



THE CENTER FOR CONSTRUCTION  
**RESEARCH AND TRAINING**

# What is Silica, and Why is it Dangerous?

Jessica Bunting,

Director, Research to Practice (r2p) Program

[jbunting@cpwr.com](mailto:jbunting@cpwr.com)

# Who is CPWR?

CPWR is dedicated to reducing occupational injuries, illnesses & fatalities in the construction industry through:



A recognized world leader in construction safety and health research



The training offered by CPWR builds on the existing infrastructure of the Building Trades Unions and the 2,000 joint apprenticeship and training programs in all 50 U.S. states and in Canada.

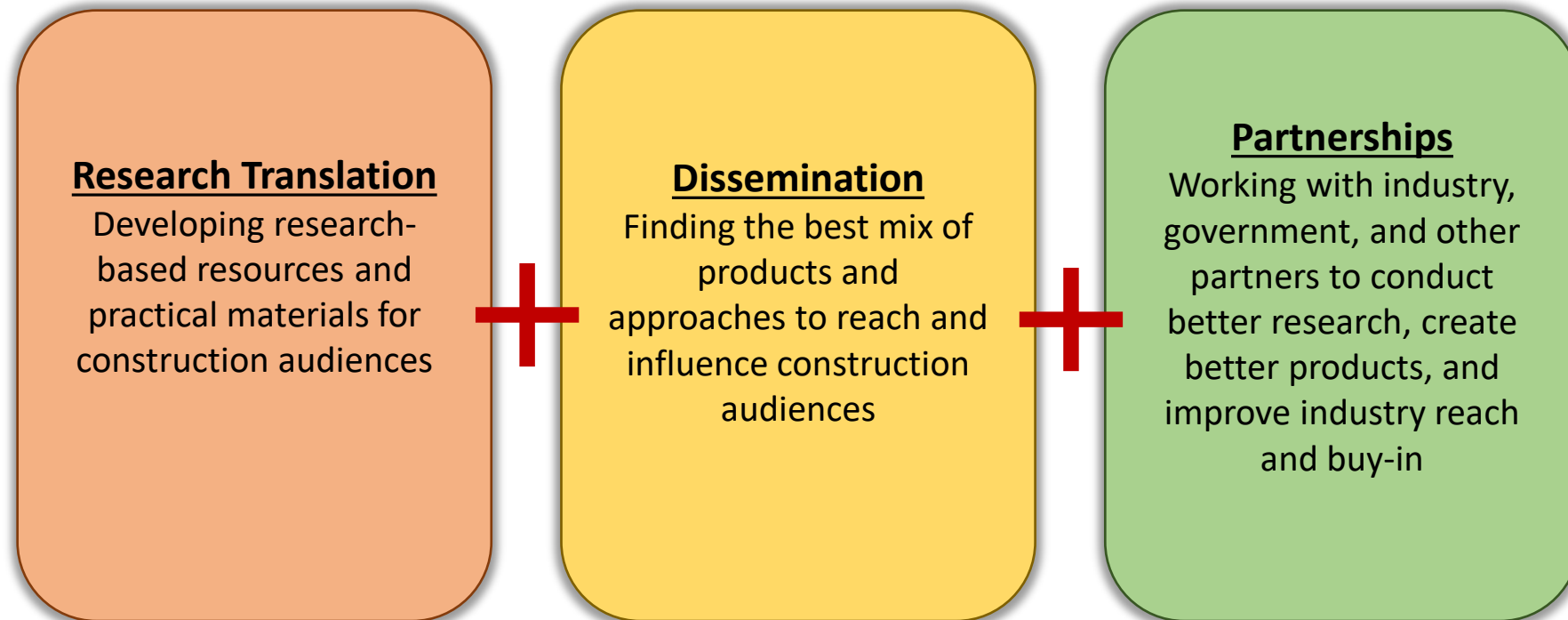


In order to prevent deaths, injuries and illnesses in construction, interventions must be evaluated in the workplace and communicated to employers and workers.

# Research to Practice (r2p) Program

**2008 National Academies Finding:** Significant research on effective interventions *but* slow adoption

- How can the program get vital information to the worker?
- How does the program persuade contractors and workers to effectively use the interventions developed through the research?



# What is Silica?

- Silica, often referred to as quartz, is a very common mineral
- Found in many materials common on construction sites such as:
  - Soil
  - Sand
  - Concrete
  - Masonry
  - Rock
  - Granite
  - Landscaping materials



# How Does Silica Get into the Air?

- Crystalline silica particles become airborne in the form of dust
- This dust is created by cutting, grinding, drilling or otherwise disturbing materials that contain silica particles
- Particles are very small and not visible to the human eye



# Know the Hazard: Possible Materials Containing Silica for BAC Members

Brick

Cement

Concrete

Concrete Block

Fiber cement products

Grout

Gunite/Shotcrete

Mortar

Plaster

Refractory Mortar/  
Castables

Refractory Units

Rock

Roof Tile (concrete)

Sand

Stone (including: granite, limestone,  
quartzite, sandstone, shale, cultured, etc.)

Stucco/EIFS

Terrazzo

Tile (clay and ceramic)

# Know the Hazard: Tasks with Risk of Silica Exposure for BAC Members

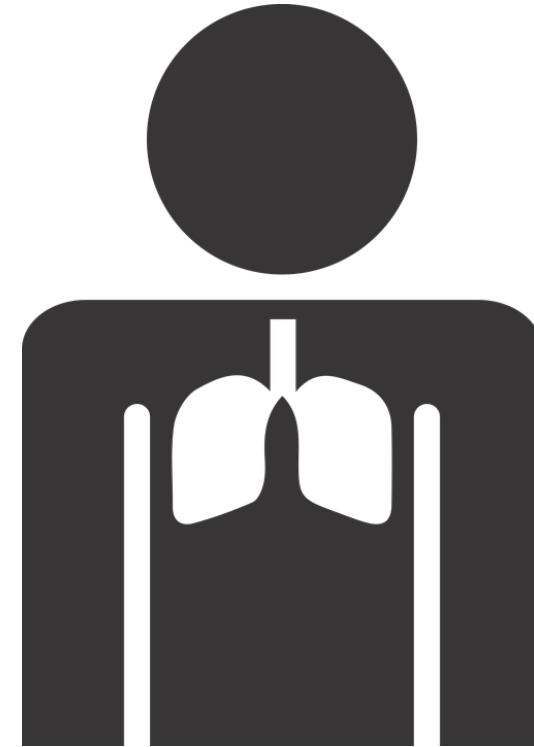
Abrasive blasting  
Bushhammering  
Cutting/sawing  
Demolishing/disturbing  
Drilling  
Grinding  
Jackhammering  
Mixing  
Polishing

Sacking/patching  
Sanding  
Scabbling  
Scraping  
Sweeping/cleaning up  
Well mixing/pumping



# How Does Silica Affect Our Lungs?

- Silica causes **permanent lung damage**
  - When workers inhale crystalline silica, the lung tissue reacts by developing fibrotic nodules and scarring around the trapped silica particles
  - If the nodules grow too large, breathing becomes difficult
- Exposure to silica can result in conditions that are **disabling and potentially lead to death**



# Silicosis

- Potentially **disabling and/or fatal**
- **No cure**
- Development varies based on exposure levels, time, and other factors:
  - Typically occurs after 10 or more years of exposure, but **can form in your lungs in as little as a few weeks** of very high dust exposure
  - **Repeated exposures add up** to a total dose that can cause serious lung disease
- By the time it gets hard to breathe, you are already sick

<https://www.silica-safe.org/know-the-hazard/body/PhysiciansAlert-Silica.2018.pdf>  
<https://www.cpwr.com/wp-content/uploads/HA-Silica.pdf>



An x-ray of a lung with silicosis and progressive massive fibrosis (PMF).  
Photo by NIOSH.

# Types of Silicosis

- **Chronic Silicosis:** Usually occurs after 10 or more years of exposure to crystalline silica at relatively low concentrations
- **Accelerated Silicosis:** Results from exposure to high concentrations of crystalline silica and develops 5 to 10 years after the initial exposure
- **Acute silicosis:** Occurs where exposure concentrations are the highest and can cause symptoms to develop within a few weeks to 4 or 5 years after the initial exposure



Healthy Lung  
(OSHA)



Silicotic Lung  
(OSHA)

# Additional Silica-Related Illnesses

- Can activate latent tuberculosis
- Increases the risk of developing other serious illnesses such as:
  - Lung cancer
  - Chronic obstructive pulmonary disease (includes chronic bronchitis, emphysema, bronchiectasis, and chronic airway obstruction)
  - Renal disease
  - Autoimmune diseases like rheumatoid arthritis and scleroderma



# OSHA Silica Standard

- New Silica Standard for Construction issued in 2016
- Requires employers to **limit worker exposures to respirable crystalline silica** and to take other steps to protect workers
- Employers can:
  - Use a control method laid out in Table 1 of the construction standard, or
  - Measure workers' exposure to silica and independently decide which dust controls work best to limit exposures in their workplaces to the permissible exposure limit (PEL).

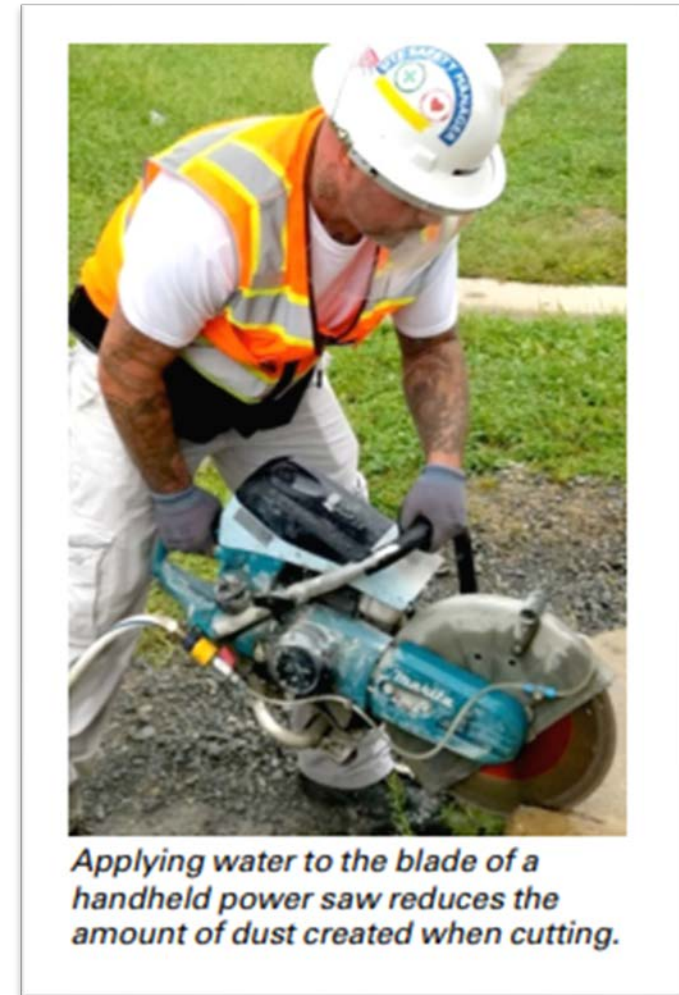


Photo via OSHA

# OSHA Silica Standard: Table 1

- Identifies 18 common construction tasks with effective dust control methods
- Required respiratory protection and minimum assigned protection factor (APF) is determined based on:
  - Equipment/Task
  - Engineering and work practice control methods
  - Shift length



CPWR Table 1 Tipsheet: [https://www.silica-safe.org/plan/body/Silica\\_Table-1\\_Equipment-Names\\_Best-Practices\\_Sept242018-1.pdf](https://www.silica-safe.org/plan/body/Silica_Table-1_Equipment-Names_Best-Practices_Sept242018-1.pdf)

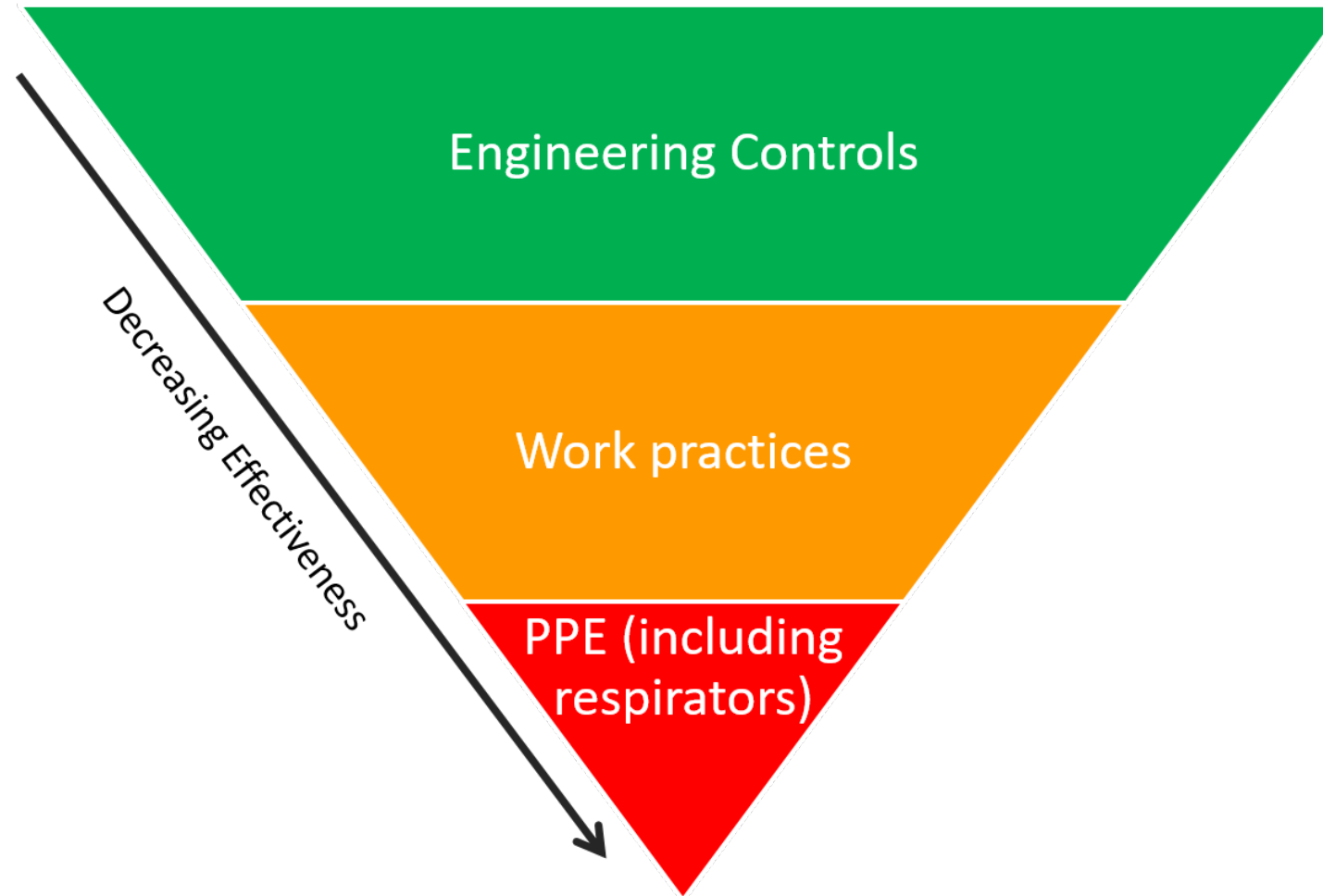
# OSHA Silica Standard: Table 1 Tasks

- Stationary masonry saws
- Handheld power saws (any blade diameter)
- Handheld power saws for fiber cement board (with blade diameter of 8 inches or less)
- Walk-behind saws
- Drivable saws
- Rig-mounted core saws or drills
- Handheld and stand-mounted drills (including impact and rotary hammer drills)
- Dowel drilling rigs for concrete
- Vehicle-mounted drilling rigs for rock and concrete
- Jackhammers and handheld powered chipping tools
- Handheld grinders for mortar removal (i.e., tuckpointing)
- Handheld grinders for uses other than mortar removal
- Walk-behind milling machines and floor grinders
- Small drivable milling machines (less than half-lane)
- Large drivable milling machines (half-lane and larger)
- Crushing machines
- Heavy equipment and utility vehicles used to abrade or fracture silica materials or used during demolition activities involving silica-containing materials
- Heavy equipment and utility vehicles for tasks such as grading and excavating

# OSHA Silica Standard: Example of Table 1 Entry

Equipment/Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum APF	
		≤4 hrs/shift	>4 hrs/shift
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:		
	-When used outdoors	None	APF 10
	-When used indoors or in an enclosed area	APF 10	APF 10

# Work Practices to Prevent Silica Exposure



# Engineering Control: Water

- Water can keep silica dust out of the air – and out of your lungs
- Use tools with water attachments to control dust at the source
- Water can also keep dust down during activities like sweeping and demolition



PHOTO COURTESY OF THE  
INTERNATIONAL MASONRY INSTITUTE

# Engineering Control: Use a Vacuum

- Use tools with vacuum attachments to capture the dust right where it starts
- Dust is drawn into a hood or cover attached to the tool, through a hose, and into a HEPA-filter vacuum
- This keeps dust out of the air – and your lungs



PHOTO COURTESY OF THE  
INTERNATIONAL MASONRY INSTITUTE

# OSHA Silica Standard: Other Key Provisions

- Establish and implement a **written exposure control plan** that identifies tasks that involve exposure and methods used to protect workers, including procedures to restrict access to work areas where high exposures may occur
- Designate a **competent person** to implement the written exposure control plan
- Restrict **housekeeping practices** that expose workers to silica, such as use of compressed air without a ventilation system to capture the dust and dry sweeping, where effective, safe alternatives are available
- Offer **medical exams** – including chest x-rays and lung function tests – every three years to workers who are required by the standard to wear a respirator for 30 or more days per year
- **Train workers** on the health effects of silica exposure, workplace tasks that can expose them to silica, and ways to limit exposure
- **Keep records** of workers' silica exposure and medical exams

# Work Safely with Silica

[www.silica-safe.org](http://www.silica-safe.org)

- **About**
  - Regulations & Requirements
  - What's New
- **Know the Hazard**
- **Training & Other Resources**
- **What's Working**
- **Ask a Question**
- **Control the Dust: Create-A-Plan tool**

The screenshot shows the homepage of the 'Work Safely with Silica' website. At the top, there is a navigation bar with links for 'About', 'Know the Hazard', 'Regulations & Requirements', 'What's New', and 'Create-A-Plan', along with a search bar and a 'GO' button. The main content area features several sections: 'Know the Hazard' with a warning icon and a paragraph about silica dust exposure; 'Control the Dust' with a checklist icon and a paragraph about a job hazard analysis tool, with a prominent green 'CREATE-A-PLAN' button; 'Training & Other Resources' with an information icon; 'What's Working' with a speech bubble icon; and 'Ask a Question' with a question mark icon. The footer contains copyright information for CPWR (The Center for Construction Research and Training) and the website's design credit to Trilog.

## Work Safely with Silica

A ONE-STOP SOURCE OF INFORMATION ON HOW TO PREVENT A SILICA HAZARD AND PROTECT WORKERS

About • Know the Hazard • Regulations & Requirements • What's New • Create-A-Plan Search GO

### Know the Hazard

Workers may be exposed to dangerous levels of silica dust when cutting, drilling, grinding, or otherwise disturbing materials that contain silica. These materials and tasks are common on construction jobs. Breathing that dust can lead to serious, often fatal illnesses. This section contains information that workers – and contractors – need to know to [recognize the hazard](#), understand the risk factors, and work safely with silica.

### Control the Dust

There are ways **contractors** can reduce the dust and reduce the hazard. This easy to use planning tool takes you step-by-step through conducting a **job hazard analysis for silica**, selecting appropriate controls, and creating a job-specific plan to eliminate or reduce silica hazards. You can save as a pdf, print and/or email your plan.

**CREATE-A-PLAN**

### Training & Other Resources

Find silica-related handouts, fact sheets, videos, toolbox talks and other resources for workers and contractors.

### What's Working


Contractors, workers, manufacturers, and researchers are on the lookout for the best ways to control silica dust. Learn what is happening in the field and share what you are doing.

### Ask a Question

Get answers to commonly asked questions about silica and ask one of your own.

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Site by: [Trilog](#)

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# Create-A-Plan: Step 1

## Create-A-Plan to Control the Dust

You do not need to register to use the planning tool, however, registering will allow you to **confidentially** save, retrieve, edit, rename or delete saved plans. Only you have access to your saved plans.

**1**

[Returning users login below.](#)

Email  Password

[REGISTER](#) [LOGIN](#)

[Forgot your password?](#)

[CLEAR THE PLAN](#)

### Step 1. Will you generate dust containing silica on the job?

The materials listed below contain silica. Select all of the materials you plan to use. As you select a material a list of dust generating tasks will appear. Please select the task(s) that you will perform with the material.

**2** How does the Create-A-Plan tool work?

<input type="checkbox"/> Asphalt	<input type="checkbox"/> Refractory Units
<input type="checkbox"/> Brick	<input type="checkbox"/> Rock
<input type="checkbox"/> Cement	<input type="checkbox"/> Roof Tile (concrete)
<input type="checkbox"/> Concrete	<input type="checkbox"/> Sand
<input type="checkbox"/> Concrete Block	<input type="checkbox"/> Sand - Frac Sand
<input type="checkbox"/> Drywall	<input type="checkbox"/> Soil (fill dirt, top soil, soil w/ fly ash added)
<input type="checkbox"/> Fiber Cement products	<input type="checkbox"/> Stone (including: granite, limestone, quartzite, sandstone, shale, slate, cultured, etc.)
<input type="checkbox"/> Grout	<input type="checkbox"/> Stucco/EIFS
<input type="checkbox"/> Guniting/Shotcrete	<input type="checkbox"/> Terrazzo
<input type="checkbox"/> Mortar	<input type="checkbox"/> Tile (clay and ceramic)
<input type="checkbox"/> Paints containing silica	<input type="checkbox"/> Material Other
<input type="checkbox"/> Plaster	
<input type="checkbox"/> Refractory Mortar/Castables	

[CONTINUE](#)

If you will not be using one of the materials listed above or another silica-containing material, **You Don't Need a Silica Control Plan.**  
If you are not sure if a material contains silica, there are several ways you can find out... [learn more.](#)

## To find out if a material contains silica: **3**

**Option 1 - Check the label:** OSHA's silica standard requires employers to include silica in their program to comply with the hazard communication standard. OSHA's Hazard Communication Standard requires materials containing silica to be labeled. [Learn more](#)

**Option 2 - Check the Safety Data Sheet** [Learn more](#)

**Option 3 - Review the published data** [Learn more](#)

**Option 4 - Analyze a sample of the material** [Learn more](#)

[RETURN TO YOUR SILICA CONTROL PLAN](#)

# Create-A-Plan: Step 1 (g)(1)(i)

Materials & tasks involving exposure to silica

## Step 1. Will you generate dust containing silica on the job?

The materials listed below contain silica. Select all of the materials you plan to use. As you select a material a list of dust generating tasks will appear. Please select the task(s) that you will perform with the material.

How does the Create-A-Plan tool work?

- Asphalt
- Brick
- Cement
- Concrete**
  - Abrasive blasting
  - Bushhammering
  - Cutting/sawing
  - Demolishing/disturbing
  - Drilling/coring
  - Earthmoving
  - Frac sand cleanup
  - Frac sand mixing
  - Frac sand offloading
  - Frac sand onloading
  - Frac sand transferring
  - Grinding
  - Other
  - Jackhammering
  - Milling
  - Mixing/pouring
  - Polishing
  - Sacking/patching
  - Sanding
  - Scabbling
  - Scarifying
  - Scraping
  - Sweeping/cleaning up
  - Well mixing/pumping
- Concrete Block
- Drywall
- Fiber Cement products
- Grout
- Gunite/Shotcrete
- Mortar
- Paints containing silica
- Plaster
- Refractory Mortar/Castables
- Refractory Units
- Rock**
  - Abrasive blasting
  - Bushhammering
  - Cutting/sawing
  - Demolishing/disturbing
  - Drilling/coring
  - Earthmoving
  - Frac sand cleanup
  - Frac sand mixing
  - Frac sand offloading
  - Frac sand onloading
  - Frac sand transferring
  - Grinding
  - Other
  - Jackhammering
  - Milling
  - Mixing/pouring
  - Polishing
  - Sacking/patching
  - Sanding
  - Scabbling
  - Scarifying
  - Scraping
  - Sweeping/cleaning up
  - Well mixing/pumping
- Roof Tile (concrete)
- Sand
- Sand - Frac Sand
- Soil (fill dirt, top soil, soil w/ fly ash added)
- Stone (including: granite, limestone, quartzite, sandstone, shale, slate, cultured, etc.)
- Stucco/EIFS
- Terrazzo
- Tile (clay and ceramic)
- Material Other

CONTINUE

# Create-A-Plan: Step 2

[Step One](#)

CLEAR THE PLAN

## Step 2. How do you plan to control the dust?

Select the type of equipment and dust control you plan to use for each material and task you selected in Step 1.

**Not Sure - Perform Air Monitoring.**

To find the exposure control methods in OSHA's silica standard, learn about air monitoring, or to find studies and data on the use of controls [click here](#). To give users the greatest flexibility, any material-task combination may be used. For uncommon combinations or those not typically performed, the default control is respiratory protection.

### 1 Concrete - Drilling/coring

Select the Equipment/Control:

[Click here](#) for examples of commercially available equipment and controls.

- Anchor System
- Core Drill with Dust Extraction
- Core Drill with Water (Table 1 Entry)
- Dowel Drilling with Dust Collection (Table 1 Entry)
- Drill Press with Hand-Held Drill and Vacuum (Table 1 Entry)
- Hand-Held Drill with Dust Extraction (Table 1 Entry)
- Hand-Held Drill with Hollow Drill Bit Extraction
- Hand-Held Drill with Vacuum (Table 1 Entry)
- Other

### 2 Concrete - Jackhammering

Select the Equipment/Control:

[Click here](#) for examples of commercially available equipment and controls.

- Hand-Held Breaker with Dust Extraction (Table 1 Entry)
- Jackhammer with Vacuum (Table 1 Entry)
- Jackhammer with Water (Table 1 Entry)
- Mounted Chipping Tool with Water
- Other

### 3 Rock - Jackhammering

Select the Equipment/Control:

[Click here](#) for examples of commercially available equipment and controls.

- Jackhammer with Vacuum (Table 1 Entry)
- Jackhammer with Water (Table 1 Entry)
- Other

## More information to help you decide how to control the dust:

**Option 1 - OSHA Exposure Control Methods:** The exposure control methods and respiratory requirements specified in the OSHA silica standard. [Learn More](#)

**Option 2 - Perform Air Monitoring:** Information on how to find an industrial hygienist to conduct air monitoring, questions to ask, and what's involved. [Learn More](#)

**Option 3 - Studies and Data on the Use of Dust Controls:** Summaries of research findings, reports, and data. [Learn more](#)

**Option 4 - OSHA's On-site Consultation Program:** [Learn More](#)

[RETURN TO YOUR SILICA CONTROL PLAN](#)

# Create-A-Plan: Step 2 (g)(1)(ii)

CLEAR THE PLAN

Step One

## Step 2. How do you plan to control the dust?

Select the type of equipment and dust control you plan to use. **Not Sure - Perform Air Monitoring.**

To find the exposure control methods in OSHA's silica standard use of controls [click here](#). To give users the greatest flexibility, use of controls is not limited to those typically performed.

### 1 Concrete - Drilling/coring

Select the Equipment/Control:

[Click here](#) for examples of commercially available equipment and controls.

- Anchor System
- Core Drill with Dust Extraction
- Core Drill with Water (Table 1 Entry)
- Dowel Drilling with Dust Collection (Table 1 Entry)
- Drill Press with Hand-Held Drill and Vacuum (Table 1 Entry)
- Hand-Held Drill with Dust Extraction (Table 1 Entry)
- Hand-Held Drill with Hollow Drill Bit Extraction
- Hand-Held Drill with Vacuum (Table 1 Entry)
- Other

### 2 Concrete - Jackhammering

Select the Equipment/Control:

[Click here](#) for examples of commercially available equipment and controls.

- Hand-Held Breaker with Dust Extraction (Table 1 Entry)
- Jackhammer with Vacuum (Table 1 Entry)
- Jackhammer with Water (Table 1 Entry)
- Mounted Chipping Tool with Water
- Other

### 3 Rock - Jackhammering

Select the Equipment/Control:

[Click here](#) for examples of commercially available equipment and controls.

- Jackhammer with Vacuum (Table 1 Entry)
- Jackhammer with Water (Table 1 Entry)
- Other

Describe the specific task and equipment/control you plan to use for this job.

COMPLETED

Engineering controls, work practices, and respiratory protection for each task

#### Drill Press with Hand-Held Drill and Vacuum (Table 1 Entry)

##### 1. Telpro Inc. Drillrite w/ Hilti TE 7 Rotary Hammer Drill & Vacuum

See how it works

Manufacturer: Telpro Overhead Concrete Drill Press

Manufacturer: Hilti Drill

Manufacturer: Hilti Vacuum

Learn More: Table 1 - Equipment Names and Best Practice Tips

Learn More: Construction Solutions

Learn More: Return on Investment - Overhead Drill Press & Dust Control

##### 2. ErgoMek LLC DrillBoss w/ Hilti TE 70 Combhammer Drill & Vacuum

See how it works

See how it works

Manufacturer: ErgoMek LLC DrillBoss

Manufacturer: Hilti Combhammer

[RETURN TO YOUR SILICA CONTROL PLAN](#)

\*CPWR does not endorse any specific equipment or product. Many factors influence the effectiveness of a control including maintenance, user skill and training, the appropriateness of the equipment/control for the task, and manufacturer instructions/requirements. Respiratory protection may be needed when controls do not bring the silica exposures down to or below OSHA's Permissible Exposure Limit (PEL).

# Create-A-Plan: Step 3

[Step One](#) > [Step Two](#)

### Step 3. Complete your Silica Control Plan

Company:

Person Completing the Plan/Title:

Jobsite/Project:

Description of Work:

Please fill in the name and title of the person assigned as the competent person for silica on the project. Required by 29 CFR 1926.1153 (g)(4).  
[Click here](#) for an explanation of what a competent person is, why it is important to assign one for silica, and what this person should know and on the job.

**Exposure Assessment and Controls**

- 1** Materials: Concrete Task: Drilling/coring  
Equipment and Control(s): 1) Core Drill with Dust Extraction, 2) Drill Press with H  
Task/Control Description: NOTE - this is a blank text space that could be used to enter specific information about how and where you will perform the task and use the equipment, as well as any other information that would be useful for the foreman, competent person, and other employees to know.
- 2** Materials: Concrete Task: Jackhammering  
Equipment and Control(s): Hand-Held Breaker with Dust Extraction (Table 1 Entry)
- 3** Materials: Rock Task: Jackhammering  
Equipment and Control(s): Jackhammer with Water (Table 1 Entry)

Please describe the procedures to restrict access to work areas, when necessary, to minimize the number of employees exposed to respirable crystalline silica and their level of exposure, including exposures generated by other employers or sole proprietors. Required by 29 CFR 1926.1153 (g)(1)(iv)

**Competent Person (g)(4)**

Please use the space below to describe the training that will be provided to workers engaged in dust producing tasks and those working nearby.  
[Click here](#) for an explanation of the elements of a worker-training program. Materials to help you conduct your training program are available on this site - just click "Training and Other Resources."

Please use the space below to describe the housekeeping measures that will be used on the project to limit employee exposure to respirable crystalline silica. Required by 29 CFR 1926.1153 (g)(1)(iii)  
[Click here](#) to learn more about recommended housekeeping activities.

Please use the space below to describe medical surveillance that will be provided to workers exposed to silica dust.  
[Click here](#) to learn more about medical surveillance. Additional materials on the risk, information workers should provide their physicians, and steps to work safely with silica are available on this site - just click "Know the Hazard."

Please use the space below to describe other things that need to be taken into consideration when controlling dust on this project.  
[Click here](#) to learn more about possible things to consider.

**CONTINUE**

# Final Plan

Print/ Email/Download/  
Save Your Plan  
(g)(2) & (3)

Step One > Step Two > Step Three CLEAR THE PLAN

## Your Silica Control Plan

<b>Company:</b> Test Company	<b>Person Completing the Plan/Title:</b> John Doe
<b>Jobsite/Project:</b> Test Project	<b>Description of Work:</b> This space can be used to provide additional information on the project, such as the location, size, and other information that would be useful for the foreman, competent person, workers...
<b>Competent Person:</b> Jane Doe	

<b>1</b>	<b>Material</b> Concrete	<b>Task</b> Drilling/coring
<b>Equipment and Control(s)</b> 1) Core Drill with Dust Extraction, 2) Drill Press with Hand-Held Drill and Vacuum (Table 1 Entry)		
<b>Task/Control Description</b> NOTE - this is a blank text space that could be used to enter specific information about how and where you will perform the task and use the equipment, as well as any other information that would be useful for the foreman, competent person, and other employees to know.		

<b>2</b>	<b>Material</b> Concrete	<b>Task</b> Jackhammering
<b>Equipment and Control(s)</b> Hand-Held Breaker with Dust Extraction (Table 1 Entry)		

<b>3</b>	<b>Material</b> Rock	<b>Task</b> Jackhammering
<b>Equipment and Control(s)</b> Jackhammer with Water (Table 1 Entry)		

**Safety of Others:**  
Space to describe steps that will be taken to ensure other workers are not exposed to hazardous levels of silica dust.

**Worker Training:**  
Space to describe how the requirements under section (i) Communicating the hazard will be addressed.

**Housekeeping:**  
Space to describe how the project will comply with the housekeeping requirements in the standard.

**Medical Surveillance:**  
Space to describe the medical surveillance program section (h)

**Other Considerations:**  
Additional space to include other information that and employer may want to convey to those responsible for implementing the silica control plan.

PRINT EMAIL DOWNLOAD AS PDF SAVE YOUR PLAN CLEAR THE PLAN

**Having Trouble Downloading?**  
If you get a "Network Error" or have another issue when downloading in **Chrome**, try the following:



1. Click on Print;
2. Click on the "Change" button under "Destination";
3. Select "Save as PDF";
4. Click "Save".

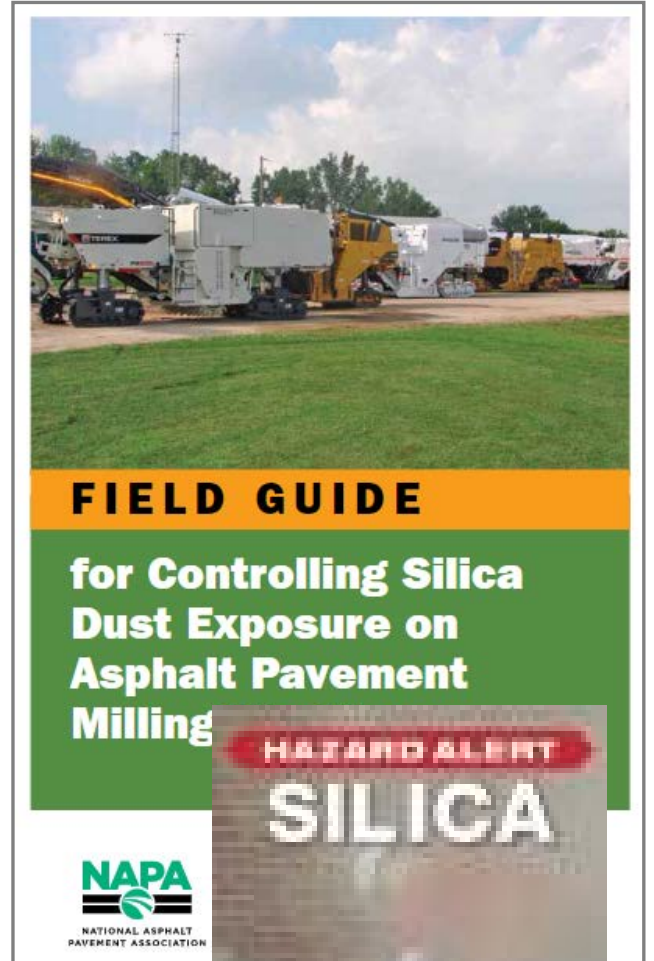
This will save a PDF version of your plan to your computer. Alternately, you can use another browser (such as Firefox).

# Work Safely with Silica

**Table 1 – Equipment Names and Best Practice Tips – Update September 2018**

- Includes equipment terms commonly used by different trades and in different geographic areas
- ‘Best practice’ tips are intended to help employers and their employees operate the equipment-control options effectively and are based on 1) [OSHA’s Small Entity Compliance Guide for the Respirable Crystalline Silica Standard for Construction](#); 2) [OSHA’s Frequently Asked Questions \(“FAQs”\) for the Construction Industry](#); 3) [silica standard’s Table 1](#); 4) manufacturer specifications; and 5) craft worker/contractor input based on experience in the field.

Equipment/Control	Photo & Video	Engineering, Work Practice Control Methods & Required Respiratory Protection	Best Practice Tips
<p><b>(i) Stationary masonry saws</b></p> <p>Other Names:</p> <p>Table saw</p> <p>Brick/block saw</p> <p>Tile saw<sup>4</sup></p>	 <p><i>Photo courtesy of the International Masonry Institute &amp; OSHA</i></p>  <p><i>Video courtesy of OSHA</i>  <a href="https://www.youtube.com/watch?v=WtoBc34EbBo">https://www.youtube.com/watch?v=WtoBc34EbBo</a> English &amp; Spanish subtitle options included.</p>	<p><b>CONTROL: water</b></p> <ul style="list-style-type: none"> <li>• Use saw equipped with integrated water delivery system that continuously feeds water to the blade.</li> <li>• Operate and maintain tool in accordance with manufacturer’s instructions to minimize dust emissions.</li> </ul> <p><b>Required Respiratory Protection:</b></p> <ul style="list-style-type: none"> <li>• ≤4 hours/shift: NONE</li> <li>• &gt;4 hours/shift: NONE</li> </ul>	<p>OSHA<sup>1</sup> requires the employer to ensure that:</p> <ul style="list-style-type: none"> <li>• The saw is equipped with an integrated water delivery system (commercially developed specifically for the type of tool in use)</li> <li>• An adequate supply of water for dust suppression is used</li> <li>• The spray nozzle is working properly to apply water at the point of dust generation</li> <li>• The spray nozzle is not clogged or damaged</li> <li>• All hoses and connections are intact</li> <li>• Water is applied at least at the flow rate specified by the manufacturer</li> <li>• Additional exhaust is provided as needed to minimize the accumulation of visible airborne dust when operating indoors or in an enclosed space (area where airborne dust can build up)</li> <li>• Additional means of exhaust could include: portable fans (e.g. box fans, floor fans, axial fans, oscillating fans), portable ventilation systems, or other systems that increase air movement and assist in the removal and dispersion of airborne dust<sup>4</sup></li> <li>• “Indoors or in enclosed areas” refer to any areas where, without the assistance of forced ventilation, the dispersal of airborne dust can be impeded and concentrations can build up. Parking garages, pits, trenches, empty swimming pools, open-top structures with 3 walls, or other structures with limited air movement could be considered enclosed<sup>4</sup></li> </ul> <p>Tips for this tool continued on next page.</p>



**FIELD GUIDE**

**for Controlling Silica Dust Exposure on Asphalt Pavement Milling**

**HAZARD ALERT**

**SILICA**

**NAPA**  
NATIONAL ASPHALT PAVEMENT ASSOCIATION

# Exposure Control Database

[ecd.cpwrconstructionsolutions.org](http://ecd.cpwrconstructionsolutions.org)

The screenshot shows the homepage of the Exposure Control Database. At the top left is the logo 'ECD | EXPOSURE CONTROL DATABASE'. At the top right are links for 'HOME' and 'GLOSSARY'. The main content area features a 2x2 grid of blue buttons labeled 'SILICA', 'WELDING FUMES', 'NOISE', and 'LEAD'. To the left of this grid is a paragraph: 'CPWR's Exposure Control Database is an interactive tool for the construction industry that helps you predict exposure to workplace hazards.' Below this is the instruction 'To start, choose a hazard'. At the bottom left, there are links for 'Home', 'Glossary', 'About', 'Disclaimer', and 'Contact', followed by the copyright notice '© 2018 All rights reserved. CPWR – The Center for Construction Research and Training'. At the bottom right is the CPWR logo and the text 'THE CENTER FOR CONSTRUCTION RESEARCH AND TRAINING'.

**ECD** | EXPOSURE CONTROL DATABASE

HOME GLOSSARY

CPWR's Exposure Control Database is an interactive tool for the construction industry that helps you predict exposure to workplace hazards.

**To start, choose a hazard**

SILICA WELDING FUMES

NOISE LEAD

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To share data, contact Sara Brooks at [sbrooks@cpwr.com](mailto:sbrooks@cpwr.com)

# Thank You!

**Jessica Bunting, MPH**

Director, Research to Practice (r2p) Program

Email: [jbunting@cpwr.com](mailto:jbunting@cpwr.com)

[www.cpwr.com](http://www.cpwr.com)

