

STANDARD PRACTICE INSTRUCTION

DATE: October 3, 2017

SUBJECT: Respirable Crystalline Silica Exposure Control Policy.

REGULATORY STANDARD: OSHA – 29CFR1926.1153 (Silica)
OSHA – 29CFR1910.1053 (Silica)
OSHA – 29CFR1910.1200 (HazCom)

BASIS: The purpose of this respirable crystalline silica compliance Plan is to help ensure that worker exposure levels to respirable crystalline silica are accurately assessed, and that workers are not exposed to respirable crystalline silica at levels that are above the Permissible Exposure Limit (PEL) of 25 micrograms per cubic meter of air (25 ug/m³) calculated at a 8-hour Time-Weighted Average (TWA). The measured concentrations of respirable crystalline silica (above, at, or below the PEL) will dictate which compliance procedures described in this Plan will be implemented.

GENERAL: An effective respirable crystalline silica Plan can prevent respiratory related ailments due to overexposure to respirable crystalline silica. In order to comply with the federal Occupational Safety and Health Administration Standards (OSHA) and most state plan OSHA requirements, this written Plan has been established for Nowland Associates, Inc. All company projects and facilities are included and will comply with this Plan. Copies of this written Plan, including a copy of the OSHA Standard, are available for review by any employee.

RESPONSIBILITY: The company Safety Officer is the competent person. He/she is solely responsible for all facets of this Plan and has full authority to make necessary decisions to ensure success of the Plan. The Safety Officer will develop written detailed instructions covering each of the basic elements in this Plan, and is the sole person authorized to amend these instructions. This company has expressly authorized the Safety Officer to halt any operation of the company where there is danger of serious personal injury. NOTE: Other competent persons may be designated for certain projects.

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Nowland Associates, Inc. Respirable Crystalline Silica Policy

1. Applicability

- 1.1 This Written Exposure Control Plan (Plan) applies to Nowland Associates, Inc. personnel who are potentially exposed to airborne concentrations of respirable crystalline silica (silica) because of their work activities or proximity to the work locations where airborne silica is being emitted. This Plan also applies to Nowland Associates, Inc. superintendents, foremen, or safety personnel who may be responsible for overseeing a subcontractor's operations that have the potential to expose personnel to airborne concentrations of silica at or above regulatory and industry action levels and exposure limits.

2. Tasks in the Workplace

- 2.1 Listed Below are descriptions of tasks in the workplace that involve exposure to Silica. These tasks include, but are not limited to:
 - 2.1.1 Use of stationary masonry saws used to cut concrete, tile, concrete masonry block, sheet rock, gypsum fiber roof board, or any other product containing quartz. NOTE: Sheet rock/drywall and associated joint compounds have small amounts of silica, and testing has shown that with normal usage/installation, the airborne amounts of silica are well below the AL (action level).
 - 2.1.2 Handheld power saws used to cut concrete, asphalt, concrete masonry block, sheet rock, gypsum fiber roof board, or any other product containing quartz.
 - 2.1.3 Walk-behind saws used to cut concrete or asphalt.
 - 2.1.4 Rig-mounted or free standing core saws or drills (including impact and rotary hammer drills) used to penetrate concrete, concrete masonry block, sheet rock, gypsum fiber roof board, or any other structural component or product containing quartz.
 - 2.1.5 Jackhammers and handheld powered chipping tools used to demolish or modify concrete, concrete masonry block, or any other structural component or product containing quartz.
 - 2.1.6 Vehicle mounted hammers or chipping tools used to demolish concrete, concrete masonry block, or any other structural component or product containing quartz.
 - 2.1.7 Handheld grinders or cut-off wheels used for mortar removal or cutting/grinding of concrete, concrete masonry block, sheet rock, gypsum fiber roof board, or any other structural component or product containing quartz.

- 2.1.8 Walk-behind milling machines or bead blasters used for surfacing activities on concrete, concrete masonry block, asphalt, or any other product containing quartz.
- 2.1.9 Installation or demolition of sheet rock, including mudding, taping, texturizing activities with quartz containing materials.
- 2.1.10 Hand or power tool sanding of painted surfaces. Current latex paint products contain quartz and the painted substrate (sheet rock, concrete masonry block, concrete) contains quartz.
- 2.1.11 Drivable asphalt milling machines used to mill asphalt roadways or walkways.
- 2.1.12 Ball mills or crushing equipment used to size products containing quartz.
- 2.1.13 All housekeeping operations associated with the activities described above.
- 2.2 Nowland Associates, Inc. employees who work in proximity to silica-related operations must be aware of safe work practices and take all necessary precautions associated with avoiding and minimizing airborne silica exposure.

3. Engineering Controls and Work Practice Control Methods

3.1 Table 1: Specified Exposure Control Methods When Working With Material Containing Crystalline Silica

Equipment / Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 Hours/shift	> 4 hours /shift
(i) Stationary Masonry Saws	Use saw equipped with integrated water delivery system that continuously feeds water to the blade. Operate and maintain tool in accordance with manufacturer’s instructions to minimize dust emissions.	None	None
(ii) Handheld power saws (any blade diameter)	Use saw equipped with integrated water delivery system that continuously feeds water to the blade. Operate and maintain tool in accordance with manufacturer’s instructions to minimize dust emissions. <ul style="list-style-type: none"> • When used outdoors. • When used indoors or in an enclosed area. 	None APF 10	APF 10 APF 10

Equipment / Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 Hours/shift	> 4 hours /shift
(iii) Handheld power saws for cutting fiber-cement board (with blade diameter of 8 inches or less)	<p>For tasks performed outdoors only:</p> <p>Use saw equipped with commercially available dust collection system.</p> <p>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</p> <p>Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency.</p>	None	None
(iv) Walk-behind saws	<p>Use saw equipped with integrated water delivery system that continuously feeds water to the blade</p> <p>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</p> <ul style="list-style-type: none"> • When used outdoors. • When used indoors or in an enclosed area. 	None APF 10	None APF 10
(v) Drivable saws	<p>For tasks performed outdoors only:</p> <p>Use saw equipped with integrated water delivery system that continuously feeds water to the blade.</p> <p>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</p>	None	None
(vi) Rig-mounted core saws or drills	<p>Use tool equipped with integrated water delivery system that supplies water to cutting surface.</p> <p>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</p>	None	None
(vii) Handheld and stand-mounted drills (including impact and rotary hammer drills)	<p>Use drill equipped with commercially available shroud or cowling with dust collection system.</p> <p>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</p>	None	None

Equipment / Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 Hours/shift	> 4 hours /shift
(vii) Handheld and stand-mounted drills (including impact and rotary hammer drills) (continued)	Dust collector must provide the airflow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism. Use a HEPA-filtered vacuum when cleaning holes.		
(viii) Dowel drilling rigs for concrete	For tasks performed outdoors only: Use shroud around drill bit with a dust collection system. Dust collector must have a filter with 99% or greater efficiency and a filter-cleaning mechanism. Use a HEPA-filtered vacuum when cleaning holes.	APF 10	APF 10
(ix) Vehicle-mounted drilling rigs for rock and concrete	Use dust collection system with close capture hood or shroud around drill bit with a low-flow water spray to wet the dust at the discharge point from the dust collector.	None	None
	OR Operate from within an enclosed cab and use water for dust suppression on drill bit.	None	None
(x) Jackhammers and handheld powered chipping tools	Use tool with water delivery system that supplies a continuous stream or spray of water at the point of impact. <ul style="list-style-type: none"> • When used outdoors • When used indoors or in an enclosed area. 	None	APF10
	OR Use tool equipped with commercially available shroud and dust collection system. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	APF 10	APF10

Equipment / Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 Hours/shift	> 4 hours /shift
(x) Jackhammers and handheld powered chipping tools <i>(continued)</i>	<p>Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism.</p> <ul style="list-style-type: none"> When used outdoors When used indoors or in an enclosed area. 	None APF 10	APF 10 APF 10
(xi) Handheld grinders for mortar removal (i.e., tuck-pointing)	<p>Use grinder equipped with commercially available shroud and dust collection system.</p> <p>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</p> <p>Dust collector must provide 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism.</p>	APF 10	APF 25
(xii) Handheld grinders for uses other than mortar removal	<p>For tasks performed outdoors only:</p> <p>Use grinder equipped with integrated water delivery system that continuously feeds water to the grinding surface.</p> <p>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</p> <p style="text-align: center;">OR</p> <p>Use grinder equipped with commercially available shroud and dust collection system.</p> <p>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</p> <p>Dust collector must provide 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism.</p> <ul style="list-style-type: none"> When used outdoors When used indoors or in an enclosed area. 	None None	None APF 10

Equipment / Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 Hours/shift	> 4 hours /shift
(xiii) Walk-behind milling machines and floor grinders	Use machine equipped with integrated water delivery system that continuously feeds water to the cutting surface. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	None	None
	OR		
	Use machine equipped with dust collection system recommended by the manufacturer. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. Dust collector must provide the airflow recommended by the manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism. When used indoors or in an enclosed area, use a HEPA-filtered vacuum to remove loose dust in between passes.	None	None
(xiv) Small drivable milling machines (less than half-lane)	Use a machine equipped with supplemental water sprays designed to suppress dust. Water must be combined with a surfactant. Operate and maintain machine to minimize dust emissions.	None	None
(xv) Large drivable milling machines (half-lane and larger)	For cuts of any depth on asphalt only: Use machine equipped with exhaust ventilation on drum enclosure and supplemental water sprays designed to suppress dust. Operate and maintain machine to minimize dust emissions.	None	None
	For cuts of four inches in depth or less on any substrate: Use machine equipped with exhaust ventilation on drum enclosure and supplemental water sprays designed to suppress dust.	None	None

Equipment / Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 Hours/shift	> 4 hours /shift
(xv) Large drivable milling machines (half-lane and larger) (continued)	<p style="text-align: center;">OR</p> <p>Use a machine equipped with supplemental water spray designed to suppress dust.</p> <p>Water must be combined with a surfactant. Operate and maintain machine to minimize dust emissions</p>	None	None
(xvi) Crushing machines	<p>Use equipment designed to deliver water spray or mist for dust suppression at crusher and other points where dust is generated (e.g., hoppers, conveyers, sieves/sizing or vibrating components, and discharge points).</p> <p>Operate and maintain machine in accordance with manufacturer's instructions to minimize dust emissions.</p> <p>Use a ventilated booth that provides fresh, climate-controlled air to the operator, or a remote control station.</p>	None	None
(xvii) Heavy equipment and utility vehicles used to abrade or fracture silica-containing materials (e.g., hoe ramming, rock ripping) or used during demolition activities involving silica-containing materials.	Operate equipment from within an enclosed cab.	None	None
	When employees outside of the cab are engaged in the task, apply water and/or dust suppressants as necessary to minimize dust emissions.	None	None
	Apply water and/or dust suppressants is necessary to minimize dust emissions.	None	None
	OR		
	When the equipment operator is the only employee engaged in the task, operate equipment from within an enclosed cab	None	None

3.2 Other Control Methods

3.2.1 Engineering and work practice controls, including administrative controls, shall be implemented to reduce and maintain employee exposure to silica at or below the PEL, to the extent that such controls are feasible.

3.2.2 Where all feasible engineering and work practice controls that can be instituted are not sufficient to reduce employee exposure to or below the PEL, such controls shall be used, nonetheless, to reduce employee

exposure to the lowest feasible level (and in conjunction with respiratory protection).

- 3.2.3 Respiratory protection shall be selected based on guidance in 1926.1153 Table 1 or based on a Certified Industrial Hygienist's or competent person's assessment of the potential airborne exposure that may be created by the means and methods of work (high energy operations with high airborne dust generation or low energy operations with low dust generation).
- 3.2.4 When using mechanical ventilation to control exposure, regularly evaluate the system's ability to effectively control exposure.
- 3.2.5 If administrative controls are used to limit exposure, establish and implement a job rotation schedule that includes employee identification as well as the duration and exposure levels at each job or work station where each affected employee is located.
- 3.2.6 A written compliance Plan shall be established and implemented prior to the start of operations within the scope of this written Compliance Plan. The written Plan shall outline the plans for maintaining employee exposure below the PEL.
- 3.2.7 Maintain all surfaces as free as possible from accumulations of silica. Select methods for cleaning surfaces and floors that minimize the likelihood of silica becoming airborne (such as using a HEPA vacuum).
- 3.2.8 If vacuuming is the method selected, specialized vacuums with HEPA filtration are required. Methods to use and empty vacuums in a manner that minimizes the reentry of silica into the workplace shall be described and used. Use of household vacuums with HEPA filters are not allowed at any time for the collection of dust or debris that contains silica.
- 3.2.9 Never use compressed air to remove silica from any surface unless it is used in conjunction with a ventilation system designed to capture the airborne dust created while using the compressed air
- 3.2.10 Employees shall not eat, drink, smoke, chew tobacco or gum, or apply cosmetics in any areas where exposure to silica is above the PEL (in other words, regulated areas)
- 3.2.11 Do not allow employees to leave the workplace wearing any protective clothing or equipment that is required to be worn during their work shift without HEPA vacuum removal of dust.
- 3.2.12 Where feasible, install shower facilities and require employees who work in regulated areas to shower at the end of their work shift. Also provide an adequate supply of cleaning agents and clean towels.
- 3.2.13 Provide hand washing facilities for use by employees working in regulated areas. Furthermore, require employees to wash their hands and face at the

end of the work shift and prior to eating or entering eating facilities, drinking, smoking, or applying cosmetics.

3.2.14 Eating facilities or areas shall be provided for employees working in regulated areas. These facilities shall be maintained free of silica contamination and shall be readily accessible to those employees.

3.3 Personal Protective Equipment (PPE)

3.3.1 Respiratory protection must be used for the following conditions:

3.3.1.1 During periods when employee exposure to airborne silica exceeds the PEL.

3.3.1.2 For work operations where engineering and work-practice controls are not sufficient to reduce employee exposure to or below the PEL.

3.3.1.3 During periods when an employee requests a respirator.

3.3.1.4 During periods when respirators are required to provide interim protection while conducting initial exposure assessments.

3.3.1.5 Powered air-purifying respirators (PAPR) shall be provided to employees who request such a respirator to use where it will provide adequate protection.

3.3.1.6 Employees shall be provided, at no cost, protective work clothing and equipment including cotton coveralls or similar full-body clothing, gloves, hats, shoes or disposable shoe coverlets, face shields, vented goggles, or other appropriate PPE.

4. Exposure Determinations, Assessments, & Procedures

4.1 Nowland Associates, Inc. will either comply with and implement all controls required by 1926.1153 Table 1- Exposure Control Methods for Selected Construction Operations or conduct an initial determination in accordance with 29 CFR 1926.1153(d)(2).

4.1.1 An exposure assessment is required when employees may be exposed to airborne silica at or above the action level in order to determine the extent to which employees are exposed and the appropriate exposure controls required.

4.1.2. An initial determination of exposure shall be made at the beginning of operations. The determination shall consist of the collection of personal air samples representative of a full shift including at least one sample for each job classification in each work area, either for each shift, or for the shift with the highest exposure level.

- 4.1.3 During the initial determination, until such time that actual airborne concentrations are determined, personnel shall be protected by respiratory protection based on task-specific anticipated airborne concentrations of silica as illustrated in Table 1.
- 4.1.4 During the initial determination, and in addition to the levels of respiratory protection required, personnel shall be provided with protective clothing and equipment, hygiene facilities, and training.
- 4.1.5 Whenever a change in equipment, process, controls, or personnel occurs, or a new task has been initiated, an additional exposure assessment is required.
- 4.1.6 When an assessment determines that exposure has occurred above the action level but below the PEL, additional monitoring shall be required at least every 6 months. Additional monitoring shall continue until such time that the monitoring results fall below the action level on two separate occasions at least 7 days apart.
- 4.1.7 When monitoring yields results above the PEL, then quarterly monitoring is required. In addition, the quarterly monitoring may be suspended when additional monitoring results fall below the action level on two separate occasions at least 7 days apart.
- 4.1.8 Where the competent person can clearly demonstrate, in the absence of air monitoring data, that a work activity will not create airborne silica concentrations in excess of the action level, then air monitoring may be unwarranted. Where a negative initial determination is reached without air monitoring, the competent person must develop a written explanation as to why exposures are not expected to exceed the action level.

5. Training Requirements.

- 5.1 Nowland Associates, Inc. employees who anticipate working on projects where they could be exposed to airborne silica will be provided training in silica hazards in accordance the Nowland Associates, Inc. Plan established to comply with the hazard communication standard (29 CFR 1910.1200).
 - 5.1.1 Each employee will have access to labels on containers of crystalline silica and safety data sheets, and be provided information on the health hazards of silica including cancer, lung effects, immune system effects, and kidney effects.
 - 5.1.2 Nowland Associates, Inc. employees will be provided training and information regarding specific activities identified in this policy that could result in airborne silica exposure, and the specific engineering controls, work practices and respiratory protection requirements to mitigate the potential airborne silica exposures.
 - 5.1.3 This training will provide a discussion of silica hazards, initial exposure determination either by complying with 29 CFR 1926.1153 Table 1

requirements or air monitoring, specific engineering and work practice control measures, personal protective equipment (PPE), and medical surveillance requirements.

- 5.1.4 The training will also identify the Nowland Associates, Inc. competent person for silica exposure identification and determination of control requirements.
- 5.1.5 All Nowland Associates, Inc. employees will be provided with access to a copy of 29 CFR 1910.1153 and be trained on the contents of 29 CFR 1926.1153.
- 5.2 Each employee shall be provided training and demonstrate knowledge and understanding of the following:
 - 5.2.1 Health hazards associated with exposure to respirable crystalline silica.
 - 5.2.2 Specific tasks that could result in exposure to respirable crystalline silica.
 - 5.2.3 Specific measures that are required to protect employees from exposure to respirable crystalline silica, including engineering controls, work practices, and required use of respiratory protection.
 - 5.2.4 The contents of the 29 CFR 1926.1153.
 - 5.2.5 The identity of the competent person.
 - 5.2.6 Purpose and description of the medical surveillance Plan.
- 5.3 A written compliance Plan shall be made available to all affected employees.
- 5.4 In addition, notification to owners, contractors, and other personnel working in the area shall be made.

6. Competent Person.

- 6.1 Nowland Associates, Inc. shall identify a competent person to inspect and oversee all activities with potential airborne silica exposure.
 - 6.1.1 Subcontractors working on projects with the scope of this Plan shall appoint a competent person capable of executing the duties described herein.
 - 6.1.2 The competent person must have training in the inspection of work areas and equipment and in the determination of safe working conditions.
 - 6.1.3 The competent person shall...
 - 6.1.3.1 Have a working knowledge of the 1926.1153 standards.
 - 6.1.3.2 Be capable of identifying airborne silica hazards.

- 6.1.3.3 Shall determine the need for initial and additional exposure monitoring.
- 6.1.3.4 Recommend and implement engineering and work practice controls.
- 6.1.3.5 Establish levels of PPE.
- 6.1.3.6 Shall have the authority to take action to eliminate hazards and correct incidences of noncompliance.

7. Medical Surveillance Requirements

- 7.1 Nowland Associates, Inc. shall institute medical surveillance for any employees required by this Plan to wear a respirator 30 or more days per year.
- 7.2 Initial medical surveillance consists of medical and work history with emphasis on:
 - 7.2.1 Past, present, and anticipated exposure to silica, dust and other agents affecting the respiratory system
 - 7.2.2 Any history of respiratory system dysfunction, including signs and symptoms of respiratory disease (e.g., shortness of breath, cough, wheezing).
 - 7.2.3 History of tuberculosis.
 - 7.2.4 Smoking status and history.
 - 7.2.5 A physical examination with emphasis on the respiratory system;
 - 7.2.6 Chest x-ray (a single posterior-anterior radiographic projection or radiograph of the chest at full inspiration recorded on either film (no less than 14x17 inches and not more than 16x17 inches) or digital radiography systems), interpreted and classified according to the International Labour Office (ILO) International Classification of Radiographs of Pneumoconiosis by a NIOSH-certified B Reader;
 - 7.2.7 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;
 - 7.2.8 Testing for latent tuberculosis infection;
 - 7.2.9 And any other tests deemed appropriate by the Occupational Medicine Provider.
- 7.3 Subcontractors are responsible for implementing a medical surveillance Plan for their employees.