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Technical Data Bulletin

#210 — Task-Based PPE Suggestions for Silica in the Construction Industry

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On March 25, 2016 the US Occupational Safety and Health Administration (US OSHA) published its Respirable Crystalline Silica in Construction regulations - 29 CFR 1926.1153. The regulation is detailed and the reader is strongly encouraged to review and understand the entire regulation and preamble prior to work with crystalline silica. The regulation, preamble, US OSHA Fact Sheet on Construction and FAQ's are available on the OSHA website and should be consulted to help ensure acomplete understanding of this regulation. (https://www.osha.gov/silica-crystalline). On June 25, 2020, OSHA released updated Inspection Procedures for the Respirable Crystalline Silica Standards. The term "silica" will be used in this document for convenience to represent "respirable crystalline silica".

29 CFR 1926.1153, Table 1 lists 18 equipment/tasks that may produce worker exposure to respirable crystalline silica ("silica"). When the specific engineering, administrative and respiratory controls for a given task are "fully and properly" implemented, US OSHA waives the exposure assessment requirements of 29 CFR 1926.1153 and 29 CFR 1910.134. US OSHA does not specify the type of respirator to be used, only the minimum assigned protection factor (APF) the respirator must have per 29 CFR 1910.134(d)(3)(i)(A).

In addition to inhalation of silica, work with the equipment/tasks listed may simultaneously expose the worker to other hazards such as eye, head, fall and noise hazards. Table A in this Technical Bulletin lists suggested examples of 3M respirators and particulate filters based on the current US OSHA Table 1 requirements. Also included are additional examples of personal protective equipment (PPE) for other hazards that may be present. Contractors may wish to consider these suggestions as a starting point during pre-project planning and are a minimum level of protection. 3M sales representatives or Technical Service Helpline (800-243-4630) can discuss PPE products and their features as well as other options for consideration. The site health and safety professional or safety competent person should review the worksite to determine PPE appropriate for the hazards and to identify any additional hazards that must be controlled. Assessments should be repeated as needed to identify changes in conditions, tasks, tools and work practices as the project progresses.

3M recommends contractors review and understand US OSHA 29 CFR 1926.1153, the preamble to the regulation, the FAQs, silica enforcement guidelines, and Fact Sheet on Construction for detailed information on silica hazards and other compliance information. A respirator program meeting the requirements of 29 CFR 1910.134 must be implemented when respirator use is required. Employers and workers must read, understand and follow the procedures and recommendations in the respirator manufacturer's user instructions. All tight fitting respirators must be fit tested. Full facepiece respirators must be fit-tested using quantitative methods for an assigned protection factor of 50.

In addition to the PPE listed below, contractors should also consider protective coveralls such as the 3M 4520 to help keep workers from taking silica dust home on their clothing.

Table A: Suggested Examples of 3M Respirators and Additional PPE for Your Evaluation

Task	Suggested respirator <4 hours and all specified engineering controls are inplace per 29 CFR 1926.1153(c)	Suggested respirator > 4 hours and all specified engineering controls are inplace per 29 CFR 1926.1153(c)	Suggested additional PPE contractors may wish to consider	Additional information
Stationary masonry saw	US OSHA does not require respirator use	US OSHA does not require respirator use	A, C, E, F, H	
Hand held power saw – any blade diameter	A*, C	A, C	E, F, H, J	* Not required if work is done outdoors <4hrs
Handheld power saws for cutting fiber-cement board (blade diameter of 8 inches or less) *outdoor tasks only*	US OSHA does not require respirator use	US OSHA does not require respirator use	A, C, E, F, H, J	This applies to outdoor work only. Indoor work is not covered in Table 1 – 29 CFR1926.1153 or this Table A.
Walk behind saw	A*, C	A*, C	E, F, H	* Not required if work is done outdoors
Drivable saw *outdoor tasks only*	US OSHA does not require respirator use	US OSHA does not require respirator use	A, C, E, F, H	This applies to outdoor work only. Indoor work is not covered in Table 1 – 29 CFR1926.1153 or this Table A
Rig mounted core saws or drills	US OSHA does not require respirator use	US OSHA does not require respirator use	A, C, E, F, H	
Handheld and stand-mounted drills (including impact and rotary hammer drills)	US OSHA does not require respirator use	US OSHA does not require respirator use	A, C, E, F, H	
Dowel drilling rigs for concrete – *outdoor tasks only*	A, C	A, C	E, F, H	This applies to outdoor work only. Indoor work is not covered in Table 1 – 29 CFR1926.1153 or this Table A
Vehicle-mounted drilling rigs for rock and concrete	US OSHA does not require respirator use	US OSHA does not require respirator use	A, C, E, F, H	
Jackhammers and handheld powered chipping tools	A*, C	A, C	E, F, H, J	* Not required if work is done outdoors <4hrs
Handheld grinders for mortar removal (*i.e.*, tuckpointing	A, C, G	B*, C	D, E, H, J	*Must use quantitative fit test. Alternative TR-300 PAPR with M-300 headgear and safety glasses
Handheld grinders for uses other than mortar removal	US OSHA does not require respirator use	A*, C	E, F, H, J	* Not required if work is done outdoors

Task	Suggested respirator <4 hours and all specified engineering controls are inplace per 29 CFR 1926.1153(c)	Suggested respirator > 4 hours and all specified engineering controls are in place per 29 CFR 1926.1153(c)	Suggested additional PPE contractors may wish to consider	Additional Information
Walk-behind milling machines and floor grinders	US OSHA does not require respirator use	US OSHA does not require respirator use	A, C, E, F, H	
Small drivable milling machines (less than half-lane)	US OSHA does not require respirator use	US OSHA does not require respirator use	A, C, E, F, H	
Large drivable milling machines (half-lane and larger)	US OSHA does not require respirator use	US OSHA does not require respirator use	A, C, E, F, H	
Crushing machines	US OSHA does not require respirator use	US OSHA does not require respirator use	A, C, E, F, H	
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	US OSHA does not require respirator use	US OSHA does not require respirator use	A, C, E, F, H	
Heavy equipment and utility vehicles for tasks such as grading and excavating but not including: Demolishing, abrading, or fracturing silica-containing materials	US OSHA does not require respirator use	US OSHA does not require respirator use	A, C, E, F, H	
Abrasive blasting* *informational purposes only*	*Abrasive blasting is NOTpart of 29 CFR 1926.1153 Table 1. Must also comply with 29 CFR 1926.57. NIOSH Approved Abrasive Blasting Helmet with Supplied Air Hearing protection and fall protection may also be required			

PPE Codes:
A – 3M™ Rugged Comfort Quick Latch Half Facepiece Reusable Respirator 6500 Series
A – 3M™ Full Face Piece Respirator - 6000 Series
C- 3M™ Particulate Filter 2071, P95 or 3M™ Particulate Filter 2091, P100
D – 3M™ Particulate Filter 2091, P100
E – Push-To-Fit Earplugs
F – 3M™ Virtua™ CCS Protective Eyewear with Foam Gasket
G – 3M™ Solus™ 1000 Series Safety Glasses with Foam Gasket and Face Shield
H – 3M™ H-700 Hard Hat with Uvicator™ Sensor H-700 Vented UVicator PinLock
J – ExoFit STRATA™ Construction Style Harness

Personal Safety Division
3M Center, Building 0235-2W-70
St. Paul, MN 55144-1000
3M.com/PPEsafety

For More Information
Technical Assistance 1-800-243-4630
Hours of Operation: M-Th 8am – 6pm,
Fri 8am – 4:30 pm CST