

City of Appleton Human Resources Policy	TITLE: <b>Respirable Silica Exposure Control Policy</b>	
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I. PURPOSE

This silica exposure control policy was developed to prevent employee exposure to hazardous levels of respirable crystalline silica that could result through maintenance and construction activities. This program is intended to meet the requirements of Occupational Safety and Health Administration’s (“OSHA”) respirable crystalline silica construction standard (29 CFR 1926.1153) and their respirable crystalline silica general industry standard (29 CFR 1910.1053) which have both been adopted by the Wisconsin Department of Safety and Professional Services (“WI DSPPS”) by Wis. Stat. § 101.055 (2021-22).

All work involving chipping, cutting, drilling, mixing, grinding, or similar activities on materials containing crystalline silica can lead to the release of respirable-sized particles. Many materials found on construction sites and in building materials contain crystalline silica, including but not limited to cement, brick, concrete, asphalt, mortar, rock, sand, pre-formed concrete structures (inlets, pipes, etc.), etc. Consequently, this program has been developed, in accordance with applicable OSHA and WI DSPPS regulations, to address and control these potential exposures to prevent our employees from experiencing the effects of occupational illnesses related to respirable crystalline silica.

II. POLICY

The City of Appleton (“City”) is committed to providing a safe work environment for its employees. This commitment includes ensuring every reasonable precaution is taken to protect our employees (and others) from the adverse health effects associated with exposure to respirable crystalline silica. The procedures set forth in this program are to be adhered to by all City employees.

III. SCOPE

This program applies to all city employees who have the potential to be exposed to respirable crystalline silica.

IV. RESPONSIBILITIES

The City firmly believes protecting the health and safety of our employees is everyone’s responsibility. All levels of the organization assume some level of responsibility for this policy including the following:

- A. Department Directors, Deputy Directors, and Supervisors:

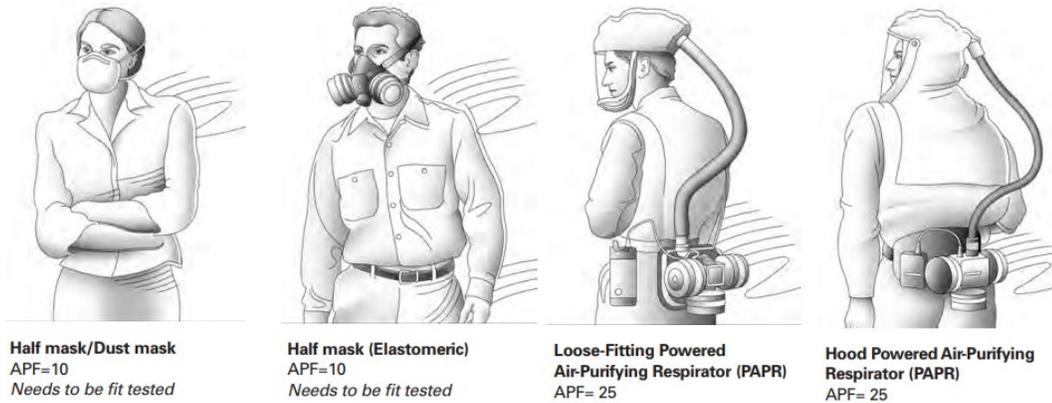
1. Provide support, where needed, to properly implement the exposure control measures of this program.
2. When applicable, select and implement the appropriate control measures in accordance with Exhibit A (OSHA's Table 1: Specific Control Methods when Working with Silica-Containing Materials). This table lists several common tasks along with OSHA/ WI DSPS accepted control methods and work practices that limits silica exposure.
3. For any work tasks/operations outside of those identified in Exhibit A, develop, and follow a project-specific silica exposure control plan (see sample under Exhibit B).
4. Ensure that applicable employees have received training in the hazards of silica exposure and how to work safely with silica in accordance with applicable OSHA / WI DSPS standards.

B Employees:

1. When applicable, follow the control methods and work practices as specified in Exhibit A (OSHA's Table 1: Specific Control Methods when Working with Silica-Containing Materials) or those methods and practices as established in the project-specific silica exposure control plan.
2. Use the assigned personal protective equipment in an effective and safe manner.
3. Attend any silica safety training provided by the City.
4. Participate in respirable crystalline silica exposure monitoring and the medical surveillance program, as needed.
5. Report any unsafe conditions or acts to their direct supervisor.

V. DEFINITIONS

- A. Action Level: A concentration of airborne respirable crystalline silica of 25  $\mu\text{g}/\text{m}^3$  (micrograms of respirable crystalline silica per cubic meter of air), calculated as an 8-hour time weighted average ("TWA"). Exposures at or above the action level triggers the requirements for an exposure assessment.
- B. Assigned Protection Factor ("APF"): The workplace level of respiratory protection that a respirator or class of respirators is expected to provide to employees when the employer implements a continuing, effective respirator protection program. APF's are used to select the appropriate respirators that will provide the necessary level of protection as specified under Exhibit A: OSHA's Table 1 Specific Control Methods when Working with Silica-Containing Materials (e.g., APF10 and APF 25). Examples of these respirators can be seen on the following page (source: OSHA).



- C. **Competent Person:** an individual who can identify existing and foreseeable respirable crystalline silica hazards in the workplace and who has authorization to take prompt corrective measures to eliminate or minimize them.
- D. **Employee Exposure:** the exposure to airborne respirable crystalline silica that would occur if the employee were not using a respirator.
- E. **High-Efficiency Particulate (“HEPA”) Filter:** a filter that is at least 99.97% efficient in removing monodispersed particles of 0.3 micrometers in diameter.
- F. **Objective Data:** 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 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 materials, control methods, work practices, and environmental conditions in the employer’s current operations.
- G. **Permissible Exposure Limit (“PEL”):** employers shall ensure that no employee is exposed to an airborne concentration of respirable crystalline silica more than 50  $\mu\text{g}/\text{m}^3$ , calculated as an 8-hour TWA.
- H. **Physician or Other Licensed Health Care Professional (“PLHCP”):** an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows them to independently provide or be delegated the responsibility to provide some or all the health care services required by the medical surveillance section of OSHA’s respirable crystalline silica standard.

**VI. EXPOSURE CONTROL METHODS**

- A. When possible and applicable, the City will conduct all activities with potential silica exposure to be consistent with OSHA’s Table 1 Specific Control Methods when Working with Silica-Containing Materials (Exhibit A). Other general exposure control methods include using water in sufficient quantities to minimize visible dust, isolating employees from silica dust using enclosed cabs or booths, wetting down silica containing materials before sweeping them up, and scheduling work that involve high silica exposures when

minimal employees are in the area. Any silica-producing tasks not identified in this table will be assessed by the City in accordance with OSHA's alternative exposure control methods.

B. Alternative exposure control methods: This process applies to all tasks not listed in OSHA's Table 1 (Exhibit A) or when the City cannot fully and properly implement the engineering controls, work practices, or respiratory protection described within this table. The City will assess our employee's exposure by utilizing the performance option or the scheduled monitoring option as detailed below.

1. Performance Option: The City will assess the 8-hour time weighted average for each employee based on any combination of air monitoring data or objective data. Examples of objective data includes air-monitoring from industry-wide surveys, calculations based on the composition of a substance, area sampling results or historical air monitoring collected by the City.
2. Scheduled Monitoring Option: The City will perform initial air monitoring to assess the 8-hour time weighted average for respirable silica exposure. If this initial monitoring indicates that employee exposures are below OSHA's action level, the City will discontinue monitoring for those employees whose exposures are represented by such monitoring. If the monitoring results indicate employee exposures are at or above OSHA's action level but are at or below OSHA's permissible exposure limit, the City will repeat such monitoring within six months. If the initial monitoring results indicate employee exposures are above OSHA's permissible exposure limit, the City will repeat such monitoring within three months. If this repeat monitoring indicates that employee's exposures are below OSHA's action level, the City will repeat such monitoring within six months until two consecutive measurements are below OSHA's action level at which time the City will discontinue monitoring except when a reassessment is required.

The City will reassess employees exposures to respirable silica whenever there is a change in production, process, equipment or work practices that may reasonably cause new or additional exposures at or above OSHA's action level. All respirable crystalline silica monitoring will be performed by a qualified individual (e.g., an industrial hygienist) and the monitoring samples are evaluated by a qualified laboratory. Within five working days after receiving the exposure monitoring results, the City will notify all affected employees of the results or will post the results in an appropriate location accessible to all affected employees. If these results indicate that employee exposure exceeds OSHA's permissible exposure limit, the City will provide employees with the corrective actions (such as engineering controls, work practices controls, respiratory protection, etc.) that will be taken to reduce employee exposure at or below this limit.

C. Respiratory Protection: Respiratory protection will be required where specified within Table 1 (Exhibit A) or whenever the City has not fully implemented the engineering

controls and work practices described in this table. Other situations which would require respiratory protection includes: where exposures exceed or might exceed OSHA's PEL to install or implement feasible engineering and work practice controls, in certain maintenance and repair tasks for which engineering and work practices are not feasible, and during tasks that all feasible engineering and work practice controls have been implemented but are not sufficient to reduce employee exposure at or below the PEL.

**Mandatory Respiratory Protection Use and Medical Surveillance:** OSHA / WI DSHS requires employers to provide a medical surveillance evaluation for any employee who will be required to use a respirator for 30 or more days each calendar year due to their respirable crystalline silica exposure. Note: if an employee is required to wear a respirator at any time during the workday; it counts as one day of respirator use. This evaluation will be performed by a PLHCP, provided at no cost to the employee, and within 30 days after their initial job assignment which requires respiratory protection. The medical evaluation must consist of the following items: medical and work history evaluation, physical examination (with emphasis on the respiratory system), chest X-ray, pulmonary function test, testing for latent tuberculosis infection and any other tests deemed appropriate by the PLHCP. These evaluations will be provided (except for testing for latent tuberculosis infection) at least every three years or more frequently, if recommended by the PLHCP. The City will provide the following information to the PLHCP: description of employee's duties as they relate to their occupational exposure to respirable silica and the known or anticipated levels of occupational exposure to respirable silica. The PLHCP will provide the City with a written opinion on the following: any recommended limitations on the employee's use of respirators and any recommended limitations on the employee's exposure to respirable crystalline silica.

D. **Written Exposure Control Plan** (see Exhibit B for sample plan): When employee exposure to respirable silica is expected to be at or above OSHA's action level, when the controls methods specified in OSHA's Table 1 (Exhibit A) are not followed or when the level of silica exposure has not been determined through previous air monitoring for a work task, a written exposure control plan ("ECP") must be developed and implemented. The ECP must contain the following elements:

- A description of the task that involves exposure to respirable crystalline silica,
- A description of the engineering controls, work practices and respiratory protection used to limit employee exposure,
- A description of the housekeeping measures used to limit employee exposure, and
- A description of the procedures used to restrict access to work areas, when necessary, to minimize the number of employees exposed to respirable crystalline silica.

The ECP must designate a competent person to make frequent inspections of the affected job site to ensure the ECP is being followed. ECP's will be reviewed annually to evaluate their effectiveness and be updated as necessary.

- E. Employee Training: Applicable employees will receive training on the following items: health hazards associated with exposure to respirable crystalline silica, specific tasks in the workplace that could result in this exposure, measures taken by the City to protect employees such as engineering controls, work practices and respiratory protection, contents of the applicable OSHA standard, identity of the competent person(s) within the City and the purpose/description of the medical surveillance program (as needed). Employees will be trained at the time they are initially assigned to a position which might involve working with respirable crystalline silica.

## VII. RECORD-KEEPING

The City will maintain an accurate record of all air monitoring results taken to assess employee exposure to respirable crystalline silica. This record will include at least the following information: date of air monitoring, task involved, sampling and analytical methods used, number, duration and results of samples taken, identity of the laboratory that performed the analysis, types of personal protective equipment worn by the employees monitored, and name and job classification of employees that were monitored. Additionally, the City will maintain an accurate record for any employee enrolled in the medical surveillance portion of this program. These records shall include the following information about each affected employee: name, a copy of the PLHCP's written medical opinion and a copy of the information provided to the PLHCP. In accordance with OSHA 29 CFR 1910.1030, these records will be kept for at least 30 years. A brief summary of previous air monitoring results for silica exposure can be found under Exhibit C of this policy.

## VIII. POLICY EVALUATION

This policy will be reviewed and evaluated on an annual basis by the central safety committee unless there are changes to operations, OSHA's / WI DSPS's respirable crystalline silica standard, or another applicable OSHA / WI DSPS standard which would require an immediate re-evaluation of this policy.

## IX. EXHIBITS

- A. Exhibit A – Specific Exposure Control Methods When Working with Silica Materials [acquired from OSHA Standard 29 CFR 1926.1153(c)(1)]
- B. Exhibit B – Sample Exposure Control Plan from OSHA's Silica Small Business Guide
- C. Exhibit C – Previous Air Monitoring Results for Respirable Crystalline Silica (Note: copies of the full air sampling reports can be requested from the Human Resources Department.)

**Table 1: Specific Exposure Control Methods when Working with Silica Containing Materials**

**Note:** For tasks performed using wet methods (i.e., water delivery system), apply water at flow rates sufficient to minimize the release of visible dust. When using equipment with an enclosed cab or booth to control silica exposure, ensure that the enclosed cab or booth: is maintained as free as practical from settled dust, has door seals and closing mechanisms that work properly, is under positive pressure maintained through continuous delivery of fresh air, has heating and cooling capabilities and has intake air that is filtered through a filter that is 95% efficient in the 0.3-10.0 microgram range for particles. When an employee performs more than one task from this table during a shift and the total duration of all tasks combined is less than four hours, the required respiratory protection for each task is in the less than four hours per shift column. If the total duration of all tasks combined is more than four hours per shift, the required respiratory protection for each task is in the greater than four hours per shift column. The City does 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 are not feasible. The City does 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: the compressed air is used in conjunction with a ventilation system that effectively captures the dust cloud or no alternative method is feasible.

Work Task or Equipment Operation		Engineering and Work Practices Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
			≤ 4 hours / shift	>4hours/shift
1	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
2	Handheld power saws (any blade diameter) when used outdoors	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"> <li>• When used outdoors.</li> <li>• When used indoors or in an enclosed area.</li> </ul>	None APF 10	APF 10 APF 10
3	Handheld power saws for cutting fiber-cement board (with blade diameter of 8 inches or less)	For tasks performed outdoors only.  Use saw equipped with commercially available dust collection system.  Operate and maintain tool in accordance with manufacturer’s instruction to minimize dust emissions.  Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with a 99% or greater efficiency.	None	None
4	Walk-behind saws when used outdoors	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"> <li>• When used outdoors.</li> <li>• When used indoors or in an enclosed area.</li> </ul>	None APF 10	APF 10 APF 10

5	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.</p>	None	None
6	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.</p>	None	None
7	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.</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 and a filter cleaning mechanism.</p> <p>Use a HEPA-filtered vacuum when cleaning holes.</p>	None	None
8	Dowel 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
9	Vehicle-mounted drilling rigs for rock and 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 style="text-align: center;"><b>OR</b></p> <p>Operate from within an enclosed cab and use water for dust suppression on drill bit.</p>	None  None	None  None
10a	Jackhammers and handheld powered chipping tools	<p>Use tool with water delivery system that supplies a continuous stream or spray of water at the point of impact.</p> <ul style="list-style-type: none"> <li>• When used outdoors.</li> <li>• When used indoors or in an enclosed area.</li> </ul>	None APF 10	APF 10 APF 10
10b	Jackhammers and handheld powered chipping tools	<p>Use tool 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 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"> <li>• When used outdoors.</li> <li>• When used indoors or in an enclosed area.</li> </ul>	None APF 10	APF 10 APF 10



14	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
15	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 to suppress dust. Operate and maintain machine to minimize dust.	None	None
		<b>OR</b> Use a machine equipped with supplemental water spray designed to suppress dust. Water must be combined with a surfactant. Operate and maintain machine to minimize dust.	None	None
16	Crushing machines	Use equipment designed to deliver water spray or mist for dust suppression at crusher and other points where dust is generated (e.g., hoppers, conveyors, sieves/sizing or vibrating components, and discharge points). Operate and maintain machine in accordance with manufacturer's instructions to minimize dust emissions. Use a ventilated booth that provides fresh, climate-controlled air to the operator, or a remote-control station.	None	None
17	Heavy equipment used to abrade or fracture silica-containing materials 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 suppression as necessary to minimize dust emissions. Note: Includes utility vehicles in addition to heavy equipment.	None	None
18	Heavy equipment and utility vehicles for tasks such as grading/excavating; not for demolition, abrading or fracturing	Apply water and / or dust suppressants as necessary to minimize dust emissions.	None	None
		<b>OR</b> When the equipment operator is the only employee engaged in the task, operate equipment from within an enclosed cab.	None	None

**Sample Exposure Control Plan**  
(From OSHA's Silica Small Business Guide)

Company Name: XYZ Renovators

Person Completing this Plan & Title: John Doe, Safety Coordinator

Description of Task: Demolishing concrete and tile floors inside homes or public buildings using a jackhammer.

Description of Controls:

- Engineering Controls:
  - Use jackhammer equipped with the appropriate, commercially available shroud and vacuum dust collection system with the flow rate recommended by the jackhammer manufacturer, a filter that is at least 99% efficient, and a filter cleaning mechanism.
  - Use a portable fan to exhaust air to prevent the buildup of dust.
- Work Practices:
  - Check shrouds and hoses to make sure they are not damaged before starting work.
  - Make sure the hoses do not become kinked or bent while working.
  - Use switch on vacuum to activate filter cleaning at the frequency recommended by the manufacturer.
  - Replace vacuum bags as needed to prevent overfilling.
  - Use the jackhammer and vacuum controls according to the manufacturer's instructions for reducing the release of visible dust.
  - If visible dust increases, check engineering controls and adjust as needed.
- Respiratory Protection:
  - Use respirator with an APF of 10 the entire time the task is being performed.
  - See the company's written respiratory protection policy for information on selection, training, and fit testing requirements, in addition to the instructions on the proper use of respirators (for example, being clean shaven when using a respirator that seals against the face).
- Housekeeping Measures:
  - Dust containing silica on work surfaces and equipment must be cleaned up using wet methods or a HEPA-filtered vacuum.
  - Do not use compressed air or dry sweeping for removing dust and debris containing silica from work surfaces.
  - Dispose of used vacuum bags in a container keep the container sealed when not in use.
- Procedures Used to Restrict Access to Work Areas:
  - Schedule the work so the only employees who are engaged in the task (the jackhammer operator and employees helping the operator) are in the area.

**City of Appleton Previous Respirable Crystalline Silica (RCS) Air Monitoring Results**

<b>Sample Date</b>	<b>Task Sampled</b>	<b>Sample Results</b>
July 5, 2022	DPW – Asphalt Pavement Crack Router Operation	Eight (8)-hour TWA RCS: 12% of OSHA’s Permissible Exposure Limit (PEL) and 24% of OSHA’s Action Level. Sample results did not exceed OSHA’s Action Level or PEL.
July 5, 2022	DPW – Asphalt Pavement Crack Blow Out Operation with Compressed Air	Eight (8)-hour TWA RCS: 22% of OSHA’s Permissible Exposure Limit (PEL) and 44% of OSHA’s Action Level. Sample results did not exceed OSHA’s Action Level or PEL.
July 5, 2022	DPW – Milling Machine Operation on Concrete (Trackless MT Equipment)	Eight (8)-hour TWA RCS: less than 5% of OSHA’s Permissible Exposure Limit (PEL) and less than 10% of OSHA’s Action Level. Sample results did not exceed OSHA’s Action Level or PEL.
July 5, 2022	DPW – Concrete Crack Blow out with Compressed Air	Eight (8)-hour TWA RCS: less than 6% of OSHA’s Permissible Exposure Limit (PEL) and less than 12% of OSHA’s Action Level. Sample results did not exceed OSHA’s Action Level or PEL.
July 14, 2023	Golf Course – Prepare divot mix (not to exceed 1 ½ hours in duration).	Eight (8)-hour TWA RCS: 20% of OSHA’s Permissible Exposure Limit (PEL) and 40% of OSHA’s Action Level. Sample results did not exceed OSHA’s Action Level or PEL.
July 13, 2023	DPW – Use of Concrete Dowel Drilling Rig with Hilti VC 150-6 XE Vacuum Collection (Two Samples Taken)	Results for Both Samples: Eight (8)-hour TWA RCS: less than 5.2% of OSHA’s Permissible Exposure Limit (PEL) and less than 10.4% OSHA’s Action Level. Sample results did not exceed OSHA’s Action Level or PEL.
July 13, 2023	DPW – Asphalt Crack Blow Out (Two Samples Taken)	Results for Both Samples: Eight (8)-hour TWA RCS: less than 5.2% of OSHA’s Permissible Exposure Limit (PEL) and less than 10.4% OSHA’s Action Level. Sample results did not exceed OSHA’s Action Level or PEL.