

ARKANSAS TECH UNIVERSITY
HEALTH & SAFETY POLICY

CRYSTALLINE SILICA DUST

It is the policy of The Facilities Management Group to take precautions to eliminate potential hazards in the workplace. The purpose of this crystalline silica dust safety policy is to prevent the hazards associated with silica dust and outline the steps to take to ensure employees who work with, or around silica are not exposed to hazardous levels of silica dust; and to provide procedures for common silica related work duties to minimize exposure in accordance with the OSHA Air Contaminants standard (29 CFR 1910.1000).

Crystalline silica is a basic component of soil, sand, granite and many other minerals. Quartz is the most common form of crystalline silica. All materials containing silica can result in the presence of respirable silica particles when chipping, cutting, drilling or grinding takes place. Silica exposure occurs through inhalation of silica containing particles and occurs through many construction and general industry methods. The most severe exposures generally occur during abrasive blasting with sand to remove paint and rust from bridges, tanks, concrete structures and other surfaces. Other activities that may result in severe silica exposure include jack hammering, rock/well drilling, concrete mixing, concrete drilling, brick and concrete cutting/sawing, tuck pointing and tunneling operations. Exposure to excessive silica dust over long periods of time can result in silicosis.

This crystalline silica dust safety policy applies to all Facilities Management Group employees who are expected to be exposed to silica dust through the methods outlined above; or through other means, which are determined by the Occupational Safety Coordinator or their supervisor.

ASSIGNMENT OF RESPOSIBILITIES

Supervisors will be responsible for the following:

1. Ensure employees understand and follow the guidelines and expectations outlined in the crystalline silica dust safety policy.
2. Ensure employees are properly trained on the applicable contents of the silica dust safety program who will be working in areas where there is a risk of exposure to silica dust.
3. Ensure that employees have the appropriate personal protective equipment (PPE) to perform the tasks associated with being exposed to crystalline silica dust.

APPENDIX O

ARKANSAS TECH UNIVERSITY HEALTH & SAFETY POLICY

The Occupational Safety Coordinator will be responsible for the following:

1. The safety department provides program oversight and consultation to Facilities Management work groups regarding potential risks, exposure prevention and training relating to silica dust exposures.
2. Conducts building/material assessments for silica containing materials and perform employee silica hazard assessments/monitoring upon request.
3. Ensure the applicable components of the silica dust safety program are available to all affected employees.
4. Provide applicable training to employees expected to work in, or with, building materials where there is a potential risk for silica exposure.

The employee (authorized person) will be responsible for the following:

1. Employees (authorized person(s)) working in areas where there is an identified risk of silica dust exposure must be properly trained on all applicable elements of the Facilities Management Groups silica dust safety program.
2. Ensure that they comply with the procedures and guidelines outlined in this policy.
3. Ensure that they wear all the appropriate PPE when performing tasks where they could be exposed to crystalline silica dust hazards.

MATERIAL ASSESSMENT & EXPOSURE

Crystalline silica occurs naturally in the earth's crust and is a basic component of sand, concrete, brick, asphalt, granite, some blasting grit and wall spackling materials. Employees can be exposed to silica when conducting activities such as, but not limited to:

- Abrasive blasting
- Jack hammering
- Concrete crushing
- Hoe ramming
- Rock drilling
- Mixing of concrete or grout
- Concrete drilling
- Sawing concrete or bricks
- Chipping or scarifying concrete
- Rock crushing
- Moving or dumping piles of concrete, rock or sand
- Demolition of concrete or brick
- Using coatings containing silica
- Removing coatings containing silica

APPENDIX O

ARKANSAS TECH UNIVERSITY HEALTH & SAFETY POLICY

Any time there is a potential for silica containing materials to be involved in a project, sources of silica must be assessed prior to disturbing. The Occupational Safety Coordinator or an authorized contractor can perform building material assessments to determine silica content in materials.

If airborne silica is expected to be generated during the project, The Occupational Safety Coordinator shall be contacted to conduct exposure monitoring and ensure all safety precautions are followed to minimize exposure to airborne silica dust.

(REFER TO APPENDIX O-1: CRYSTALLINE SILICA DUST HAZARD ASSESSMENT)

EXPOSURE MONITORING

The Facilities Management Group employees expected to come in contact/work with silica containing materials where there is a risk of exposure through inhalation of dust should develop an exposure monitoring program. That program can consist of three different levels of monitoring.

INITIAL EXPOSURE MONITORING

Initial exposure monitoring should be conducted by the Occupational Safety Coordinator to quantitatively evaluate the exposure to airborne silica.

Exposure monitoring should be conducted on any employee exposed to airborne silica dust as levels may vary based on job duty within a project. For example, the employee performing concrete cutting vs an employee providing supervision during the work.

PERIODIC EXPOSURE MONITORING

Whenever silica exposure levels are greater than, or equal to the permissible exposure level (50 μ g/m³), periodic exposure monitoring is required. It is the responsibility of the affected department to work with the Occupational Safety Coordinator and develop a periodic exposure monitoring schedule.

ARKANSAS TECH UNIVERSITY
HEALTH & SAFETY POLICY

1. The frequency of periodic exposure monitoring should be as follows:

Measured concentration:

Permissible exposure level- 50µg/m³

Monitoring Frequency:

Annual

2. Exposure monitoring is not required by every employee at risk of airborne lead exposure. Enough sampling must be done to enable the employee's exposure level to be reasonably represented.

TERMINATION OF EXPOSURE MONITORING

Periodic exposure monitoring may be discontinued if results from two consecutive sampling periods taken at least 7 days apart show that employee exposure is below the PEL.

SAMPLING METHODS

Personal exposure monitoring will be conducted using an approved NIOSH method. Monitoring records shall include the following.

1. The date, number, duration, location and results of each of the samples taken, including a description of the sampling procedure used to determine representative employee exposure where applicable.
2. A description of the sampling and analytical methods used.
3. The type of respiratory protective devices, if any.
4. Name and job classification of the employee monitored.
5. Any environmental variables that could affect the measurement of the employee exposure.

ARKANSAS TECH UNIVERSITY
HEALTH & SAFETY POLICY

REPORTING EXPOSURE MONITORING RESULTS

The Occupational Safety Coordinator will notify the department/supervisor of exposure monitoring results within as soon as the final laboratory analysis is completed. The department/supervisor must provide this information to the affected employee(s) within 5 working days.

If levels are measured during the exposure monitoring exceeding the PEL, the Occupational Safety Coordinator report will include steps and controls to reduce exposure to below the PEL.

Follow up exposure monitoring may be necessary if engineering or administrative controls are put in place to reduce hazardous exposures.

EXPOSURE CONTROL

Prior to projects taking place affecting FAMA employees in buildings and other facilities, the Occupational Safety Coordinator will review planning documents to account for potential exposures to hazardous materials, including silica.

PRE-PROJECT PLANNING

The Occupational Safety Coordinator can conduct building material assessments to make determinations if there are any silica containing materials, which may be impacted by the project.

During the planning process, any silica containing materials are addressed and methods for exposure control are provided prior to work beginning.

If silica containing materials are to be disturbed during the project, the appropriate exposure control methods will be recommended by the Occupational Safety Coordinator.

ADMINISTRATIVE/ENGINEERING CONTROLS

Where silica exposures at or above the permissible exposure limit have been documented, or are expected, the appropriate engineering or administrative controls will be implemented, where

ARKANSAS TECH UNIVERSITY
HEALTH & SAFETY POLICY

feasible. Follow-up exposure monitoring may be necessary when administrative or engineering exposure controls are utilized.

Typical controls may include, but not limited to:

1. Substituting non-silica containing materials for use while abrasive blasting
2. Alternative methods such as pre ordering grout already mixed instead of on-site mixing in bulk
3. Local exhaust ventilation
4. General ventilation
5. Vacuum methods with HEPA filters
6. Distance
7. Dust control products
8. Containment
9. Use of water to keep dust down
10. General work practices such as good housekeeping, worker rotation, development of specific SOPs to minimize exposure

PERSONAL PROTECTIVE EQUIPMENT (PPE)

In addition to administrative/engineering controls, employees may be required to wear specific PPE during the disturbance of silica containing materials and/or when airborne silica is present. The level of protection will depend on the task being conducted and the tools being utilized to complete the task.

Recommended PPE will typically include, but not limited to:

1. Respiratory protection
2. Disposable or reusable work clothing to keep from spreading the dust or bringing the dust home
3. Leather gloves
4. Safety glasses, goggles, or face shield
5. Boot covers or rubber boots

APPENDIX O

ARKANSAS TECH UNIVERSITY HEALTH & SAFETY POLICY

The following table provides recommended respiratory protection levels based on the measured or anticipated exposure levels:

Respirator	Protection Factor	Typical Silica Activity
N95	Less than 50 $\mu\text{g}/\text{m}^3$	- Used on voluntary basis to control low exposures
Half-face with HEPA filters	50 – 500 $\mu\text{g}/\text{m}^3$	- Housekeeping (wet method) - Saw cutting (wet method) - Drilling concrete (wet method) - Power tools with dust collection - Equipment operating with open cab
Full-face with HEPA filters	500 – 5,000 $\mu\text{g}/\text{m}^3$	- Chipping concrete - Jack Hammering - Power tools without dust collection - Mixing grout in bulk - Vacuum abrasive blasting
SCBA	Above 5,000 $\mu\text{g}/\text{m}^3$	- Abrasive blasting

HOUSEKEEPING & HYGIENE FACILITIES

In areas where silica containing dust may be present, all surfaces must be maintained free from accumulations of dust to minimize potential silica exposure. Dust and other silica containing debris must be removed from the work area as soon as possible.

Acceptable method of silica dust removal includes the use of HEPA vacuum or wet methods such as wet mopping.

Unacceptable methods of silica dust removal include dry sweeping, vacuum cleaners, shop vacuums, and compressed air.

ARKANSAS TECH UNIVERSITY
HEALTH & SAFETY POLICY

Follow all recommended procedures and utilize recommended PPE during silica containing debris cleanup activities.

Where silica containing materials are used, impacted, or being removed; the following requirements must be met:

1. PPE should be removed upon work completion and disposed of after each use.
2. Ensure contaminated PPE, including footwear is not worn outside the work areas.
3. Employees must wash hands and are recommended to shower prior to leaving work.

MEDICAL SURVEILLANCE

Employees exposed to silica levels above the permissible exposure limit (50 μ g/m³), or any employee working with silica who develops signs/symptoms of excessive exposure, should be enrolled in the medical surveillance program.

All medical surveillance will be performed by a licensed physician and results must be provided to the affected employee and their supervisor within 15 days of the assessment.

The medical surveillance will include, but not limited to:

1. Baseline examination
2. Chest X-ray.

Employees enrolled in the medical surveillance program should be examined annually to track any changes as a result to exposure to silica dust.

ARKANSAS TECH UNIVERSITY
HEALTH & SAFETY POLICY

TRAINING & RECORDKEEPING

Silica awareness training is available in person and will be offered to affected employees prior to working with silica and annually thereafter.

Silica awareness training should include the following:

1. Information about the potential health effects and symptoms of exposure to respirable silica
2. Safety data sheets for silica, quartz, and applicable products containing silica
3. The purpose and set up of regulated areas to mark the boundaries of work areas containing silica dust
4. The use of engineering controls, work practices, good housekeeping and PPE to control exposure to silica
5. Use and care of PPE
6. Expected exposures to silica dust
7. Exposure monitoring process
8. Medical surveillance process

Respiratory protection training, medical clearance, and quantitative fit testing is required under the respiratory protection policy (section 14.0). The policy states that employees requiring respirators for work tasks will be re-tested annually.

Contact the Occupational Safety Coordinator for additional information regarding the policy.

ARKANSAS TECH UNIVERSITY
HEALTH & SAFETY POLICY

SIGNAGE

In areas where exposure to silica dust may exceed the PEL the following type of signage must be in place to warn employee of hazards:

