



**ENVIRONMENTAL
HEALTH & SAFETY**

Respirable Silica Control Plan

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UNIVERSITY OF NEW MEXICO
Department of Environmental Health and Safety

Casey B Hall

Casey Hall
Interim Director

Zachary Peterson
Zachary Peterson (Mar 24, 2021 12:09 MDT)

Zachary Peterson
Interim Manager, Safety

ACRONYMS & DEFINITIONS

AL	Action Level: Point when an employer must act to reduce respirable silica exposure to the worker. 25 micrograms of respirable crystalline silica per cubic meter of air ($\mu\text{g}/\text{m}^3$) (50% of the PEL).
CFR	Code of Federal Regulations
EHS	Environmental Health and Safety
EOHS	Employee Occupational Health Services
FM	Facilities Management
HEPA Filter	High-efficiency particulate air filter
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit: The amount of silica that a worker can be exposed to over an 8-hour time-weighted average. 50 micrograms of respirable crystalline silica per cubic meter of air ($\mu\text{g}/\text{m}^3$)
PPE	Personal Protective Equipment
UNM	University of New Mexico

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1. PURPOSE

The purpose of this Respirable Silica Control Plan is to protect UNM staff and faculty from health hazards associated with exposure to respirable silica dust. This plan follows the requirements set forth in OSHA General Industry Rule (29 CFR 1910.1053) and OSHA Construction Rule (29 CFR 1926.1153).

2. SCOPE

This plan applies to all UNM employees who may be exposed to respirable silica at or above the AL, or any personnel who are engaged in a known silica dust producing activity as outlined in Attachment 1: Control Methods for Silica Producing Activities.

3. ROLES AND RESPONSIBILITIES

3.1. Environmental Health & Safety

- Implements and maintains this procedure.
- Develops and reviews employee training programs.
- Conducts respirable silica exposure assessments.
- Reviews and approves contractor silica control programs.
- Makes recommendations on silica dust control options to reduce and eliminate exposure to respirable silica.
- Maintains records of occupational exposure assessments.

3.2. Employee Occupational Health Services

- Conducts medical surveillance in accordance with 1910.1053 and 1926.1153.
- Maintains records of physical examinations, x-rays, and tests.
- Provides written medical opinion to both employee and employer.

3.3. Facilities Management

- Notifies EHS of activities that may require exposure monitoring.
- Enforces this program with all personnel and vendors engaged in respirable silica producing activities.
- Develops procedures for housekeeping that are within compliance of this procedure.
- Ensures that all tools and equipment necessary to implement this procedure are available prior to allowing work activities to commence.
- Ensures all tools and equipment necessary to implement this procedure are in good working order.

3.4. Supervisors

- Identify respirable silica hazards and act to minimize or eliminate exposure.
- Provide new employees with information regarding this procedure.
- Ensure employees have appropriate equipment and PPE to properly work in accordance with this procedure.
- Enforces this program with all employees engaged in respirable silica producing activities.
- Notify EHS of activities that may require exposure monitoring 10 business days in advance through the EHS iServiceDesk < http://iservicedesk.unm.edu/srs_home.html>.

3.5. Affected Employees

- Perform work in accordance with this procedure and the requirements outlined in this plan.
- Attend training sessions.
- Comply with surveillance and monitoring requirements.
- Wear required PPE.
- Notify supervisors of activities that may require exposure monitoring.
- Notify supervisors and EHS if there is a reasonable concern they have been exposed to respirable silica that would place them above the PEL.

3.6. External Contractors Performing Work at UNM

- Contractors who are completing work that creates respirable silica will have silica control plans and will submit them for review and approval to EHS. This is in accordance with the requirements of the EHS *Construction Safety Manual*.

4. PROGRAM REQUIREMENTS

4.1. Exposure Assessment

4.1.1. Performance Assessment

OSHA has published a list of tasks that place an employee above the PEL. For any task listed in Attachment A: Control Methods for Silica Producing Activities, the employee shall comply with the control methods listed according to the task and duration. Exposure monitoring is not required when following the control methods listed in Attachment A.

If the task and duration require the use of respiratory protection, the employee completing the task must be fit tested for the type of respirator that is required, in accordance with the UNM *Respiratory Protection Plan*.

4.1.2. Scheduled Monitoring Assessment

For any respirable silica producing activities not listed in Attachment A: Control Methods for Silica Producing Activities, EHS shall perform an assessment to determine potential hazards to the employee. The supervisor is required to contact EHS 10 business days prior to starting work.

The assessment will consist of a job hazard analysis. If any employee can potentially be exposed to respirable silica at or above the action level, then it will include personal air monitoring. All results of personal air monitoring will be made available to the employee within five business days of receipt of lab analysis results.

All results will be held on file by EHS for the course of the employee's time with UNM, and 30 years beyond their separation from the University.

Based upon the results of the assessment and air monitoring, EHS will make recommendations and/or requirements for the task sampled and may add it to Attachment A: Control Methods for Silica Producing Activities with a revision of the control plan.

4.2. Regulated Areas

A Regulated Area shall be established if an activity is in a fixed location and will expose personnel to a respirable silica at or above the PEL.

A regulated area must have a visual barrier that marks the boundary lines of the area, and must be separated from other areas in a way that will minimize the number of employees exposed.

A warning sign must be posted at the entrance to the regulated area that includes the following:

- Danger
- Respirable Crystalline Silica
- May Cause Cancer
- Causes Damage to Lungs
- Wear Respiratory Protection in this Area
- Authorized Personnel Only

Respirators must be provided for any persons that enter the regulated area. The respirator and employee must meet the requirements of the UNM *Respiratory Protection Program* in addition to all requirements of Subpart E of 29 CFR 1910.

4.3. Housekeeping

Any activity that will cause silica dust to become airborne is strictly prohibited, this includes dry sweeping and compressed air. Instead, use wet mopping, wet sweeping, and HEPA filtered vacuuming.

Never use compressed air to clean skin or clothing that can potentially have silica dust.

4.4. Medical Evaluation

Medical evaluation will be provided to any personnel that meet one of the following:

- Exposed to respirable silica above the PEL.
- Exposed to respirable silica at/above the action level for 30 or more days per year.
- Are required to wear respirators under this plan for 30 or more days a year.
- Work with crystalline silica and develop signs/symptoms of excessive exposure to respirable silica.

The examinations shall be offered every 3 years and will contain tests for pulmonary functions, chest x-ray, and a physical exam.

After the exam, the worker will get a report detailing their health and the employer will receive a medical opinion as per the limitations, if any, to the worker as a result of the exam.

All medical evaluations will be free to the employees and offered at a reasonable time and take place on campus at EOHS unless otherwise authorized by EOHS. Additionally, medical records will be retained and available in accordance to 29 CFR 1910.1020 (30 years from date of separation).

4.5. Worker's Compensation Reporting

If there is reasonable concern an employee has been exposed to respirable silica that would place them above the PEL, they are required to notify their supervisor and EHS so an investigation can be performed and a Worker's Compensation Report can be filed.

5. TRAINING

EHS will develop basic respirable silica awareness training that addresses the following items:

- Health hazards associated with respirable silica;
- Specific tasks in the workplace that could result in exposure to respirable silica;
- Engineering and administrative controls necessary to protect personnel from exposure;
- When and what respiratory protection is required;
- The identity of the competent person responsible for task review; and
- The purpose and description of the medical surveillance program.

6. PLAN REVIEW

The EHS Director and Department Managers shall review this plan tri-annually to verify compliance with all current requirements.

Reviews shall be noted on the document revision log, and will always generate a new revision number.

7. ATTACHMENTS

Attachment 1: *Control Methods for Silica Producing Activities*

7.1. Attachment 1: Control Methods for Silica Producing Activities

Equipment/Task	Engineering & Work Practice Control	Required Respiratory Protection & Minimum Assigned Protection Factor (APF)	
		≤ 4 hours /shift	> 4 hours /shift
7.1.1. Handheld & Stand-mounted Drills	<p>Use drill equipped with commercially-available shroud or cowling with dust collection system.</p> <p>Dust collector must provide the airflow recommended by the tool manufacturer, or efficiency and filter-cleaning mechanism.</p> <p>Operate and maintain tool in accordance with the manufacturer's instructions to minimize dust emissions.</p> <p>Use a HEPA-filtered vacuum when cleaning holes.</p>		
7.1.2. Handheld grinders for mortar removal (i.e., tuckpointing)	<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 25cfm or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filtercleaning mechanism.</p>	APF 10	APF 10
7.1.3. 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>	None	None
	<p>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 25cfm or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filtercleaning mechanism.</p>		
	When Used Outdoors	None	None

	When used indoors or in an enclosed are	None	APF10
	Use tool with water delivery system that supplies a continuous stream or spray of water at the point of impact.		
	When used outdoors	None	None
7.1.4. Jackhammers and handheld powered chipping tools	When used indoors or in an enclosed area	APF10	APF 10
	OR Use tool equipped with a commercially available shroud and dust collections system. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. 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.		
	When used outdoors	None	None
	When used indoors or in an enclosed area	APF10	APF10
7.1.5. Heavy Equipment & Utility Vehicles for Grading & Excavating	<i>Not for demolishing, abrading, or fracturing of silica containing materials.</i> Apply Water and/or dust suppressants as 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
7.1.6. Heavy Equipment & Utility Vehicles for Demolishing, Abrading or Fracturing	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.		
7.1.7. Power Saws on Concrete & Walkbehind Saws	Use saw 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.		
	When used outdoors	None	APF 10
	When used indoors or in an enclosed area	APF 10	APF 10

7.1.8. Stationary Masonry Saws	<p>Use saw 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
7.1.9. Drivable Saws	<p>Use saw 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
7.1.10. Hand-held Power Saws	<p>For cutting fiber-cement board and sheet rock.</p> <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 airflow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency.</p>	None	None
7.1.11. Walk-Behind Milling Machines and Floor Grinders	<p>Use machine equipped with integrated water delivery system that continuously feeds water to the cutting surface.</p> <p>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</p>	None	None

	<p>OR</p> <p>Use machine equipped with dust collection system recommended by the manufacturer</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 manufacturer, or greater, and have a filter with 99% or greater efficiency and filter-cleaning mechanism</p> <p>When used indoors or in an enclosed area, use a HEPAfiltered vacuum to remove loose dust in between passes</p>	None	None
7.1.12. Dowell Drilling Rigs for Concrete	<p>For tasks performed outdoors only:</p> <p>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.</p> <p>Use a HEPA-filtered vacuum when cleaning holes.</p>	APF 10	APF 10
7.1.13. Vehicle-Mounted Drilling Rigs for Rock & Concrete	<p>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.</p> <p>OR</p> <p>Operate from within an enclosed cab and use water for dust suppression on drill bit.</p>	None	None
7.1.14. 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, climatecontrolled air to the operator, or a remote-control station.</p>	None	None