under the standard, so long as all requirements and time deadlines are met.

3.2.7 Reporting of silicosis.

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Both the employer and the PLHCP have reporting obligations under the respirable crystalline silica standard.

3.2.7.1. Employer responsibilities for reporting. Within 24 hours of receiving information regarding a confirmed silicosis case or lung cancer related to respirable crystalline silica exposure, the employer must report the following information to the California Department of Public Health (CDPH) and to the Division by phone or a specified online mechanism established by these agencies:

3.2.7.1.1. The name, phone number, email, and mailing address of each employee identified with silicosis or lung cancer, or their next of kin;

3.2.7.1.1.2 Date of birth of employee;

3.2.7.1.3. The employer's business name, including any aliases or dba identifiers, and the employer's phone number, email, and mailing address;

3.2.7.1.4. The name, phone number, email, physical address, and mailing address of the manager responsible for the facility where each employee with silicosis or lung cancer is, or was, employed;

3.2.7.1.5. The name, phone number, email, and mailing address of the diagnosing PLHCP, and the date of diagnosis;

3.2.7.1.6. The number of years each employee identified with silicosis has been, or was, employed by the employer, and the tasks the employee engaged in during this time period, including the number and frequency of high-exposure trigger tasks;

3.2.7.1.7. The specific protections, if any, that were implemented by the employer throughout the employee's period of employment, to prevent exposure to respirable crystalline silica;

3.2.7.1.8. Results of air monitoring for respirable crystalline silica conducted by the employer throughout the employee's period of employment;

3.2.7.1.9. A description of any personal protection equipment provided by the employer and used by the employee throughout the employee's period of employment;

3.2.7.1.10. Whether or not the employer has reported the facility with the Division as required by Section 5203 (Carcinogen Report of Use Requirements); and

3.2.7.1.11. Prior employers, if known, where the employee had respirable crystalline silica exposure.

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3.2.7.2. PLHCP and specialist responsibilities for reporting. Within 24 hours of identifying a confirmed silicosis case, PLHCPs and specialists must report the case to the Division by phone or a specified online mechanism, in addition to complying with reporting requirements under California Code of Regulations (CCR) Title 17. The report must include the following information:

3.2.7.2.1. Name of the employer;

3.2.7.2.2. Name of employer representative;

3.2.7.2.3. Phone number and email for the employer;

3.2.7.2.4. The employee's levels of occupational exposure to respirable crystalline silica, if known;

3.2.7.2.5. A description of any personal protective equipment used by the employee, if known, and

3.2.7.2.6. Name, date of birth, phone number, email, and physical address of affected employee.

3.3. Public Health Professionals. PLHCPs might refer employees or consult with public health professionals as a result of silica medical surveillance. For instance, if individual cases of active TB are identified, public health professionals from state or local health departments may assist in diagnosis and treatment of individual cases and may evaluate other potentially affected persons, including coworkers. Because silica-exposed employees are at increased risk of progression from latent to active TB, treatment of latent infection is recommended. The diagnosis of active TB, acute or accelerated silicosis, or other silica-related diseases and infections should serve as sentinel events suggesting high levels of exposure to silica and may require consultation with the appropriate public health agencies to investigate potentially similarly exposed coworkers to assess for disease clusters. These agencies include local or state health departments or OSHA. In addition, NIOSH can provide assistance upon request through their Health Hazard Evaluation program. (See Section 5 of this Appendix)

4. Medical Removal

If a worker has suspected or confirmed silicosis, as defined in the Standard, or needs to restrict exposure to respirable crystalline silica for other related concerns, the PLHCP, alone or in consultation with the Specialist, should determine if the worker can safely remain in the workplace. If conditions are unsafe, the worker should be effectively and immediately removed from further exposure to respirable crystalline silica. This work status change may be initiated when the worker begins further evaluation and before a full characterization of

the worker's medical condition. The employer should be advised that respirator use, even in the case of supplied-air respirator use, in an exposed environment is not equivalent to removal from exposure. Finally, caution should be exercised when considering returning a worker to usual work tasks even if the health condition has improved and engineering controls have been implemented.

4.1 When the PLHCP determines that an employee needs to be removed from a job assignment or that the employee's job needs to be modified to reduce exposure to respirable crystalline silica, the employer must modify the employee's job or transfer the employee to comparable work for which the employee is qualified, or for which the employee can be trained within a period of six months.

4.2 The employer must maintain the employee's current earnings, seniority, and other benefits for up to six months. If there is no work available that meets the PLHCP's recommended restrictions, the employer must maintain the employee's current earnings, seniority, and other benefits until any of the following occurs:

4.2.1. Such work becomes available;

4.2.2. The employee is determined by the PLHCP, or determined in accordance with the subsection (k)(4), to be able to return to his or her original job status;

4.2.3. The employee is determined by the PLHCP, or is determined in accordance with subsection (k)(4), to be permanently unable to return to work that could involve exposure to respirable crystalline silica; and/or

4.2.4. Six months have elapsed since the beginning of the current medical removal period.

4.3 Workers' Compensation Claims. If a removed employee files a claim for workers' compensation for a silica-related disability, the employer must provide medical removal benefits to the employee at the employee's normal hourly wage and weekly work schedule for a period of up to six months, pending final disposition of the claim.

4.4. Other Credits. The employer's obligation to provide medical removal benefits to a removed employee may only be reduced by the amount that the employee receives in compensation for:

4.4.1 Earnings lost during the period of removal from a public or employer-funded compensation program, including a workers' compensation program; or

4.4.2 Income received from employment with another employer made possible by virtue of the employee's removal.

4.4 Independent Medical Review.

4.4.1 After any medical evaluation or consultation conducted as outlined in subsections (j) or (k), the employee may designate an independent PLHCP to review any findings, determinations, or recommendations and to conduct such examinations, consultations, and laboratory tests as this second PLHCP deems necessary and appropriate to facilitate this review.

4.4.2 The costs of this review will be borne by the employer.

4.4.3 The determination of the second PLHCP shall be binding on all parties.

54. Confidentiality and Other Considerations

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~~5~~6. *Resources*

~~5~~6.1. American College of Occupational and Environmental Medicine (ACOEM): ACOEM Code of Ethics. Accessed at: http://www.acoem.org/codeofconduct.aspx

Raymond, L.W. and Wintermeyer, S. (2006) ACOEM evidenced-based statement on medical surveillance of silica-exposed workers: Medical surveillance of workers exposed to crystalline silica. *J Occup Environ Med*, 48, 95-101.

~~5~~6.2. Center for Disease Control and Prevention (CDC)

Tuberculosis Web page: http://www.cdc.gov/tb/default.htm

State TB Control Offices Web page: http://www.cdc.gov/tb/links/tboffices.htm

Tuberculosis Laws and Policies Web page: http://www.cdc.gov/tb/programs/laws/default.htm

CDC. (2013). Latent Tuberculosis Infection: A Guide for Primary Health Care Providers. Accessed at: http://www.cdc.gov/tb/publications/ltbi/pdf/targetedltbi.pdf

~~5~~6.3. International Labour Organization

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~~5~~6.4. National Institute of Occupational Safety and Health (NIOSH)

NIOSH B Reader Program Web page. (Information on interpretation of X-rays for silicosis and a list of certified B-readers). Accessed at: http://www.cdc.gov/niosh/topics/chestradiography/breader-info.html

NIOSH Guideline (2011). Application of Digital Radiography for the Detection and Classification of Pneumoconiosis. NIOSH publication number 2011-198. Accessed at: http://www.cdc.gov/niosh/docs/2011-198/.

NIOSH Hazard Review (2002), Health Effects of Occupational Exposure to Respirable Crystalline Silica. NIOSH publication number 2002-129: Accessed at http://www.cdc.gov/niosh/docs/2002-129/

NIOSH Health Hazard Evaluations Programs. (Information on the NIOSH Health Hazard Evaluation (HHE) program, how to request an HHE and how to look up an HHE report). Accessed at: http://www.cdc.gov/niosh/hhe/

~~5~~6.5. National Industrial Sand Association:

Occupational Health Program for Exposure to Crystalline Silica in the Industrial Sand Industry. National Industrial Sand Association, 2nd ed. 2010. Can be ordered at: http://www.sand.org/silica-occupational-health-program

~~5~~6.6. Occupational Safety and Health Administration (OSHA)

Contacting OSHA: http://www.osha.gov/html/Feed_Back.html
OSHA's Clinicians Web page. (OSHA resources, regulations and links to help clinicians navigate OSHA's Web site and aid clinicians in caring for workers.) Accessed at: http://www.osha.gov/dts/oom/clinicians/index.html
OSHA's Safety and Health Topics Web page on Silica. Accessed at: http://www.osha.gov/dsg/topics/silicacrystalline/index.html
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Note: Authority cited: Sections 142.3, 9020, 9030 and 9040, Labor Code. Reference: Sections 142.3, 9004(d), 9009, 9020, 9031 and 9040, Labor Code.