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 μg/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) High-exposure trigger tasks are covered by this section regardless of employee exposures, exposure assessments, or objective data.

- (Jim H: How best to address compliant employers).

(43) 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:

Action Level means a concentration of airborne respirable crystalline silica of 25 μg/m^3, calculated as an 8-hour TWA.

Artificial Stone means any reconstituted, artificial, synthetic, composite, engineered, or manufactured stone, porcelain, or quartz. Commonly made by binding crushed or pulverized stone with adhesives, polymers, epoxies, resins, or other binding materials to form a slab. Also called, but not limited to quartz, quartzite, quartzitic sandstone, engineered stone, and manufactured stone.

- (ASTM: quartz is a natural stone).
- (Jim: Why target artificial stone vs silica-containing generically). (Multiple materials are fabricated in shops in addition to artificial stone).
- (KC OHB: ~80 cases of silicosis resulting from short-term exposure to artificial stone, with advanced silicosis, requiring lung transplantation, with 10 fatalities. Australia: 25% of workers exposed to art stone have developed silicosis. Health impacts are unique vis-à-vis other silica exposures). (Internat'l art stone association: art stone has a higher content of silica but this doesn't necessarily translate to higher exposures in the workplace).
- (MS CLF: Like asbestos, this product appears to be unsafe at any level. Giving employer responsibility for confirming 1% silica makes sense. The consequences for workers are immensely important relative to inconveniences faced by employers). (MO Day Laborers: Industry is often underground, no monitoring, workers are not told what they're working with, which means these workers are not able to advocate for themselves.) (JS, SBCTC: In addition to workplaces exposures, there are take-home exposures. Families are exposed to silica dust when it comes home on clothing.) (MS consultant: people are dying of high exposure to art stone. Are fatalities occurring at the manufacturing stage or fabrication? With 80% silica and 20% epoxy, where is the exposure taking place?)

Exception: Materials demonstrated to contain 1% or less crystalline silica.

- (How is 1% determined and on what schedule. Is it determined for each job? For user, percentage is described on the SDS). Is concrete captured by this definition? Add concrete exemption?

Chief means the Chief of the Division of Occupational Safety and Health, or designee.

Confirmed Silicosis means any one of the following:

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

1. A chest radiograph, interpreted by an individual certified by NIOSH as a B reader, classifying the existence of pneumoconioses of category 1/0 or higher; or

2. Results from a computer tomography or other imaging technique that are consistent with silicosis; or

3. Lung biopsy findings consistent with silicosis; or

[*from Code of Federal Regulations Title 20 section 30.5(k); Office of Workers' Compensation Programs, Department of Labor*]

(B) Death certificate listing silicosis or pneumoconiosis due to dust containing silica 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 radiograph (or other radiographic image, such as computed tomography) showing abnormalities interpreted as consistent with silicosis; or

2. Lung histopathology consistent with silicosis.

[*From National Notifiable Diseases Surveillance System, CDC – Silicosis 2010 Case Definition*]

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

Employee Exposure means the exposure to airborne respirable crystalline silica that would occur if the employee were not using a respirator.

High-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.

High-exposure trigger task means machining, crushing, cutting, drilling, abrading, abrasive blasting, grinding, chipping, chiseling, carving, gouging, polishing, buffing, fracturing, or breaking artificial stone that contains more than 1 percent crystalline silica, or for natural stone that contains more than 40 percent crystalline silica. High-exposure trigger tasks include clean up, disturbing, or handling of wastes, dusts, residues, debris, or other materials created during the above-listed tasks. (

Negative pressure enclosure (NPE) means a barrier surrounding the area where high-exposure trigger task are performed with the following specifications:

(A) The NPE may be of any configuration;

(B) At least 4 air changes per hour shall be maintained in the NPE;

- (MS: Does 4 ACH actually work? Laminar flow is needed inside the space to be effective. Need a make-up air system; HEPA filter will not be sufficient to pull laminar flow. Engineered laminar flow system. Germany requires 20 ach for asbestos but without laminar flow, this is also probably ineffective.)
- (Gary, SC: Goal: capture velocity for suspending particles as objective of laminar flow systems). (JG, IH: Research geologists impact. Handling unknown specimens in the field, crushing and managing stone sample materials, single digit days per year, that might contain more than 40% silica—natural stone. Capture velocity: Use the the ACGIH ventilation handbook for silica particles.)

- (Barnes: Asbestos and silica differ in particle size and toxicity. Silicosis is preventable with best practices in the workplace. Both art and natural stone can be handled safely with proper enforcement and implementation of safe practices).
- (JH, NSI: The % as applied to natural stone should be removed. An awareness campaign and enforcement efforts will be needed to improve practices).
- (Brandon Calvo: Man of eng stone and nat stone: The percentages that trigger the new requirements are problematic; you don't usually know what the silica content is until you test it. In developing SDS, we rely on color, but this is probably unreliable worldwide).
- (Barnes: natural stone usually includes a range for silica content; more specificity is possible with art stone).
- (JH, NSI: Member companies includes those who are doing it right and others who need more education. We are on board with improving practices. Similar goals.).
- (MS, CLF: The % question is very common in occ health regulation. It's a compromise against prohibiting practices above a certain %. 40% is a generous approach, where workers could be cutting etc and be potentially exposed to very high levels of silica dust. It can be complicated to implement but is essential to prevent disease and death.) (Asbestos: presumption approach triggers safety measures when content is unknown).
- (Kazan law: Safe handling arguments were raised with asbestos 30-40 years ago and we're still cleaning up the impacts for these workers. Take home exposures are included in the scope of the problem. Please be very conservative with protective measures so we don't end up repeating the experience of asbestos.)
- (BC: Any product that contains silica should trigger these new requirements, rather than splitting hairs with percentages. The rule should not give the impression that inhaling any silica is acceptable.)
- (MS: Asbestos is regulated at 1/10 of 1%, and presumed applies to only a limited number of materials; 1980 cut-off date has no bearing under DOSH regs. This rule needs to do this more effectively than the asbestos rule does. Need to be precise in these definitions.)
- (Blink: Breathing any amount of silica dust is a problem, and we know that these high-silica-content materials bring new, unique risks to workers. 40% is probably too high, and 1% might be too low. Asbestos is different: de minimus exposures are a problem, whereas this is not the case with silica. It's all around us.)
- (Papanek: There is good science on the exposure levels that occur based on the content of silica in the base material. It doesn't make sense to apply protections under "high exp trigger tasks" to all silica-containing materials, regardless of the % content. Art stone is a uniquely hazardous product and we need to recognize this. It makes sense to apply a percentage in the rule. We have extensive tox data on the effects of asbestos; this tox research has not occurred for art stone. The science has not kept up, and we can't wait for the science to control the risk. Is it the particle size or epoxies etc, but we don't have that specificity of data so we need to make an educated guess at what will be protective, given what we know now) (Should art stone have a different PEL?)
- (RM, Cesar Stone: Basic science questions might show unique hazards with art stone, so regulation should be broad enough to cover range of silica content given lack of scientific specificity on effects. Reality is that there are both good and bad actors in the market; these regulations will not affect the bad actors. Maybe a licensing approach should be applied to ensure only good actors are in the market. It can be handled safely).

- (MS: PELs are based on both health and feasibility, including with respirators. % of silica in the product is less important than the way the product is handled. A 1% product could be more hazardous than a 40% product if handled improperly.)

(C) A minimum of -0.02 column inches of water pressure differential, relative to outside pressure, shall be maintained within the NPE as evidenced by manometric measurements;

(D) The NPE shall be kept under negative pressure at all times when high-exposure trigger tasks are performed; and

(E) Air movement shall be directed away from employees within the enclosure, and toward a HEPA filtration or a collection device.

[*From title 8 section 1529 Asbestos*]

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.

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 to independently provide or be delegated the responsibility to provide some or all of the particular health care services required by subsection (i).

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 PEL.

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.

Specialist means an American Board Certified Specialist in Pulmonary Disease or an American Board Certified Specialist in Occupational Medicine.

Supervising physician means the occupational or pulmonary medicine physician who is:

(A) An American Board Certified Specialist in Pulmonary Disease or an American Board Certified Specialist in Occupational Medicine;

(B) Knowledgeable about spirometry, pulmonary disease, surveillance for occupational disease, the diagnosis and management of occupational disease, and the requirements of this standard; and

(C) Responsible for ensuring compliance with all the medical program requirements described in subsection (i) of this standard, as well as all applicable medical guidelines for places of employment where high-exposure trigger tasks occur.

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 seven or more days: shortness of breath, difficulty breathing, weakness, fatigue, fever, cough, chest pain, or unexplained weight loss unless symptom is explained by another illness; or

(B) An employee with respirable crystalline silica exposure and radiological or other imaging findings suggestive of silicosis regardless of symptoms that is not yet a confirmed silicosis case; or

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

This Section means this respirable crystalline silica standard, Section 5204.

Wet methods means suppressing dust by one of the following

- (Nat St Institute: has additional suggestions on wet methods that are effective and feasible; e.g. water jet machine).

(A) Applying a constant, continuous, and appropriate volume of running water directly onto the surface of the work object, or

(B) Submersing the work object underwater.

Regardless of the method used, water must cover the entire surface of the work object where a tool, equipment, or machine is contacting the work object.

(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 μg/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).

(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.

(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. **However, monitoring shall not be discontinued for high-exposure trigger tasks. For high-exposure trigger tasks, monitoring shall be repeated at least every 12 months or more frequently as otherwise required in this section.**

- **(**EB: Exposure monitoring is not occurring in most shops).
- (MS: Most shops do not do any monitoring at all. The regulation does not actually require monitoring; employers can rely on "objective data" and simply claim that exposures are below the PEL. With concrete cutting, for example, employers simply claim that there is no potential for exposure. Monitoring should actually be required, not an option).
- (AH, OHB: This is the (d)(2) performance option, which should not apply to high-exp trigger tasks).

(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). **However, monitoring shall not be**

discontinued for high-exposure trigger tasks. For high-exposure trigger tasks, monitoring shall be repeated at least every 12 months or more frequently as otherwise 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 exposures, 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) 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 (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 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 (g). **Subsection (f)(1) does not apply to high-exposure trigger tasks, which are covered by subsection (f)(2).**

- AL, Parent: Employee protections should be maximized, with full PPE etc, due to uncertainty regarding the unique hazards of art stone, which protects the worker as well as preventing take-home exposures. Consider employee rotation with specific timeframes. Employer should have to provide a medical exam regularly, more so than annually, to capture signs of silicosis early. Rule should require that employees handling these materials are certified in handling hazardous materials. Installers need protections, too. Check with DIR ORLA for a request to Legislature to conduct a study re the unique hazards of art stone in fab shops as well as with installers, as well as workers who do clean-up at these sites.
- JH: This approach could disadvantage good actors
- AB, UCM: This rule needs to maximize protections, given the cases we're seeing. Incorporate disposable garments and workplace shower and chaning facilities. Cleaning clothing before workers go home needs more attention in the rule.
- JW, OHB: Decon procedures are needed in the rule, similar to asbestos and lead industries. This also keeps other areas of the plant clean. It prevents take-home exposures.
- RM, plaintiff's attorney: Reality is that this is an underground industry. Mostly very small shops; workers are undocumented, immigrant, often treated as independent contractors, no employees and not eligible for WC coverage. Most employers are also immigrants from the industry. Financial margins are small—so the requirements discussed here are not realistic. In nearly 40 years of doing fibrotic lung disease litigation, I've not seen silicosis cases, and among mostly young people. Art stone is uniquely toxic due to high silica content, resins (VOCs, particle size, styrene, various metals, phth. Anhydride). Figure 2 in AIOH doc shows particle size distribution, showing nanosize particles = very high surface area. Lung impact is therefore much higher. Percentages are not a solution—this needs to be a performance standard. The small shops will need funding to install the protections needed. On resp protection, APRs are inadequate to prevent disease. Only air supplied respirators work.
- MS: We resolved the silica problem in the 1930s, where wet methods were effective in protecting people doing tunneling. PAPRs work. Less than $1000 can equip shops with negative spaces for working with art stone.
- M Geyer: Most of the controls are focused on the fab shops, which is underground. The approach here focuses on fab shops and ignore the risks to installers at the construction site. They cut and core at the customer's location. Wet methods, neg pressure are not possible. This rule needs to protect the installers, too. Some installers are union. Consider LEV; it works and doesn't leave wet waste. Residues left behind in the resident's home, which are hazardous. (EB: This is covered by construction regulation, not this rule. This would have to be a separate action, requiring a PAPR and HEPA and LEV, wet methods, in construction).
- MO, Day Laborers: Do not use the term "illegals." The protections afforded by this industry should be applied to installers as well. Simply stating that an employee is an independent contractor does not make them so.
- R Mosberg, Caeser: Large fabricators do this work with adequate protections. This is the result of strong enforcement. Expand the jurisdiction to include protection of families and installers. There

needs to be cleaning facilities to prevent take-home exposures. Some installers are prohibited from cutting on-site; they return to the shop to do this work.

(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) Effective wet methods shall be used.

- (Phan, IH Stanford: Researchers cannot use wet methods when crushing rock; this affects the sample) (Consider exemption for research).

- (JH: NTS has input on wet methods to improve specificity. NIOSH has shown that some wet methods are ineffective—this should spelled out carefully.)

(B) 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.

- GG: Clean-up methods need to be specified that do not generate dust.

(C) All processes producing respirable crystalline silica shall be enclosed or isolated in negative pressure enclosures.

(D) The regulated area shall be properly ventilated in such a way as to move contaminated air away from the breathing zone of employees and toward a filtration or collection device equipped with a HEPA filter;

- GG: Capture velocity is key, based on ACGIH Vent Manual.

(E) The Division may require the employer to take additional actions to protect employees through the issuance of an Order to Take Special Action.

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

1. Use of abrasive disc saws, grinders, sanders, polishers, or other equipment that are not equipped with local exhaust ventilation and a HEPA filtered dust collection system.

Exception to subsection (f)(2)(F)1. Local exhaust ventilation is not required during tasks where the employer has demonstrated that exposures during these tasks are continuously maintained below the action level through representative air sampling conducted at least once every six months and in accordance with subsection (d)(3)(A).

- GG: Make this consistent with the rest of the section.

2. Use of compressed air on respirable crystalline silica.

3. Use of compressed air on waste, dust, debris, residue, or other materials or objects that may contain respirable crystalline silica.

3. Dry sweeping, shoveling, disturbing, or other dry clean-up of wastes, dusts, debris, or other materials that are generated during high-exposure trigger tasks or that are otherwise likely to contain respirable crystalline silica.

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

- JH, NSI: Is employee rotation prohibition in existing reg. RM's comments illustrate the bad actor employers. They need to be shut-down. The fab shops reps on the call today are doing the best they can. Cal/OSHA needs to be able to take swift action to close down unsafe operations.

(G) Imminent Hazards. High-exposure trigger tasks performed without wet methods or respiratory protection in accordance with subsection (g) shall be considered an imminent hazard and subject to an Order Prohibiting Use from the Division.

- JH: This is key to address bad actors. NSI has suggestions on terminology.

(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:

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) Workplaces where high-exposure trigger tasks occur shall include the following in their written exposure control plan:

1. A record of exposure measurements to demonstrate that wet methods and other engineering controls continuously maintain exposure levels below the action level.

2. A weekly record of measurements or tests to confirm that regulated areas are under negative pressure.

3. Written procedures for the proper donning and doffing of personal protective equipment, including garments and respiratory protection, to effectively prevent exposures to respirable crystalline silica and prevent take-home exposures.

4. Documentation of proper registration with DOSH, pursuant to section 5203, Carcinogen Report of Use Requirements.

Note: Respirable Crystalline Silica is a known human carcinogen according to the International Agency for Research on Cancer (IARC), the U.S. Department of Health and Human Services National Toxicology Program, and others. Respirable Crystalline Silica is a regulated carcinogen per section 5203.

5. Documentation of an agreement with the Supervising Physician who will perform or oversee medical surveillance exams as required by this Section, and documentation that the Supervising Physician meets the requirements in (i)(1)(D).

(~~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) 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 (g)(1) does not apply to high-exposure trigger tasks, which are covered by subsection (g)(3).

(3) For workplaces where high-exposure trigger tasks occur, the employer shall provide and shall ensure the following respiratory protection, in accordance with section 5144, is properly used by employees who perform high-exposure trigger tasks or who work within the regulated area:

(A) A full face, tight-fitting powered-air purifying respirator (PAPR) equipped with a HEPA filter and organic vapor cartridge.

Exception to subsection (g)(3)(A). A loose-fitting PAPR used in accordance with section 5144 is allowed where the employer demonstrates employee exposures are continuously maintained below the action level through representative air sampling conducted at least once every six months and in accordance with subsection (d)(3)(A). This exception does not apply if the PLHCP, Specialist, or Supervising Physician recommends use of a full face, tight-fitting PAPR or 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 have or be diagnosed with silicosis or suspected silicosis, or whenever the PLHCP, Specialist, or Supervising Physician recommends use of a supplied-air respirator.

- Email comment: MCDM MCDA references. DOD 8208. Questioning rationale for ETS.
- Phan, IH Stanford: should include APF. PAPR could be financial burden for employer. APFs for PAPRs differ, so rule should be specific.
- Geyer, industry: Can you get OV cartridges for PAPRs? OV cartridges wouldn't apply to natural stone. (EB: Will need to be clear that this is for art stone). These are >$130-$150 per cartridge.
- Barnes: (B) implies that someone with silicosis can keep working with resp protection. This is internally inconsistent. Workers with suspected or confirmed silicosis should not be working. NIOSH and effectiveness of resp protection—rationale for these requirements? (EB: medical removal would apply here. This would be in unusual conditions. Severe silicosis cases are occurring with use of inadequate resp protection, including APRs.)
- JH: What about not requiring resp protection if exposures are below with AL. (EB: LEV and wet methods are not necessarily effective).

- S DeOliveira, UMG: We're using 3M VersaFlow PAPRs. They have a silica filter. Including OV will increase cost—there's a big cost difference that could affect small shops especially. We prefer to stick with silica HEPA.
- PP: Additional studies may be needed to understand breathing zone exposures. (EB: monitoring would be an alternative, but employers don't do monitoring so this isn't effective.)
- KC, OHB: Consider: OV cartridges are required unless employers demonstrate that they are not needed.

(**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.

(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) Subsection (h) does not apply to high-exposure trigger tasks, which are covered by subsection (f)(2).

- Geyer: Wet methods leave residues everywhere. The slop doesn't get cleaned up well and then it dries and becomes an exposure source. Secondary exposure. Dry methods are more effective with good LEV. Wet saws produce rock slime.
- JH, NSI: There are best practices to address rock slime. NSI can help with this.
- MS: Slurry is similar to concrete slurry, which can be pulled up with wet-dry vacuum immediately. This can be applied here as well.
- Shawn DeOliveira: Water curtains work well. Filtration HEPA system are cleaned by reverse blowing, back-flushing, which is problematic. The method for cleaning the filters needs to be spelled out; current practice makes a big mess. The HEPA filter cleaning system can pollute the entire work area with RCS particles. Water systems are way better.

(i) Medical surveillance.

(1) General.

(A) The employer shall make medical surveillance 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) For workplaces where high-exposure trigger tasks occur, the employer shall make medical surveillance available at no cost to the employee, and at a reasonable time and place, for each employee who performs high-exposure trigger tasks or works within a regulated area for 10 or more days per year regardless of exposure levels.

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

(D) For workplaces where high-exposure trigger tasks occur, the employer shall ensure that all medical examinations and procedures required by this section are performed under the direction of

the Supervising Physician as defined in subsection (b). The employer shall ensure that the Supervising Physician is provided with all the information that the employer is obligated to provide to the PLHCP in subsection (i)(4).

- WOEMA support for supervising physician. Many MDs are not familiar with silicosis and silica exposure issues.

(2) Initial examination. The employer shall make available 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 **12 months** ~~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 (FEV_1) and FEV_1/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.

(G) The PLHCP or Supervising Physician shall request past medical records when clinically indicated and shall document a comparison with prior X-rays, spirometries, and other tests.

(3) Periodic examinations. The employer shall make available medical examinations that include the procedures described in subsection (i)(2) (except subsection (i)(2)(E)) at least every three years, or more frequently if recommended by the PLHCP.

- Barnes: Can employees be required to participate in medical surveillance? (EB: No, but employer must make exams available. Goal is early detection.)

(A) For workplaces where high-exposure trigger tasks occur, the employer shall ensure that employees who perform high-exposure trigger tasks or who work within the regulated area receive a medical examination every 12 months, or more frequently if recommended by the PLHCP, Specialist, or Supervising Physician, that includes the procedures described in subsection (i)(2) and (i)(3)(A) (except subsection (i)(2)(E)).

(B) A high-resolution computerized tomography (CT) scan, low-dose CT scan, and/or lung diffusing capacity exam shall be included in periodic examinations when determined to be appropriate by the PLHCP, Specialist, or Supervising Physician.

- Geyer: What prohibits unqualified MDs from participating in this process? Can this be tightened up to ensure that the supervixing physician is actually qualified to opine on the matter of medical surveillance? Unqualifed MDs actually do harm. (EB: Board certification in Occ Med). Might need to referfence definition). PLHCP opens the door to anyone. Supervising physician is fine, but PLHCP is way too broad. The stakes are too high with silicosis.
- Dr. Blink: Must be board certified in Occ or pulm medicine, per the definition. (EB: when high-exp trigger tasks are involved, supervising physician is required.). Reg might need to require that PLHCP doing the actual exam must report to the supervising physician—this isn't spelled out in the draft. States supervising the "program" not the PLHCP.

- Papanek: it's common for medical providers to be family practice, for example. But supervising physicians must be occ or pulm medicine board certified—they oversee the MDs or PLHCP doing some portion of the exam work.

(4) Information provided to the PLHCP **or Supervising Physician**. The employer shall ensure that the examining PLHCP **or Supervising Physician** has a copy **and is knowledgeable** of this standard, **including Appendix B,** and shall provide the PLHCP or **Supervising Physician** with the following information:

(A) A description of the employee's former, current, and anticipated duties 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 any personal protective equipment used or to be used by the employee, including when and for how long the employee 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, Specialist, or Supervising Physician.

(5) PLHCP's or **Supervising Physician** written medical report for the employee. The employer shall ensure that the PLHCP explains to the employee the results of the medical examination and provides each employee with a written medical report within 30 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; ~~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, or if referral to a specialist is otherwise deemed appropriate by the PLHCP~~.~~**;**

(E) Opinion on whether a supplied-air respirator is recommended for the employee;

(F) Recommended frequency of further medical surveillance or follow-up exams; and

(G) Whether or not the employee has a diagnosis of confirmed silicosis or suspected silicosis.

(6) PLHCP's or **Supervising Physician's** written medical opinion for the employer.

(A) The employer shall obtain a written medical opinion from the PLHCP within 30 days of the medical examination. The written opinion shall contain only the following:

1. The date of the examination;

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

3. Any recommended limitations on the employee's use of respirators~~.~~**;**

4. Opinion on whether a supplied-air respirator or full-face tight-fitting PAPR is recommended for the employee;

5. Recommended frequency of further medical surveillance or follow-up exams;

6. Any recommended special protective measures to be provided to the employee, or limitations to be placed upon the employee's exposure to respirable crystalline silica; and

- Geyer: overly broad, open-ended requirement; e.g. use of the word "any."

- Knight, WS: “Any recommended special protective measure” is common and reasonable to include here.
- JH, NSI: Med surveillance is important, but recognize that these costs will be passed on to the consumer. How do we get to the bad employers. Good employers will take on this burden but will be undercut by low-road employers who ignore this and the other requirements.

7. Opinion as to whether the employee has any detected health-related condition that would place the employee’s health at increased risk of material impairment from exposure to respirable crystalline silica.

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

~~1. Any recommended limitations on the employee's exposure to respirable crystalline silica;~~

1. ~~2.~~ 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, or if referral to a specialist is otherwise deemed appropriate by the PLHCP.

2. Whether or not the employee has a diagnosis of confirmed silicosis or suspected silicosis.

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

(7) 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)(4).

(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 days of the examination. The written report shall meet the requirements of subsection (i)(5) (except subsection (i)(5)(D)).

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

(j) Medical Removal Protection

- (EB: see regs for diacetyl and lead (18 month medical removal)

(1) When the PLHCP recommends an employee's removal from a job assignment or recommends modification of an employee's job to reduce exposure, the employer shall:

(A) Modify the employee's job or transfer the employee to comparable work for which the employee is qualified or can be trained in a short period (up to six months). The employer shall maintain the employee's current earnings, seniority, and other benefits. If there is no work available that would not involve the employee being exposed to respirable crystalline silica, the employer shall maintain the employee's current earnings, seniority, and other benefits until any of the following occurs:

1. Such work becomes available.

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

3. The employee is determined by the PLHCP or is determined in accordance with subsection (j)(4), to be permanently unable to return to work involving exposure to respirable crystalline silica.

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

(B) Provide competent medical counseling on the increased risk of significant health impairment for employees with medical conditions that may be directly or indirectly aggravated by exposure to respirable crystalline silica.

(2) Workers' Compensation Claims. If a removed employee files a claim for workers' compensation for a silica related disability, then for up to a maximum of six months pending final disposition of the claim, the employer shall continue to provide medical removal protection benefits. To the extent that an award is made to the employee for earnings lost during the period of removal, the employer's medical removal payment obligation shall be reduced by such amount. The employer shall receive no credit for workers' compensation payments received by the employee or a health care provider for treatment related expenses.

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

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

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

(4) Multiple Physician Review.

(A) After any medical evaluation or consultation conducted pursuant to subsection (i), the employee may designate an independent physician to review any findings, determinations, or recommendations and to conduct such examinations, consultations, and laboratory tests as this second physician deems necessary and appropriate to facilitate this review.

(B) The employer may condition its payment for the employee designated physician in the multiple physician review mechanism upon the employee doing the following within fifteen (15) days after receipt of the notification of the right to seek a second medical opinion, or receipt of the initial PLHCP's written opinion, whichever is later:

1. The employee informs the employer in writing of the intention to seek a second medical opinion, and

2. The employee initiates steps to make an appointment with a second physician.

(C) If the findings, determinations, or recommendations of the second physician differ from those of the initial PLHCP, then the employer and the employee shall assure that efforts are made for the initial PLHCP and the second physician to resolve the disagreement. If they are unable to quickly resolve their disagreement, then the employer and the employee through their respective physicians shall designate a third physician who shall be a specialist in the field at issue:

1. To review the findings, determinations, or recommendations of the initial PLHCP and the second physician; and

2. To conduct such examinations, consultations, laboratory tests and discussions with the prior PLHCP and physician as the third physician deems necessary to resolve the disagreement.

(D) In the alternative, the employer and the employee or authorized employee representative may jointly designate such third physician.

(E) The employer shall act consistent with the findings, determinations, and recommendations of the third physician, unless the employer and the employee reach an agreement which is otherwise consistent with the recommendations of at least one of the three physicians.

(**k**~~j~~) Communication of respirable crystalline silica hazards to employees.

(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 (j)(3). The employer shall ensure that at least the following hazards are addressed: Cancer, lung effects, immune system effects, and kidney effects.

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

DANGER

RESPIRABLE CRYSTALLINE SILICA

MAY CAUSE CANCER

CAUSES **PERMANENT LUNG** DAMAGE ~~TO LUNGS~~

WEAR RESPIRATORY PROTECTION IN THIS AREA

AUTHORIZED PERSONNEL ONLY

PELIGRO

SÍLICE CRISTALINA RESPIRABLE

PUEDE PROVOCAR CÁNCER

PROVOCA DAÑO PERMANENTE A LOS PULMONES

USAR PROTECCIÓN RESPIRATORIA EN ESTA ÁREA

SOLO PERSONAL AUTORIZADO

- R Mosberg: Is it possible to have a hotline number on the sign for employees to call if they are concerned about silica exposure.
- Steiger, CLF: "May Cause Cancer" should be below the lung damage warning. It's less effective as a warning given Prop 65.
- D. Chang: Workers can tune this out. What about stating that silica exposure can cause death. Permanent lung damage is not very compelling.

(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 shortness of breath, difficulty breathing, weakness, fatigue, fever, cough, chest pain, or unexplained weight loss,

- **(EB:** Damage can occur *before* symptoms occur—need to add)
- Blink and PP: Proper sequence: Cough, difficulty breathing, fatigue, shortness of breath, chest pain, weakness, fever, weight loss.
- Sumeshwar: Align with CDC list of symptoms.
- JH, NSI: Would like to offer materials to strengthen this subsection.

- MO, Day Laborers: In wildfire areas—is it worth adding a warning related to silica exposure and smoke exposure.
- A Berliner, UCM: Training should be in language of employees.
- J Guzman: Trained prior to work and frequency of retraining needs to be added.

2. Specific tasks in the workplace that could result in exposure to respirable crystalline silica, **including high-exposure trigger tasks**;

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

4. The contents of this section; and

5. The purpose and a description of the medical surveillance program required by subsection (i).

6. Increased risk of death from the combined effect of smoking and silica exposure.

7. Increased risk of a latent tuberculosis infection becoming active from silica exposure.

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

(4) 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.

(5) Reporting of silicosis

(A) Within 24 hours of receiving information regarding a confirmed silicosis case or lung cancer related to silica exposure, the employer shall report the following information to the California Department of Public Health (CDPH) and to the Division.

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

2. Date of birth of employee;

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

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

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

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;

7. The specific protections, if any, implemented by the employer during this time period to prevent exposure to respirable crystalline silica; 8. Results of air monitoring for respirable crystalline silica conducted by the employer during this time period;

9. A description of any personal protective equipment provided by the employer and used by the employee during this time period; and

10. Whether or not the employer has registered the facility with the Division, pursuant to section 5203.

11. Prior employers, if known, where employee had silica exposure.

(C) PLHCPs, Specialists, and Supervising Physicians shall report cases of confirmed silicosis cases to CDPH and the Division. The report shall contain the following information:

1. Name of employer

2. Phone number and email for the employer

3. Physical and mailing address of the workplace

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

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

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

(*l*~~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;

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 (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.

(m) Artificial Stone Use Certification [*for possible future legislation and rulemaking*]

- Shops that engage in high exp trigger tasks would need to obtain certification from Cal/OSHA, including corrective actions as needed. Similar to crane program, where operators are certified by private entities that are licensed by Cal/OSHA. If the shop is not certified, we could efficiently prohibit use until certification is obtained.
- JH, NSI: There are many good shops and also many poor actors. The good companies will follow these extensive regs, but the poor actors will not. What else can you do? The poor actors will undercut the good ones. Suggestion: Shops cannot purchase stone until they are operating properly. (EB: this would require legislation, but it could be part of a certification program). The distribution community—they would be supportive of an effort to sell only to certified companies but only if it's a rigorous enforceable program.
- Shawn UMG: Distribution network illustrations. Gray market is the worst. Very informal industry. Underground shops pay in cash os it's hard to compete. The industry is a mess. Material has to be controlled at the upstream side—fabricators aren't even buying the product. Consumers can buy the product over the content. The supply chain issues are a serious problem. Need to assist the fabrication community that is doing this right.
- Metzger: The manufacturers should be the ones cutting off the bad actors. You know who they are and how they're performing. The major manufacturers are multi-billion $ operations. The underground shops will fold and reopen the next day. A top down approach is needed: manufacturers and importers are the ones who can do this.
- P. Chang, industry LX Hausys: The regulation is a problem with the 40% cut-off. What happens at 42%? Do they not follow it?
- B Calvo: re controlling supply. Training and licensing being required to purchase material. We are a manufacturer and distributor. We support a traing and licensing program. We want it to be against the law to sell slab product that contains silica to anyone who does not have a license. This is not complicated.
- R Mosberg: Make it illegal to purchase and illegal to sell. Caesar sells to distributors; we don't know where it ends up. IF we stop selling, you will have Chinese imports coming in.
- Metzger: a licensing program will not make it safe for the workers. IT's a piece of paper. But it would allow manufacturers to disclaim all responsibility once they sell only to downstream small fab shops. And onto OSHA—you didn't inspect the shop and shut it down, and manufacturer is absolved of accountability. It's a ploy that benefits manufacturers.
- Papanek: WOEMA support.
- J. Heib, NSI: Shifting liability and accountability—we just need help on enforcement from Cal/OSHA, but more regulations aren't the only solutions. Training education outreach are all needed.
- Dr. Blink: WOEMA is interestd in both a Cal/OSHA approach as well as legislation. Please reach out to WOEMA if you're interested.

~~(*l*) Dates.~~

~~(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.~~

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