Guides for Managing Crystalline Silica Control Programs in Construction

- Engineering & Work Practice Controls
- Exposure Assessment
- Respiratory Protection
- Safety Meetings
- Toolbox Talks

By Nancy Clark, Mark Goldberg, Katya Wanzer, Norman Zuckerman

Mount Sinai-Irving J. Selikoff Center for Occupational & Environmental Medicine,
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BLUEPRINT

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Acknowledgements

The Blueprint Guides are the product of a joint research project of the Mount Sinai Irving J. Selikoff Center for Occupational and Environmental Medicine Construction Hygiene and Ergonomics Program (CHEP) and the Urban Public Health Program, Hunter College, City University of New York (CUNY). This endeavor has been supported by a grant from the National Institute for Occupational Safety and Health (NIOSH) through the Center to Protect Worker's Rights (CPWR).

The Guides could not have been written without the cooperation and assistance of many people and organizations. We give special thanks to:

Members of the International Association of Bridge, Structural, Ornamental and Reinforcing Iron Workers, Locals 40 & 361

Joint Apprenticeship & Trainee Committee, Ironworkers Locals 40 & 361
Kevin Gorham, Director

Members of Laborers International Union of North America, Local 731

Members of Laborers International Union of North America, Local 60

Members of International Union of Operating Engineers, Local 137

Yonkers Contracting Co., Inc.
John Koloya, PE, Vice President
Tom Smith, Corporate Safety Director
Wes Griffin, Senior Site Safety Manager

Kiska Construction Corporation
John Antonopoulos, Corporate Safety Director

M.A. Angelidis Inc.
Harry Monuidis, Corporate Safety Director

OSHA
Diana Cortez, Area Director, Tarrytown Area Office
Laura Kenny, Labor Liaison, Region 2
Philip Peist, Area Director, Parsippany Area Office

Members of the New Jersey Silica Partnership

The Construction Safety Council
Tom Broderick, Executive Director

Hunter College Program in Urban Public Health
Susan Klitzman, DrPH, Director

Contents

Introduction

Guides for Managing Crystalline Silica Control Programs in Construction

The Blueprint Guides are designed to aid construction managers in planning, implementing and integrating health hazard control programs for crystalline silica into the day-to-day operations of infrastructure rehabilitation projects. They are designed with the following principles in mind:

- Reliance on occupational health best practices
- Incorporation of health hazard control into the project from beginning to end
- Compatibility with current OSHA standards and owner specifications
- Integration of training and experience of labor into managing controls

This binder contains a series of individual "how-to" guides for managing major elements of crystalline silica control programs, e.g. respirators, exposure assessment. Each individual guide begins with step-by-step instructions and explanatory notes on planning, implementing and evaluating key program components, followed by sections containing checklists, sample forms, and useful topical information.

How to use the guides

Interdependence of the guides

Each guide is arranged in a logical fashion that follows the sequencing of events at a "typical" infrastructure rehabilitation site. At the same time, activities in one guide often depend upon the completion of tasks outlined in another guide and therefore refer the user to specific sections of other guides whenever necessary or helpful. For instance, selecting the correct respirators, described in the guide on managing a respiratory protection program, depends upon results of exposure assessment, described in the guide for managing that activity.

Using the guides

Every attempt is made to explain terms that might be unfamiliar to the user. Step-by-step instructions are accompanied by hints and suggestions on how to proceed through the sometimes seemingly complex requirements of health hazard control. The checklists and sample forms can be copied and used as is, or they can be modified to fit site-specific conditions.

Assignment of personnel

It is suggested that a manager be appointed to oversee the program activities described in each guide, e.g. silica program manager, respirator program manager. The idea is not to create an abundance of program managers, but to

emphasize a fundamental principle of program management: someone must be in charge of daily program activities and be accountable for the program's implementation. It is up to the company to select the individual or individuals according to company policies; indeed one person may wear all the hats. Of course, a person who manages one or all aspects of a silica program must be knowledgeable about silica hazards and have decision-making authority within the management structure at the site.

What the guides are not

The guides are not a substitute for understanding and implementing the OSHA Special Emphasis Program (SEP) for Silicosis. In short, the guides do not include all components of silica protection programs or OSHA requirements. We have focused on those components of hazard control that we think offer the greatest challenge to construction managers: exposure assessment, respiratory protection, engineering and work practice controls, safety meetings, and toolbox talks. While these are crucial to protecting workers and complying with OSHA, there are additional, important requirements not addressed in the guides. For instance, although worker training is a key element of implementing many of the requirements of the OSHA SEP, and is mentioned in several of the guides, there is no specific guide on worker training. Similarly, while there is a guide for managing control programs, there is none for writing a compliance program. In the future, such guides might be produced if users express an interest or need.

The guides are not a program. They include pointers on how to plan and implement health hazard control programs, but do not substitute for a program. It is also important to note that the guides are not training curricula, although they can be used in conjunction with training. As stated above, companies need to refer to OSHA standards and compliance directives for a comprehensive list of requirements.

Use of the guides is no guarantee that a health hazard control program will be managed effectively. That depends much more upon the commitment to health and safety of the company from top management down. Effective management is a reflection of the training of the individual selected to manage the program, and their ability to successfully implement the program at the site.

In Summary

The guides represent the distillation of practical experience of many individuals, organizations and companies. They have been reviewed and revised a number of times. Nonetheless, this is an ongoing process. Because construction companies and sites are so varied, it is difficult, if not impossible, to reflect the needs of every construction manager and worker in one document, or to provide definitive advice on how to manage health hazard controls. We expect that the guides will be adapted to company management structures and that the reader or user will offer comments and any ideas on how the guides can be improved. While focused on infrastructure projects, we believe the guides can be easily adapted to other construction environments and to other hazards.

Questions or comments?
Please contact us at the Construction Hygiene and Ergonomic Program 212-241-7573, or via email at contactus@blueprintproject.org

Guide for Managing Engineering & Work Practice Controls for Crystalline Silica

Note to the User:

Engineering and work practice controls for lead dust are widely available and in common use. This is not the case for crystalline silica. We recommend that contractors engaging in silica dust generating tasks:

1. Develop a site-specific silica compliance program for managing engineering and work practice controls.

2. Use engineering and work practice controls for silica-generating tasks, even though they might not always be readily available. Water and a spray can, of course, are not hard to find. Suggestions are provided on where to look for controls. As is often the case in construction, a little creativity can go a long way.

Overview

Why institute an engineering and work practice control program?

- The OSHA Special Emphasis Program (SEP) requires that contractors use engineering and work practice controls to reduce exposure to the lowest level practical.
- Required by some owners in initial project bid documents.
- Worker exposure can be reduced or eliminated by:
  - engineering controls, such as a vacuum attachment to a pneumatic hammer
  - work practice controls such as spraying water before performing any silica generating activities

Overview of the Tasks

1. Planning
a) Select a Silica Program Manager
b) Identify silica dust generating tasks
c) Select control methods
d) Schedule implementation
e) Develop a silica compliance program

2. Writing a site specific program

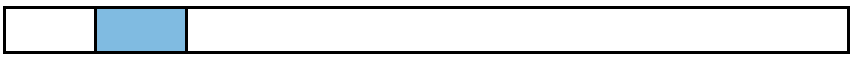
3. Implementing
a) Managing the control plan
b) Making the control plan work

4. Evaluating
a) Assess effectiveness of controls

– This Guide will elaborate on these tasks –

Engineering and Work Practice Control Project Timetable

Owner issues bid documents with specifications for worker protection from crystalline silica.



Bid awarded; contract includes provisions for silica dust control plan. Contractor develops initial compliance program.

Project starts. Contractor develops site-specific silica health & safety program; engineering and work practice controls in place.

Silica Program Manager (SPM) reviews silica air monitoring results and makes regular site inspections.

SPM assesses effectiveness of controls and tries other strategies if necessary. Updates compliance program.

Project complete. SPM reviews effectiveness of controls. Owner modifies specifications for future projects, if necessary.

Planning

Planning the engineering and work practice control program is part and parcel of project planning. A timeline for the planning stage looks something like this:

Owner issues bid documents with specifications for worker protection from crystalline silica.

Bid awarded; contract includes provisions for silica control plan. Contractor develops initial OSHA compliance program.

Who is responsible for planning

- Can be any of the following:
  - Project planners
  - Managers
  - Company health and safety officer
  - Silica Program Manager (SPM)
  - Union superintendent

What plans need to be made

- Assign a SPM to organize and run the program (usually assigned by central office or project manager).
- Identify silica-generating tasks
- Select one or several control options for each task. See the Silica Controls Selection Chart in Section 5.
  - On most rehabilitation projects a combination of controls may be necessary.
  - When selecting controls consider site-specific factors and schedules (e.g. are there factors which make the use of water undesirable - temperature, slip hazards).
- Prepare a Compliance Program.

When to plan

- Methods of controlling silica dust should be included in the initial project plans.
  - Planners should look at the different silica disturbing tasks and select the best control options available to them.

Writing a Site Specific Compliance Program

SECTION 2

The compliance program describes the engineering and work practice controls used at the site and includes records of compliance activities. The written program should include:

- **Introduction:** Project description, location, scope and schedule of work.
- **Personnel:** Project Manager, Silica Program Manager or industrial hygienist.
- **Silica dust-emitting activities:** Describe tasks, equipment, materials used, work crew.
- **Engineering and work practice controls:** Describe type of control, equipment, use and maintenance procedures. Include rationale for selecting each control and alternative technologies considered.
- **Personal air monitoring results:** Provide industrial hygiene reports and air sampling results for silica dust-emitting activities. Refer to the Guide for Managing Exposure Assessment.
- **Schedule:** Provide timetable for implementing compliance program.
- **Interim controls:** Describe respiratory protection and other controls that will be used for each task. Refer to the Guide for Managing Respiratory Protection
- **Hygiene procedures:** Describe protective clothing and equipment, housekeeping, clean areas, showers, and hand washing stations.
- **Worker rotation schedule:** (if applicable).

Attach the following programs and records:

- **Respirator Program:** Provide written program and identify program administrator, include respirator type selected for each task, records for training, fit testing, and medical clearances.
- **Training:** Schedules, topics covered and records.

Information on controls is available from a variety of sources. See the Resource List.

The written compliance program must be revised & updated periodically to reflect the current status of the program.

Implementing

SECTION 3

Managing the Control Plan

Each of the activities listed below requires periodic inspection by the SPM. A timeline for control implementation looks something like this:

Project starts. Interim controls in place; contractor develops site-specific silica health & safety program; engineering and work practice controls in place.

SPM reviews silica air monitoring results and makes regular site inspections.

Making the control plan work:

- Check that control equipment and supplies are on site before silica dust disturbing tasks begin.
- Train workers and supervisors on how to use control equipment.
- Inspect site frequently to ensure that controls are:
  - present at the location where the tasks will be performed on any given day
  - in operating order
  - being used when they should be
  - being used properly (provide additional training if necessary)
  - effective (that is controlling dust emissions)

Use the Silica Controls Selection Chart in Section 5.

Section 6 contains Checklists that can be used by the SPM for conducting inspections.

Selecting a control is the first step in protecting workers from silica containing dust - making it work is the second. A control program must be closely managed to be effective. For each control selected, the SPM should consider exposure factors, work procedures and should evaluate the effectiveness of the control. Weekly toolbox talks are a good time to review the use of new tools or controls.

Caution: Performing silica dust disturbing activities in an enclosed or confined space may greatly increase exposure.

Evaluating

Evaluating the control program is an ongoing activity as shown in the time line below.

Contractor assesses effectiveness of controls and tries other strategies if necessary. Updates compliance program.

Project complete. SPM reviews effectiveness of controls. Owner modifies specifications for future projects, if necessary.

There are 2 ways to evaluate whether the control program is working:

- Site inspections of the controls – use Checklists in Section 6
- Monitoring worker exposure to airborne silica dust while a control is being used (see Guide for Managing Exposure Assessment).

If the evaluation indicates a potential problem with a control check these possibilities:

- Control is not appropriate for the job. Seek an alternate control.
- Control is not functioning properly.
- Workers are not using control properly.

SECTION 4

Upon completion of the project, it is advisable to prepare a final effectiveness report for future projects.

Silica Controls Selection Chart

Task/Tool	Control	Notes
Abrasive blasting	Substitute for sand	• Alternate blasting agents with dust suppressant additives are widely available. • Some, such as coal slag, might contain toxic materials
Jackhammer, pneumatic chipping gun	Wetting, vacuum attachment	• Attachments that provide a fine water spray are currently being developed. • Operators can also wet the surfaces with water from spray can, watering truck or hose prior to chipping. • Care must be taken since some surfaces may not absorb water and frequent spraying may be necessary. • Some workers don't like wetting because they can't see the work. Depending upon the location and/or time of year water can be a slip hazard due to mud or ice. • Vacuum attachments are available but not widely used.
Pneumatic drill	Wetting, vacuum attachment	• Water hose attachments are available • Refer to above for additional options.
Power saws	Wetting	• Attachments for concrete saws are available and in use.
Rock crusher	Wetting, distancing	• Hose/spray assemblies available for wetting dust generated during rock crushing. • Remote control devices can help reduce operator exposure.
Grinder, tuck pointing	Wetting, vacuum attachment	• Vacuum attachment available although not widely used. • Wetting of surfaces works but often discouraged because of surface run-off and slurry created.
Operating heavy equipment	Air-conditioned cab with HEPA filters	• Keep doors, windows closed and air conditioning filter on.
Cleaning surfaces and clothing	HEPA vacuums, water spray	• Compressed air should not be used to clean surfaces or clothing. • Mechanical cleaning machines not using water will create dust clouds. • Use vacuum for smaller size debris, a shovel should be used for larger pieces that may clog the vacuum. • Maintain adequate vacuum capacity. • Use prefilters to extend the service life of HEPA filters.
General work area	Water truck with spray nozzles	• Frequent spraying of work area to keep surface damp

Checklists

Suggestion on using checklists: since these lists are short, they can be made smaller and placed or pasted into field notebooks. For instance, Checklist 1 could be miniaturized - see example at end of checklists. They can also be programmed onto a PDA (Personal Digital Assistant).

CHECKLIST 1. SITE INSPECTION (for all controls)

	Y/N	Problem noted (describe)	Problem fixed (describe)
Controls are: Available at work location			
In operating order			
Used when they should be			
Used properly (workers trained in their use)			
Effective in controlling dust emissions			

CHECKLIST 2. CLEANING UP DEBRIS WITH HEPA VACUUM

	Y/N	Problem noted (describe)	Problem fixed (describe)
Vacuum is operated as per manufacturer's instructions			
Large pieces of debris have been picked up with shovel prior to use of vacuum (so that vacuum doesn't get clogged).			
Adequate vacuum capacity maintained			
Prefilters in place			
Wide mouthed attachments and rigid wands in use. Workers able to operate vacuum without stooping over			
Collection bags in place, bags disposed of properly			

MINIATURIZED CHECKLIST 1. SITE INSPECTION (for all controls)

	Y/N	Problem noted (describe)	Problem fixed (describe)
Controls are: Available at work location			
In operating order			
Used when they should be			
Used properly (workers trained in their use)			
Effective in controlling dust emissions			

Guide for Managing Exposure Assessment for Crystalline Silica

Overview

Exposure assessment, or monitoring, measures workers' exposure to airborne contaminants during the performance of their jobs.

Why perform monitoring?

- It is required by OSHA under the Special Emphasis Program (SEP) for Silicosis
- Required by some owner specifications
- The exposure level determines what has to be done to protect workers, including:
  - the need for engineering controls
  - the effectiveness of engineering controls
  - the type of respirators required on the job

Overview of the Tasks

1. **Planning**
   a) Designate a Silica Program Manager (SPM)
   b) Identify tasks/trades that generate silica dust
   c) Hire IH consultant

2. **Implementing**
   a) Select tasks to be monitored
   b) Schedule monitoring
   c) Prepare personnel for monitoring
   d) Organize day of monitoring

3. **Managing and Responding to Results**
   a) Review IH report and results of monitoring
   b) Respond to elevated results
   c) Provide results to workers
   d) Maintain records of results

– This Guide will elaborate on these tasks –

Planning

SECTION 1

When to plan

- At the same time the project is being planned
- No later than during job mobilization
- If job has started, or dusty tasks have begun, plan fast to do what has to be done!

Who does the planning

- Corporate safety office (where applicable) or management at the site begins the planning and appoints the Silica Program Manager (SPM).
  - SPM should have silica awareness training and some knowledge of dust hazards and their control
- Planning is usually done by the SPM and project management

What plans need to be made

- Identify tasks/trades with potential for generating silica dust.
  - SPM needs to be familiar with scope of work throughout the course of the project since tasks or intensity of work often vary during the life of the project.
- Hire an Industrial Hygiene (IH) Consultant – See Infosheet 1 (B-11) and Resource (F-2)
- Supply IH consultant with information to help him/her gain an understanding of the project – See Infosheet 2 (B-13)
  - To do their job well, the consultant will have to have a sense of such items as the scope of work, the tasks being performed, and the number of workers engaged in these tasks.
  - In the meantime: employees should be protected with respirators as soon as dusty work begins. Refer to the Guide for Managing a Respiratory Protection Program for Crystalline Silica.

Selecting an IH you can work with is important. The IH provides information that is used to select the appropriate level of worker protection. OSHA or the owner may review this information at any time. The IH can help interpret OSHA standards

Implementing

SECTION 2

The IH performs the monitoring; the SPM organizes things so that the IH can do the job with the least disruption to the project.

Select tasks to be monitored

- Review all silica generating tasks
- Conduct walkthrough of site with IH
  - Make sure the IH sees all silica generating tasks
  - Orient IH to safety issues at site

Schedule monitoring – See Suggestion Box on the next page

- Determine work schedule with project manager
- Select day when activities are going to be representative of an average workday
- Call IH consultant and schedule

Prepare personnel for monitoring

- Arrange with site supervisor/foreman the day before - the fewer surprises the better.
- Inform workers and unions that monitoring is taking place
  - A toolbox talk on what to expect and an explanation of monitoring the week before is suggested

Organize day of monitoring

- Review sampling plan with IH
  - Ensure all tasks and highest exposures are selected
  - Ensure IH has access to site and workers
  - Review with IH tasks/locations/workers to be monitored
  - Accompany IH to sampling locations
  - Introduce IH to workers and supervisors

Summarize day with IH

- Meet with IH at end of work shift for a quick review of the day's activities. Ask if there were any problems that could affect results or any situations in need of immediate response.

The SPM has a detailed knowledge of the site (exposures/tasks). His job is to communicate relevant information to the IH so he/she can do the best possible job.

Suggestion Box: When to Schedule Monitoring

- Beginning of job (to make an initial determination)
- At least every six months if exposure is greater than $^1/_2$ the Threshold Limit Value (TLV) - see Note below.
- At least every three months if exposure is above the TLV

Any major variation in the work process can reduce or increase exposure levels. Remonitor whenever changes occur.

- New tasks and/or tools are introduced
- Crew size increases
- Work configuration changes significantly (enclosure, confined area)
- Increase in number of hours worked

Even with the best intentions, things go wrong. Here are some scheduling pitfalls that managers have to deal with:

- Monitoring cannot be conducted as planned due to such factors as:
  - Weather
  - Change in work plans for the day
  - Equipment breakdown
- Monitoring begins but cannot be finished because of above
- A worker who is being monitored is assigned to another task
- Work is unusually light and it is difficult to get a representative sample

If such things happen, reschedule as soon as possible

Note: Occupational Exposure Limit Information

This Guide refers to two occupational exposure limits for crystalline silica: the ACGIH TLV and the OSHA Permissible Exposure Limit (PEL). The TLV is 0.05 mg/m^3. The OSHA PEL is roughly equivalent to 0.1mg/m^3, but it must be calculated for each sample. For more information, refer to the Background for Understanding the Silica Monitoring Report (B-27). We choose to use the TLV because it is more protective and much more straightforward to apply.

Managing & Responding To Results

SECTION 3

The SPM has responsibilities for reviewing the IH report, informing workers and keeping records. These tasks are described below.

Managing the Results

Review IH report and results of monitoring.

- Compare results to ACGIH-TLV or OSHA PEL
- Review IH recommendations
- Initiate response if necessary – See Responding to Elevated Results, on next page.

Provide results in writing to each monitored workers within 5 days of receipt of results.

- See Sample Air Monitoring Results Reporting Form (Individual B-19/23)
  - Distribute during weekly toolbox talk or with paychecks
  - Attach Silica Fact Sheet (B-29)

Provide results to all workers potentially exposed to silica dust.

- See Air Monitoring Results Reporting Form (Group) B21/25
- Post prominently in change room or distribute to workers
- Use Checklist 1: Reporting Results to Workers group results file folder (B-15)
- Prepare and schedule a toolbox talk to review the results

Maintain records of results

- Use Sample Recordkeeping Form (B-17)

When monitoring workers for exposure to crystalline silica, dust is passed through a cyclone to separate out large dust particles so that only the smaller particles are collected on the filter. These smaller particles are referred to us "respirable" particles. The dust collected is called respirable dust.

Responding to Elevated Results

Monitoring results above the TLV or PEL might indicate a problem with engineering and work practice controls. Consult the Guide for Managing Engineering & Work Practice Controls for further guidance on troubleshooting. The following points summarize the main steps to be taken:

- Make sure there are controls in place.
- Check out the equipment to make sure it is functioning.
- Talk to the workers, to find out if:
  - engineering controls are working properly
  - they are familiar with the equipment
  - they have any suggestions for improving existing controls
  - they use the controls and, if not, why not
  - what they do when the equipment isn't working properly
- Hold a safety meeting with managers and a toolbox talk with workers about the controls.
- Investigate with them if the controls are suited to the site and the particular application. An investigation of other controls may be in order.
- If problems are found and corrected, reschedule monitoring.
- Given the measured exposure, ensure that the types of respirators worn by the workers are sufficiently protective and are being used properly.

OSHA requires that the way to protect workers from exposure is first by using engineering and work practice controls. If the controls employed are state-of-the art, and the monitoring results show workers are exposed above the TLV/PEL, then the controls must be supplemented with respiratory protection.

Infosheets, Sample Forms & Further Information

SECTION 4

Infosheet 1: Hiring an IH Consultant
Infosheet 2: Project Information for the IH

Checklist: Reporting Results to Workers

Sample Recordkeeping Form

Sample Air Monitoring Results Reporting Form/TLV (Individual)
Sample Air Monitoring Results Reporting Form/TLV (Group)

Sample Air Monitoring Results Reporting Form/OSHA PEL (Individual)
Sample Air Monitoring Results Reporting Form/OSHA PEL (Group)

Background for Understanding the Crystalline Silica Monitoring Report

Silica Facts Sheet

Infosheet 1: Hiring an IH Consultant

- IH consultant has construction experience (preferable)
- IH consultant has a supervisory Certified Industrial Hygienist (CIH) (preferable)
- Sample analyzed by accredited laboratory (necessary)
- Request sample report
  - Is it well written (do you understand it)?
  - Are results presented as 8-hour time weighted averages? (they should be)
- Compare costs to those of several other consultants
- Is the turn-around time for reporting results acceptable?

The information gathered from different consultants can be used to choose the best one

Infosheet 2: Project Information for the IH

- Scope of work/silica dust generating tasks
- Approximate project timetable
- Approximate number of workers engaged in silica generating tasks
- Trades and tasks of workers, focusing on dusty tasks
- Approximate amount of time workers spend on dusty tasks (days/week, hours/day)
- Location of project and accessibility
- Description of controls used (engineering, administrative, respirators)
- Copy of Respiratory Protection Program
- Details on site safety hazards
- Site contact person and phone number

It is recommended that the SPM have this information ready at hand when speaking with the consultant

CHECKLIST 1: REPORTING RESULTS TO WORKERS

	✓
Results reviewed then copied to recordkeeping table or spreadsheet	
Results copied into form for reporting to workers and dated (Group and Individual reporting form)	
Individual results given to monitored workers	
• Group form posted in area where all workers can view them or • Group form handed out to all workers	

SAMPLE RECORDKEEPING FORM

First Name	Last Name	Monitoring Date	Tasks	Results 8-hr TWA (mg/m^3)	Exceed the TLV/PEL (Y/N)	Workers given results (Y/N)	Action Taken

AIR MONITORING RESULTS REPORTING FORM
(TLV)
(Individual)

This report presents your results for the for crystalline silica exposure conducted on ___/___/___

Contractor's Name_____

Employee name _____ Work Site/Location _____

Description of engineering /administrative controls at the site _____

_____

_____

Job Description _____

Monitoring Result_____

TLV Exceeded (TLV = 0.05 mg/m^3) Yes / No

These results represent exposure levels during the time and day the task was performed and the conditions present at the time the monitoring occurred.

At this job site _____ (company name) has selected to use the occupational exposure limit recommended by the American Conference of Governmental Industrial Hygienist (ACGIH). The ACGIH Threshold Limit Value (TLV) of 0.05 mg/m^3 is approximately $^1/_2$ the OSHA Permissible Exposure Limit (PEL). The TLV is set at a level below which it is believed that nearly all workers may be exposed to repeatedly over a 40-hour workweek without adverse effect. If exposure exceeds the TLV the appropriate respiratory protection must be used. For more information see attached Silica Facts Sheet.

AIR MONITORING RESULTS REPORTING FORM
(TLV)
(Group)

This report presents results for personal air monitoring for crystalline silica dust conducted on ___/___/___

Contractor's Name_____

Employee name _____ Work Site/Location _____

Description of engineering /administrative controls at the site _____

_____

_____

Monitor Worker	Job Description/ Location	Monitoring Results 8-hour TWA mg/m³	TLV Exceeded? Y/N
#1			
#2			
#3			
#4			
#5			
#6			

TLV = 0.05 mg/m³

These results represent exposure levels during the time and date the task was performed and the conditions present at the time the monitoring occurred.

At this job site _____ (company name) has selected to use the occupational exposure limit recommended by the American Conference of Governmental Industrial Hygienist (ACGIH). The ACGIH Threshold Limit Value (TLV) of 0.05 mg/m³ is approximately $^1/_2$ the OSHA Permissible Exposure Limit (PEL). The TLV is set at a level below which it is believed that nearly all workers may be exposed to repeatedly over a 40-hour workweek without adverse effect. If exposure exceeds the TLV the appropriate respiratory protection must be used. For more information see attached Silica Facts Sheet.

AIR MONITORING RESULTS REPORTING FORM
(OSHA PEL)
(Individual)

This report presents results for personal air monitoring for crystalline silica dust conducted on ___/___/___

Contractor's name _____

Employee name _____ Work Site/Location _____

Description of engineering /administrative controls at the site _____

_____

_____

Job Description _____

Monitoring Result_____

Exceeded PEL? (Circle one) Yes / No

These results represent exposure levels during the time and date the task was performed and the conditions present at the time the monitoring occurred. If exposure exceeds the PEL the appropriate respiratory protection must be used.

For more information see attached Understanding the Crystalline Silica Monitoring Report

AIR MONITORING RESULTS REPORTING FORM
(OSHA PEL)
(Group)

This report presents results for personal air monitoring for crystalline silica dust conducted on ___/___/___

Contractor's Name_____

Employee name _____ Work Site/Location _____

Description of engineering /administrative controls at the site _____

_____

_____

Monitor Worker	Job Description/ Location	PEL Exceeded? Y/N
#1		
#2		
#3		
#4		
#5		
#6		

These results represent exposure levels during the time and date the task was performed and the conditions present at the time the monitoring occurred.

If exposure exceeds the PEL the appropriate respiratory protection must be used.

For more information see attached Understanding the Crystalline Silica Monitoring Report.

Background for Understanding the Crystalline Silica Monitoring Report

Monitoring for crystalline silica and interpreting the results needs some explanation.

How do we monitor for crystalline silica?

A small sampling pump and filter is used to monitor exposure to crystalline silica. When monitoring, only the "respirable" part of the dust is collected, that is, the smallest particles that settle in the lower part of the lungs where silica causes disease. To collect the small particles the filter is attached to a device called a cyclone that separates out the larger non-respirable dust particles. The dust collected on the filter represents only the respirable portion.

How does the laboratory analyze the crystalline silica sample?

After the sample is collected, it is sent to a laboratory where two analytical procedures are done:

1. The filter is weighed to determine the amount of respirable dust collected.
2. The filter undergoes an X-ray diffraction procedure to determine the percentages of the three most common forms of crystalline silica (quartz, cristobalite and tridymite) in the dust sample. In general the last two don't show up very often and when they do it is in very small quantities.

How is the Permissible Exposure Limit (PEL) for crystalline silica calculated?

The PEL for crystalline silica is calculated for each sample taken, using the following equation. Note that this equation combines the percentages of the three most common forms of crystalline silica: quartz, cristobalite and tridymite.

PEL for sample = [10 ÷ (% quartz) + (% cristobalite x 2) + (% tridymite x 2) + 2]

As an example, consider these numbers:

Concentration of respirable sample	= 4.8 mg/m^3 (weighed in laboratory)
% quartz in sample	= 10 % (from x-ray diffraction analysis)
% cristobalite	= 1 % (from x-ray diffraction analysis)
% tridymite	= 0.5 % (from x-ray diffraction analysis)
Calculated PEL for this sample	= [10 ÷ (10) + (1 x 2) + (0.5 x 2) + 2]
	= [10 ÷ (10 + (2) + (1) + 2)] = 10/15
	= 0.66 mg/m^3

The PEL is then compared to the respirable dust concentration of the sample:
4.8 mg/m^3 ÷ 0.66 mg/m^3 = 7.27
Sample concentration is 7.27 times greater than the PEL. This number is the "severity" of exposure.
To determine the correct respirator to use we look for a respirator with an Assigned Protection Factor greater then 7.27

The Assigned Protection Factor of a $^1/_2$ face Air Purifying Respirator = 10

7.27 is less than 10. Therefore, a $^1/_2$ face Air Purifying Respirator with 100 series cartridges will be acceptable.

Silica Facts

Silica, also called quartz, is found naturally in the earth's crust. Silica is the basic component of sand and rock. Concrete and masonry products also contain silica. Construction workers may be exposed to silica when working with stone, concrete, brick, or masonry. Activities that can lead to exposure include:

Chipping, hammering, and drilling
Saw cutting and grinding
Crushing, loading, and dumping rock and concrete
Abrasive blasting using sand
Abrasive blasting on concrete or stone surfaces
Dry sweeping

What is Silicosis?

Silicosis is a disease caused by breathing silica dust. This dust can cause scarring and damage in the lungs. There is no cure for silicosis so prevention is very important.

There are several stages of silicosis. Early stages may go unnoticed and can occur after 10 or more years of exposure. The disease can cause fatigue, shortness of breath, loss of appetite, pain in the chest and respiratory failure. Eventually breathing becomes difficult and strains the heart. Some cases of silicosis are fatal. Silicosis causes people to be more susceptible to tuberculosis and bronchitis. Recent scientific information indicates that silica can cause lung cancer.

What You Can Do to Protect Yourself

– **Know** the health effects of silica and what tasks create silica dust.

– **Use all available controls** to reduce dust, like wet methods and vacuums.

– **Participate** in air monitoring and training programs.

– **Use a respirator** with a P-100 (HEPA) filter for protection against silica dust.
  Change the filter when it is dirty, damaged, or breathing is difficult.
  Be clean shaven when you wear a respirator; facial hair interferes with the seal.
  Employers must provide fit tests every year.
  When exposures are high, like when abrasive blasting, use airline respirators.

– **Change** into disposable or washable work clothes at the worksite. Shower, if possible, and change into clean clothing before going home.

– **Do not eat,** drink or use tobacco products in work areas.

– **Wash your hands and face** before eating, drinking, smoking, or using lip balm.

If you have any questions contact site safety manager _____

Guide for Managing a Respiratory Protection Program for Crystalline Silica

Overview

This guide outlines the steps for planning and managing a respirator protection program for workers exposed to crystalline silica dust during construction activities. It covers all the components of a respirator protection program as required by OSHA. The guide will be helpful to anyone with respirator program responsibilities; it can be used in its entirety or by section.

Why do you need a respirator program?

- It is required by OSHA whenever respirators are used.
- Respirators must be used when engineering and work practice controls fail to reduce crystalline silica dust exposure below the Permissible Exposure Limit (PEL).

Overview of the Tasks

1. **Planning**
   a) Appoint a respirator program manager
   b) Write a site specific respirator program
   c) Select the right respirator for each task

2. **Mobilizing**
   a) Set up medical clearance evaluations
   b) Train respirator users and supervisors
   c) Make sure the respirator fits correctly
   d) Order respirators and supplies

3. **Day-to-Day Practices**
   a) Manage respirator use
   b) Maintain respirators

4. **Records and Evaluation**
   a) Maintain records of respirator program activities
   b) Evaluate respirator program regularly

– This Guide will elaborate on these tasks –

Note: The most labor-intensive tasks are found in Sections 1 & 2. Once you get through the planning and mobilizing phases, you will be in good shape to manage the use of respirators at your site, maintain records, and conduct periodic program evaluations.

Planning for Respirator Use

SECTION 1

There are three major tasks in setting up a respirator program:

1.1 Appointing a respirator program manager

1.2 Writing a site specific respirator program

1.3 Selecting the right respirator for each crystalline silica dust generating task

1.1 Appointing a Respirator Program Manager (RPM)

- Appointed by higher management
  - Position can be assigned to a site safety officer, project engineer or other competent construction manager
- RPM must be qualified by training and/or experience with the respirators used at the site
  - Arrange respirator training if needed (see Resource List).
- A qualified worker can be assigned day-to-day program tasks such as:
  - fit testing
  - training
  - maintenance/cleaning
  - assisting in program evaluation

1.2 Writing a site specific respirator program

- Program can be written by RPM, company safety officer or IH consultant
- The Program can be adapted from:
  - company-wide program
  - previous project
  - OSHA model program
  - commercially available program
- The Program must address the following items:
  - respirator selection
  - medical evaluation
  - use of repirators
  - training
  - fit testing
  - maintenance
  - record keeping
  - evaluation
- The Program must be site specific. It must address the use of respiratory protection under the conditions present at the site.
  - The site-specific program is an open-ended document that is updated as respirator needs change at the site.

The respirator program needs to be in place before workers use respirators for the first time. Like any other construction activity, using respirators will go a lot smoother if time and effort are put in upfront to plan and mobilize.

- The Sample Program in Section 5 (C-25) represents the program update after exposure monitoring and respirator selection have been completed. You can adapt this sample program to your site's conditions and needs.

1.3 Selecting the right respirator for the task*

1.3.a. Selecting a respirator <u>before</u> monitoring results are known:

There are no OSHA guidelines for selecting respirators for a particular task. For some crystalline silica generating tasks – for example jack hammering and wet saw cutting – a half-face respirator with P-100 filters will ordinarily provide adequate protection. For other tasks, like dry saw cutting, drilling in enclosed spaces, and grinding, a more protective respirator may be needed.

For this reason, it is important to have exposure assessment conducted as soon as work begins.

It is recommended that the program and records be kept together in a loose-leaf binder

In general, the calculations for selecting the right respirators are done by the IH consultant.

***Occupational Exposure Limit Information**

Managing respirator selection depends on comparing monitoring results to the occupational exposure limit. This Guide refers to two occupational exposure limits for crystalline silica: the ACGIH Threshold Limit Value (TLV) and the OSHA Permissible Exposure Limit (PEL). The TLV is 0.05 mg/m^3. The OSHA PEL is roughly equivalent to 0.1mg/m^3, but must be calculated for each sample. For more information, refer to the Background for Understanding the Silica Monitoring Report (B-27). We prefer to use the TLV because it is more protective and more straightforward to apply.

Minimum respiratory protection for workers exposed to crystalline silica is a 1/2 face APR with P100 filters.

1.3.b. Selecting a respirator <u>after</u> monitoring results are known

- Select the correct Respirator Selection Flow Chart below, using either the TLV or PEL (see "Occupational Exposure Limit Information" on previous page).
- Complete the blank Worksheet in Section 5 (C35/37).
  - Refer to completed Work Sheet on the following page for assistance.

1.3.b (1) Using the ACGIH TLV:

- Compare crystalline silica monitoring results to the TLV (0.05mg/m^3).

Respirator Selection Flow Chart (TLV)

Step 1: List all activities that generate crystalline silica dust in the Sample Respirator Selection Worksheet (C-35). Seek input from job foremen, stewards, and workers.

↓

Step 2: Identify workers (e.g., laborers, carpenters) and supervisors who do these activities or may be working nearby.

↓

Step 3: Record air monitoring results as an 8-hour Time Weighted Average (TWA). Record highest result for each activity. See Guide for Managing Exposure Assessment for Crystalline Silica.

↓

Step 4: Select a respirator using criteria in "Respirator Selection (TLV)" following this flowchart.

↓

Step 5: Include respirator selection worksheet in your site-specific respirator program.

↓

Step 6: Review respirator selection worksheet with job foremen, stewards, and workers and attach it to the written program.

↓

Step 7: Post a copy in the project office, supply station, and worker shanties. It can also be reviewed during training sessions, safety meetings and toolbox talks.

Respirator Selection (TLV)

- If results of monitoring for crystalline silica are between 0.05 mg/m^3 and 0.5 mg/m^3 :
  - Use a half-face air purifying respirator with 100 series filters*
- If results are between 0.5 mg/m^3 and 2.5 mg/m^3 :
  - Use a full-face air purifying respirator with 100 series filters*
    - Must be quantitatively fit tested.
  - Tight fitting powered air purifying respirator (PAPR)
  - Atmosphere supplying respirator in continuous supply mode
- If results are between 2.5 mg/m^3 and 50 mg/m^3 :
  - Use an airline respirator operated in the pressure demand mode.

Sample Respirator Selection Worksheet (TLV)

Step 1: Activity	Step 2: Exposed Workers	Step 3: Monitoring Results (mg/m^3)	Step 4: Respirator Selected
Chipping concrete	Laborers	0.2 mg/m^3	Half face APR P-100 Filters
Grinding concrete	Laborers	0.8 mg/m^3	Tight fitting PAPR or Atmosphere supplying respirator in continuous supply mode

*N/R/P-100 designation indicates filter resistance to oil.
N=not oil resistant/ R = oil resistant /P=oil proof

1.3.b (2) Using the OSHA PEL

- Compute the PEL for each sample (RPM or IH consultant)
- Calculate the severity of exposure (explanation included in 'Background for Understanding the Silica Monitoring Report' (B-27)
- Select respirator with an Assigned Protection Factor (Table 1, C-8) greater than the calculated severity of exposure.

Refer to the completed worksheet (PEL) on next page.

Respirator Selection Flow Chart (PEL)

Step 1: List all activities that generate crystalline silica dust in the Sample Respirator Selection Worksheet (C-37). Seek input from workers, job foremen, and stewards.

↓

Step 2: Identify workers (e.g., laborers, carpenters) and supervisors who do these activities or may be working nearby.

↓

Step 3: Compute severity of exposure.

↓

Step 4: Compare severity of exposure to Assigned Protection Factor in Table 1 on next page.

↓

Step 5: Select respirator with assigned protection factor greater than severity.

↓

Step 6: Review respirator selection worksheet with job foremen, stewards, and workers and attach it to the written program.

↓

Step 7: Post a copy in the project office, supply station, and worker shanties. It can also be reviewed during training sessions, safety meetings and toolbox talks.

Table 1: Assigned Protection Factors (for Most Commonly Used Respirators)

Respirator type	Assigned Protection Factor
Half-face air purifying with 100 series filters*	10
Full-face air purifying with 100 series filters*	50#
Tight fitting powered air purifying respirator (PAPR)	50
Atmosphere supplying respirator in continuous flow mode	50
Airline respirator with pressure demand mode	1,000

*N/R/P-100 designation indicates filter resistance to oil.
N=not oil resistant/ R = oil resistant /P=oil proof

#Must be quantitatively fit tested

Assigned Protection Factor is a number assigned by NIOSH representing the minimum protection factor of a particular type respirator when used correctly

Sample Respirator Selection Worksheet (PEL)

Step 1: Activity	Step 2: Exposed Workers	Step 3: Severity of Exposure	Step 4: Assigned Protector Factor	Step 5: Respirator Selected
Chipping concrete	Laborers	4	10	Half-face APR
Grinding concrete	Laborers	11	50	Full Face APR or Atmosphere supplying respirator in continuous flow mode

Mobilizing at the Worksite

SECTION 2

Once the initial planning has been completed, it is time to mobilize people and equipment. Mobilization requires additional planning, coordination and paperwork.

Before a worker can use a respirator on-site the following activities must be completed:

2.1 Medical evaluation

2.2 Training

2.3 Fit testing

2.4 Ordering respirators and supplies

Workers need to be medically evaluated before being fit tested and trained. The last two activities can be conducted at the same time.

2.1 Medical evaluation

2.1.a. Medical evaluation is conducted by a physician or licensed health care professional (PLHCP), who is responsible for:

- Reviewing the completed OSHA Respirator Medical Evaluation Questionnaire (MEQ)
- Making medical determination of fitness to wear a respirator
- Recommending any follow-up evaluation
- Communicating result to employer/workers

Medical evaluations are required by OSHA and conducted in order to determine if using a respirator will place a burden on a worker's health, resulting in an increase risk of illness, injury or death.

2.1.b. Hiring a medical service

- Find a PLHCP to provide medical evaluations for respirator users.
- Section 5 Infosheet 1: Information to Gather When Hiring a Medical Service (C-39)
- Provide PLHCP with a copy of the company respirator program and the completed Job/Task Information Form (C-41)

Tip for finding a medical service

Ask industrial hygiene consultants, unions, or industry associations for referrals for medical services. Also check the Association of Occupational and Environmental Clinics for local services at www.aoec.org

2.1.c. Administering the medical evaluation

Medical evaluations can be administered in one of three ways:

The MEQ is completed on-site and reviewed off site by the PLHCP. See flow chart below: Preparing MEQs On-Site.

- Any positive answer to a question must be followed up by a medical "consultation" or exam. The consultation can be as simple as a phone call from the PLHCP to the worker.
- The PLHCP makes a determination of fitness for respirator use or recommends follow-up evaluation.

The MEQ is completed and reviewed on-site under the supervision of the PLHCP.

- Again, any positive response to any question must be followed up by a medical consultation or exam.
- The PLHCP makes a medical determination or recommends follow-up evaluation.

The PLHCP conducts a medical exam either on-site or at their facility.

- The PLHCP determines the contents of the medical exam. There are no specific medical procedures or tests required by OSHA (i.e. pulmonary function tests are not required by OSHA but may be ordered by the PLHCP).
- The PLHCP does not have to use the OSHA MEQ but must obtain the medical history information contained in it.
- The PLHCP makes a medical determination or recommends follow-up evaluation.

Medical evaluations must be completed during the normal work day or at a time convenient to the employee

The employer pays for the cost of the medical evaluation

Supervisors, foremen, or other company managers are not allowed to see or hear employees' answers to the questionnaires.

Often it is easiest to contact workers at the job site as long as confidentiality can be maintained.

English and Spanish versions of the MEQ can be found in Section 5 (C-43/51).

Preparing MEQs On-Site

Step 1: Provide each worker being evaluated an MEQ, the form "Employee Instructions For Filling Out Respirator MEQ" (C-59), and an envelope with their name on it (addressed to the medical service).

Step 2: Read out loud the "Employee Instructions for Filling Out Respirator MEQ".

Step 3: Have employee provide a contact phone number and time in case the PLHCP needs to speak with them.

Step 4: Provide employees with the telephone number of the medical service so they can contact the PLHCP if they have any questions.

Step 5: Provide a private area where employees can fill out questionnaires confidentially.

Step 6: Ask employees if they need a translator or someone to read the questionnaire to them.

Step 7: Instruct employees to place the completed questionnaire inside the envelope, seal it and return it to you.

Step 8: Deliver the completed questionnaires to the medical service.

2.1d. Plan for special needs or potential problems

Refer to Table 2 below for dealing with common problems that arise in completing the MEQ

Table 2: Troubleshooting

Problem	Solution
Follow-up evaluation recommended by PLHCP	Contract with local medical service for follow-up (consultations, tests, or physical examinations).
New hires.	Develop plan with medical service to accommodate new hires in a timely manner.
Worker says they have received respirator medical clearance at another job site.	Clearance may be accepted if 1. it is current 2. work conditions are approximately the same as when the certificate was issued 3. there has been no change in worker's health status.
Employee is cleared only for PAPR by the PLHCP.	Provide fit testing and training for PAPR
PLHCP has difficulty contacting workers for consultation.	Consultations can be performed by telephone at the job site, if confidentiality can be maintained
Employee is not medically cleared for respirator use.	Provide employee with task not requiring a respirator.
Worker reports problems related to respirator use.	Have worker describe problem. Check respirator fit and usage. Provide additional training if necessary. If the problem is medical, it might be necessary to readminister MEQ.

2.2 Training

- Establish a training timetable. Conduct respirator training:
  - before workers use a respirator for the first time
  - if workplace conditions change
  - whenever problems are noted (e.g., workers not wearing respirators when required)
  - annually
- Select person to do the training. This person can be any of the following individuals:
  - the RPM
  - a safety officer
  - a union trainer
  - a knowledgeable foreman, steward, or worker
  - an IH consultant
- Select a quiet, comfortable area in which to conduct the training.
- Prior to training, review the training materials to ensure that they:
  - are site specific - dealing with the conditions at the site
  - include a review of respirator use
  - are understandable to all workers – language and words that they know
- Refer to Checklist 1: Suggested Respirator Training Topics (C-61)
- The box below contains suggestions for training activities and discussions

The trainer should be knowledgeable about site conditions and the type of respirators used.

Workers have to demonstrate to the trainer or supervisor that they know how to use their respirators properly. You can use an oral or written evaluation to do this.

Training Tips

Adults learn best when training is related to what they do and involves hands-on experience. Try these training activities:

- Pass out respirators so users can examine them.
- Ask workers to do positive and negative pressure seal checks.
- Ask another worker to check that the respirator is on correctly.
- Pass out a selection of defective respirators (wrong cartridges, worn or missing parts, dirty, etc.) and ask workers to identify defect.
- Promote lively question and answer sessions. Use questions like: Why do workers take off their respirators? Do you think that the respirator protects you? When do you change the filters? Do the crystalline silica filters protect you from chemicals? Find solutions to problems that come up.
- Use Checklist 1: Suggested Respirator Training Topics (C-61). Pass it out to one or more workers and ask them to check off each topic during the session. Review at end of the session.

2.3 Fit Testing

2.3.a. Scheduling fit testing:

- After workers have been medically cleared
- Before respirators are worn for the first time
- Repeat fit testing:
  - yearly
  - whenever workers are assigned a different respirator brand or model
  - when the worker has a physical change which might effect fit, like an obvious weight gain or loss
  - if the worker, supervisor, RPM, or PLHCP requests it

Fit testing matches each worker with a respirator facepiece that fits comfortably on the face without leaking. Any leaks into the mask allow contaminated air to be inhaled.

2.3.b. Select person to do the fit testing:

- Fit testing can be done by any of the following
  - the RPM
  - an industrial hygienist or safety professional
  - respirator manufacturer representative
  - trained worker specialist
- The person must be familiar with the respirators used at the site and be able to follow the OSHA fit testing instructions.

Respirator facepieces come in a variety of brands, models, and sizes to fit most people. Beware: there is no one-size-fits-all respirator model!

2.3.c. Choose either a qualitative or quantitative fit test method:

- Qualitative fit testing
  - this method relies on a worker's sense of smell, sense of taste or the irritation of mucus membranes to detect leaks into the facepiece.
  - a qualitative fit test kit can be ordered from many respirator manufacturers and safety equipment suppliers (see Resource List).
  - Table 3 below summarizes important information on qualitative fit tests.
  - refer to the OSHA Respiratory Protection Standard, 1910.134, Appendix A, for detailed instructions on fit testing.
  - use the Respirator Fit Test Record in Section 5 (C-63)
- Quantitative fit testing
  - requires special equipment.
  - is used for certain type respirators (SCBA/Full Face) when exposure levels are more than 10 times the PEL. For more information see OSHA's Small Entity Compliance Guide (see Resource List).
    - ◊ consult an industrial hygienist or safety professional if you select this method.

Fit testing offers workers a chance to practice correct respirator usage as well as an opportunity to select a comfortable model.

Tight-fitting Atmosphere Supplying Respirators and PAPRs have to be fit tested in the negative pressure mode.

Table 3: Qualitative Fit Test Information

Fit Test Agent	Filter/Cartridge	Response
Saccharin	100 series filter*	taste–sweet (voluntary response)
Bitrex	100 series filter*	taste–bitter (voluntary response)
Irritant smoke	100 series filter*	nose and throat irritation (involuntary response; need well-ventilated space)
Banana oil	Organic vapor filter	smell (voluntary response)

*N/R/P-100 designation indicate resistance to oil.
N=not oil resistant/ R= oil resistant / P=oil proof

Rule of thumb: for every 25 workers, order 30 medium facepieces, 3 smalls, and 3 larges.

2.4 Ordering Respirators and Supplies

- Order respirators
  - one respirator for each worker
  - more than one brand may be necessary to fit all workers
  - maintain sufficient stock to replace and repair respirators as needed
- Order filters
  - The right filter for crystalline silica dust exposure is a 100 series (HEPA) filter (N/R/P). This filter can also be used with all fit test agents except banana oil which requires organic vapor cartridges
  - Whichever filters or cartridges you use, make sure that they match the facepiece (same manufacturer/model respirator)
- See Checklist 2: Respirator Supplies (C-65)

Note: these are guidelines for half-mask air-purifying respirators (APR). To order supplies for other types of respirators and masks, check with a local vendor or manufacturer.

Day-to-Day Practices

SECTION 3

This section includes guidance on:

3.1 Managing respirator use

- Post Infosheet 2: Respirator Use Practices (C-67) in the office, the shanty and at the supply station.
- Field supervisors, foremen and workers are responsible for making sure that respirators are used when necessary and that they are maintained and worn correctly.
  - Have a protocol in place for dealing with workers who do not wear respirators when required.
- Apply the respirator program uniformly and consistently: assure that all supervisory personnel and site visitors wear respirators in areas where they may be exposed to crystalline silica dust.
- Discuss problems that arise in the field during management safety meetings and weekly worker toolbox talks.
- As part of regular required evaluation, the RPM should make periodic audits of the site and note any problems.

Refer to Table 4 on next page, Troubleshooting Respirator Problems.

It's simple – if workers wear respirators, they're protected from crystalline silica dust. If they don't – they're not.

Wearing a respirator for an extended period of time is uncomfortable and may interfere with communication. When possible, adopt practices to ease respirator use, such as short breaks away from exposure, alternating work that requires respirators with other activities.

Table 4: Troubleshooting Respirator Problems

Problem	Solution
Filters don't fit on facepiece.	Make sure to order the correct filters for each type facepiece used on site. Never force or tape the wrong filter (e.g. from different brand respirator) onto the mask.
Respirators getting dirty on job site when not in use	Make sure workers have storage containers, e.g. plastic bags, rigid plastic storages containers. Replace as necessary.
Plastic storage bags fall apart easily.	Use heavy-duty freezer ziplock bags or rigid plastic containers. Replace as necessary.
No running water in work areas for cleaning respirators.	Use respirator sanitary wipes to clean up masks during work shifts. Follow manufacturer's cleaning instructions. Provide adequate wash-up stations.
Eyeglasses interfere with fit of full-face respirator.	Use spectacle kit available from respirator manufacturer.
Full-face (FF) respirator lens fogs up.	Use defogging solution available from manufacturer or supplier. Order a FF respirator with oral-nasal mask or substitute with a PAPR or supplied air respirator (SAR).
Difficult to communicate with others.	Consider using respirators with speaking aids; consult with manufacturer. Adopt hand signals when appropriate.
Respirator is hot and uncomfortable.	Provide non-contaminated, cool-off area where workers can remove respirator to wash face. Consider changing style of respirator for a lighter model or PAPR.
Respirators are frequently torn or worn-out.	Replace and repair as needed. Talk to supplier regarding different make or model respirator.
Respirator is missing inlet or exhaust valve covers.	Keep an adequate supply of spare parts on hand. Encourage workers to inspect and maintain their respirators.
Workers exposed to particulates and organic vapors.	Consult with respirator manufacturer about using combination cartridges.

3.2 Maintaining respirators

On large jobs assign a trained individual to take care of respirators.

- This person (a.k.a. Respirator Technician) is responsible for inspecting, repairing, maintaining supplies, and cleaning respirators.
  - Candidates for the job could be a trained apprentice or journeyman.
- On smaller jobs, workers can do these things for themselves as long as the RPM keeps an adequate stock of respirator supplies and the workers are trained in maintenance procedures recommended by the manufacturer. See Checklist 2: Respirator Supplies (C-65), for suggestions. Quantities needed will vary based on size of workforce and duration of project.

Construction sites are rugged environments and respirators can take quite a beating. A well-stocked supply station will provide workers with everything they need to keep their respirators in tip-top shape.

Replacement filters and cleaning supplies should be available at work areas.

Records & Evaluation

SECTION 4

This section reviews:

4.1 Recordkeeping
4.2 Evaluating the site specific program

4.1 Recordkeeping

- Records can be kept by RPM or delegated to office staff.
- The following records should be maintained
  - respiratory medical clearance
  - fit test results
  - training rosters
- Records should be kept in alphabetical order in a file folder or loose-leaf binder together with the site-specific program.
- Keep a Record Summary Spreadsheet (C-69) of individual worker records This can be done electronically or manually and should be maintained with the site-specific program. This summary spreadsheet can be designed to alert you to scheduling needs such as:
  - training
  - fit testing
  - medical evaluation
  - annual follow-ups

Records are kept:

To document respirator activities

To evaluate the overall effectiveness of the program

Because OSHA requires respirator program records and may review them during an inspection

4.2 Evaluating site-specific program

- The program is evaluated to:
  - ensure that it is working effectively
  - identify areas for improvement
- The components of program evaluation are:
  - reviewing the written guidelines and conducting site audits to assure proper implementation
  - consulting with workers and supervisors about respirator usage
- Program evaluation is conducted by the RPM with help from the company's safety person or an IH consultant.
- Evaluation frequency is determined by the RPM based on exposure levels and complexity of respirator program.
- Conduct the evaluation by walking around the site, observing respirator use, asking questions, and talking to the workers, foremen, and shop stewards.
- Ongoing assessment of factors such as respirator fit, selection, proper use under site conditions, and maintenance.
- Use the Checklist 3: Evaluation of Site Specific Respirator Program (C-71).

Write up problems identified during assessments along with plans on how to correct them. Keep this information with other program records.

Checklists, Sample Forms, Info Sheets & Further Information

SECTION 5

Sample Site Specific Respiratory Protection Program

Sample Respirator Selection Worksheet (TLV)

Sample Respirator Selection Worksheet (PEL)

Infosheet 1: Information to Gather When Hiring a Medical Service

Job/Task Information Form for PLHCP

Medical Evaluation Questionnaire (English)

Medical Evaluation Questionnaire (Spanish)

Employee Instructions for Filling out Respirator MEQ

Checklist 1: Suggested Respirator Training Topics

Respirator Fit Test Record

Checklist 2: Respirator Supplies

Infosheet 2: Respirator Use Practices

Sample Respirator Records Summary

Checklist 3: Evaluation of Site-Specific Respirator Program

Respiratory Protection Program for Crystalline Silica
Sand City Construction Co., Inc.

Gotham City Railway Main Terminal Building
Historical Restoration, contract # NCS-7833
January 1, 2000 – June 30, 2001

Table of Contents

The Model Respiratory Protection Program is for demonstration purposes only. It is based on the Sample Respiratory Protection Program located in Appendix iv of the OSHA Small Entity Compliance Guide. All names and companies are fictitious.

1.0 Purpose

Sand City Construction Co., Inc. has been contracted to complete the Gotham City Railway Main Terminal Building Historical Restoration, contract # NCS-7833.

Sand City Construction has determined that during the course of this project some employees will be exposed to crystalline silica containing dust during routine operations. The purpose of this program is to ensure that Sand City Construction employees are protected from exposure to crystalline silica.

Whenever feasible engineering controls, such as substitution, wetting or the use of tools equipped with Local Exhaust Ventilation (LEV) will be used to reduce exposure. When engineering controls cannot be used, or have not successfully reduced the hazard sufficiently, respirators will be employed.

2.0 Scope and Application

This program applies to all Sand City Construction employees who are required to wear respirators during normal work operations. Work processes requiring the use of respirators are listed in Section 4.2 Table 1. Work activities covered by this program include the use of: jackhammers, drills, grinders, and any other tool and/or task emitting crystalline silica containing dust. Project management will assure that changes in work operations are evaluated for hazardous exposures and selection of proper respirator.

Employees participating in the respiratory protection program do so at no cost to themselves. Any expense associated with training, medical evaluations and respiratory protection equipment will be borne by the company.

2.1 Voluntary Use

Any employee who voluntarily chooses to wear one of the respirators selected when a respirator is not required will be subject to the provisions of this section.

Sand City Construction will approve requests for voluntary respirator use on a case-by-case basis. Voluntary use of a respirator may be granted if such use will not jeopardize the health or safety of the worker. The Program Administrator will provide all employees who voluntarily choose to wear a respirator a copy of Appendix D of the of the OSHA respirator standard 1910.134 which details the requirements for voluntary use.

Voluntary users are subject to the medical evaluation, cleaning, maintenance, inspection and storage elements of this program. Fit testing and training are not required but highly recommended. To date, no workers have requested respirators where not required.

Employees voluntarily wearing filtering facepieces (dust masks) are not subject to the provisions of this program.

3.0 Responsibilities

3.1 Program Administrator

The Program Administrator is responsible for administering the respiratory protection program. The responsibilities of the Program Administrator include:

- Identifying work areas, processes and tasks that require respiratory protection.
- Selecting respirators.
- Monitoring respirator use to ensure they are used correctly.
- Arranging for and/or conducting respirator training.
- Providing for proper storage and maintenance of respirator equipment in accordance with the provisions of this program.
- Arranging for and/or conducting qualitative fit testing.
- Administrating the medical surveillance program.
- Keeping records.
- Periodically evaluating the program.
- Updating the program when required.

The Respirator Program Administrator for Sand City Construction at the Gotham City Railway Main Terminal Building Historical Restoration Project is John Freeman Telephone number (917) 666-7876.

The Program Administrator may appoint additional personnel to assist him/her in administrating the program. At this site John Franklin is responsible for respirator maintenance.

3.2 Supervisors

Supervisors are responsible for ensuring that the respiratory protection program is implemented in their work areas. In addition to being knowledgeable about the program, supervisors must also ensure that the program is understood and followed by the employees they supervise. Duties of the supervisor include:

- Ensuring the availability of appropriate respirators and accessories.
- Being aware of tasks requiring the use of respiratory protection.
- Enforcing the proper use of respiratory protection when necessary.
- Ensuring that respirators are properly cleaned, maintained, and stored according to the respiratory protection plan.
- Continually monitoring work areas and operations to identify respiratory hazards.
- Coordinating with the Program Administrator on how to address respiratory hazards or other concerns regarding the program.

3.3 Employees

Each employee has the responsibility to wear his or her respirator when and where required and in the manner in which they were trained. Employees must also:

- Care for and maintain their respirators as instructed, and store them in a clean sanitary location.
- Inform their supervisor if the respirator no longer fits well, and request a new one that fits properly.
- Inform their supervisor or the Program Administrator of any respiratory hazards that they feel are not adequately addressed in the workplace and of any other concerns that they have regarding the program.

4.0 Program Elements

4.1 Selection Procedures

The Program Administrator has selected respirators for the site based on respiratory hazards that workers are potentially exposed to and in accordance with all OSHA standards.

Workers are given a choice of 3M model 7500 or Survivair 7000 series 1/2 face air purifying respirator, each available in 3 sizes (small, medium and large). A copy of the manufacturers instructions for using each type respirator is attached to this program.

The Program Administrator has reviewed the hazard evaluation for each operation, process, or work area where airborne contaminants may be present. All work activities that crush, cut, grind, burn or generate dust or fume were evaluated for hazardous exposures. Procedures for respirator selection included:

- Inventory of hazardous substances used or produced at the project site.
- Review of work activities to determine where potential exposures to hazardous substances may occur. This review was conducted by considering the scope of work, by surveying the workplace, and by talking with employees and supervisors.
- Initial respirator selection for workers exposed to crystalline silica will be based on industrial hygiene best practices. At a minimum all exposed workers will be issued 1/2 face APR with 100 series filters until completion of initial exposure assessment for that task.
- Upon completion of the initial exposure assessment, respirator selection will be based on the American Conference of Governmental Industrial Hygienist (ACGIH) TLV of 0.05 mg/m^3 for crystalline silica.

Exposure assessment (personal air monitoring) at this location was conducted by:
Quality Industrial Hygiene Inc.
1 Corporate Park Plaza, Suite 1000, Broklyn, NY
Telephone number 718-889-4532/ 1-800-654-0987

The results of the current exposure monitoring and respirator selections are listed in Table 1 in Section 4.2.

Exposure monitoring reports are retained in the Program Manager's office.

4.1(a) Only respirators approved by the National Institute of Occupational Safety and Health (NIOSH)have been selected for use at this site. All respirators shall be used in accordance with the terms of that certification. All filters, cartridges, and canisters are labeled with the appropriate NIOSH approval label. The label must not be removed or defaced while it is in use.

Respirators selected for use at this site have a maximum use concentration equal to or greater than the air monitoring results for a particular work activity.

4.2 Hazard Assessment

The Program Administrator will revise and update the hazard assessment as needed, for example if there is a change in a work process that may potentially affect exposure levels. If an employee feels that respiratory protection is needed during a particular activity, they have been informed that they should notify their supervisor or the Program Administrator. The Program Administrator will evaluate the potential hazard and arrange for outside assistance as needed. If it is determined that respiratory protection is necessary, all other elements of this program will be in effect for those tasks and this program will be updated accordingly.

Table 1: Monitoring Results

Step 1: Activity	Step 2: Exposed Workers	Step 3: Morning Results (mg/m^3)	Step 4: Respirator Selector
Chipping concrete	Laborers	0.2 mg/m^3	1/2-face APR
Grinding concrete	Laborers	0.8 mg/m^3	Tight fitting PAPR or Atmosphere supplying respirator in continuous flow mode
Drilling	Laborers	0.1 mg/m^3	1/2-face APR

4.3 Medical Evaluation

4.3(a) Employees who are either required to wear a respirator on this job, or who choose to wear one voluntarily, must be medically cleared for respirator use by a physician or licensed health care professional (PLHCP) before being permitted to do so on this job. Any employee refusing the medical evaluation will not be allowed to work in an area requiring respirator use.

4.3(b) The Gotham City Occupational Medicine Clinic has been selected to conduct respirator medical clearance evaluations for Sand City Construction:

Gotham City Occupational Medicine Clinic
55 Sullivan Place, Brooklyn, NY 11225
Telephone number: 718-987-0090

4.3(c) Procedures for the medical evaluation are as follows:

- The medical evaluation is conducted using the questionnaire provided in Appendix C of the OSHA Respiratory Protection Standard. The Program Administrator has to provide a copy of this questionnaire to all employees requiring medical evaluations.
- To the extent feasible, the company provides translators and/or readers to assist employees who are unable to read the questionnaire.
- All affected employees are given a copy of the medical questionnaire to fill out, along with a stamped envelope addressed to the Gotham City Occupational Medicine Clinic.
- Employees are permitted to fill out the questionnaire on company time.
- Follow-up medical exams are granted to employees as required by the standard, and/or as deemed necessary by the Gotham City Occupational Medicine Clinic.
- All employees are granted the opportunity to speak with the physician about their medical evaluation, if they so request.

The Program Administrator has provided the Gotham City Occupational Medicine Clinic with a copy of this program, a copy of the OSHA Respiratory Protection Standard, and a list of hazardous substances by work area. For each employee requiring a medical evaluation, the Clinic has been provided with the following information:

- Work area or job title.
- Proposed respirator type.
- Length of time employee will be required to wear a respirator.
- Expected physical work load (light, moderate, or heavy).
- Potential temperature and humidity extremes.
- Any additional protective clothing required.

Any employee required for medical reasons to wear a powered air purifying respirator (PAPR) will be provided with a powered APR. To date, this has not been necessary.

Any employee who has received clearance and begun to wear a respirator, will be provided with additional medical evaluations under the following circumstances:

- Employee reports signs and/or symptoms related to their ability to use a respirator, such as shortness of breath, dizziness, chest pains, or wheezing.
- The Gotham City Occupational Medicine Clinic physician or supervisor informs the Program Administrator that the employee needs to be reevaluated.

- Information from this program, including observations made during fit testing and program evaluation, indicates a need for reevaluation.
- A change occurs in workplace conditions that may result in an increased physiological burden on the employee.

A list of Sand City Construction employees currently included in medical surveillance is provided in Section 6.0 Table 2.

All examinations and questionnaires are to remain confidential between the employee and the physician.

4.4 Fit Testing

All employees required to wear a respirator are fit tested:

- Prior to initial use of a tight fitting facepiece respirator.
- Annually.
- When there are changes in the employee's physical condition that could affect respiratory fit (obvious change in body weight, facial scarring, etc).
- If the worker, supervisor, RPM, or PLHCP requests it

New employees will be fit tested when they begin work in an area requiring respirators.

Employees voluntarily wearing 1/2-face APRs may be fit tested upon request.

Employees are fit tested with the make, model, and size of respirator that they actually wear. Employees are provided with several models and sizes of respirators so that they may find the best fit.

Fit testing of positive pressure respirators will be conducted in the negative pressure mode.

All fit tests follow the protocol in the OSHA Respiratory Protection Standard 1910.134, Appendix A. All 1/2-face APRs are qualitatively fit tested. All full-face respirators are quantitatively fit tested when used to a protection factor exceeding 10 x the ACGIH TLV of 0.05 mg/m^3 for crystalline silica.

4.5 Respirator Use

4.5(a) Employees are trained to use their respirators whenever performing tasks listed in Table 1 or any other tasks specified by the Program Administrator. All use is in accordance with this program and with the training received by workers. A respirator shall not be used in a manner for which it is not certified by NIOSH or by its manufacturer.

4.5(b) All employees will conduct user seal checks each time they wear their respirator.

4.5(c) All employees are permitted to leave the work area to go to a clean area to maintain their respirator for the following reasons:

- To clean their respirator if the respirator is impeding their ability to work.
- To relieve skin irritation.
- To change filters/cartridges or to replace parts.
- To repair respirator malfunctions.

Employees are informed that they should notify their supervisor before leaving the work area.

4.5(d) Employees are trained that respirators must be worn so that a good facepiece-to-face seal is maintained.

- Employees are not permitted to wear tight-fitting respirators if they have any condition, such as facial scars, facial hair, jewelry, or missing dentures, that prevents them from achieving a good seal.
- Employees are not permitted to wear headphones, jewelry, or other articles that may interfere with the facepiece-to-face seal.

4.6 Emergency Procedures

At this site there are no work areas or processes identified to date as having foreseeable work related emergencies requiring respiratory protection. Sand City Construction employees are not trained as emergency responders, and are not authorized to act in such a manner.

4.6(a) Respirator Malfunction

For any malfunction of an APR (e.g., such as breakthrough, leakage, or a malfunctioning valve), the respirator wearer informs his or her supervisor and then proceeds to the designated clean area to maintain the respirator. The supervisor ensures that the employee receives the needed parts to repair the respirator, or is provided with a new respirator.

4.7 Cleaning, Maintenance, Filter Change Out Schedule and Storage

Respirators are inspected for defects, cleaned, disinfected, and maintained on a regular basis by the individual worker or the designated respirator program assistant. At this site John Franklin is responsible for respirator maintenance.

4.7(a) Cleaning

A designated respirator cleaning station is located in the employee locker room. The Program Administrator ensures an adequate supply of appropriate cleaning and disinfecting material at the cleaning station. If supplies are low, employees are informed that they should contact their supervisor, who will inform the Program Administrator or respirator program assistant.

The following procedure is to be used when cleaning and disinfecting respirators:

- Disassemble respirator, remove any filters, canisters, or cartridges.
- Wash the facepiece and parts in a mild detergent with warm water. Do not use organic solvents.
- Rinse completely in clean warm water.
- Wipe the respirator with disinfectant wipes to kill germs.
- Air dry in a clean area.
- Reassemble the respirator and replace any defective parts.
- Place in a clean, dry plastic bag or other airtight container.
- Respirators issued for the exclusive use of an employee shall be cleaned as often as necessary.
- Atmosphere supplying respirators are to be cleaned and disinfected after each use

Sanitary wipes for cleaning respirators in the field are available in the supply station and gang boxes in each work location.

4.7(b) Maintenance

Respirators are to be properly maintained at all times in order to ensure that they function properly and adequately protect the employee. Maintenance involves a thorough visual inspection for cleanliness and defects. Worn or deteriorated parts will be replaced prior to use. No components will be replaced or repairs made beyond those recommended by the manufacturer.

The following items will be checked when inspecting respirators:

- Facepiece: cracks, tears, or holes
- Facemask distortion
- Cracked or loose lenses/faceshield
- Headstraps: breaks or tears, broken buckles
- Residue, dirt cracks or tears in valve material
- Filters/cartridges, the right one for the hazard, cracked or excessively dirty
- Gaskets and housings for cracks or dents

4.7(c) Change Out Schedules

Employees wearing air purifying respirators with 100 series filters are informed that they should change the filter cartridges on their respirators when they are difficult to breathe through, excessively dirty or damaged.

4.7(d) Storage

Respirators are stored in a clean, dry area, and in accordance with the manufacturer's recommendations. Each employee cleans and inspects his/her own air-purifying respirator in accordance with this program and stores their respirator after drying in a dry plastic bag or rigid container with a tight fitting lid.

4.7(e) Defective Respirators

Respirators that are defective are taken out of service immediately. If, during an inspection, an employee discovers a defect in a respirator, he/she will inform their supervisor. Supervisors give all defective respirators to the Program Administrator or his/her assistant for repair or disposal.

4.8 Training

4.8(a) Training Topics:

- OSHA Respiratory Protection Standard Program.
- Sand City Construction's Respiratory Protection Program.
- Worker and supervisor responsibilities under the program.
- Respiratory hazards encountered at this site and their health effects.
- How a respirator works including limitations of selected respirator.
- Respirator selection.
- Respirator use including inspecting for defects.
- Respirator donning and user seal (fit) checks.
- Fit testing, explanation of fit test exercises.
- Emergency use procedures, if deemed necessary.

- Cleaning, maintenance and storage procedures.
- When to change filters, where to get new filters and/or replacement parts.
- Medical signs and symptoms limiting the effective use of respirators.

Employees will be retrained annually or as needed, for example if there is a change in work process or type of respirator required.

5.0 Program Evaluation

The Program Administrator or his/her assistant conducts evaluations periodically of the workplace to ensure the effectiveness of the respirator program. The evaluations include consultations with employees and their supervisors, site inspections, air monitoring and a review of records. The Program Administrator corrects any problems identified during these evaluations.

6.0 Documentation and Recordkeeping

A written copy of this program and the OSHA standard is kept in the Program Administrator's Office and is available to all employees who wish to review it. Other records on file include: training rosters and materials, fit test results, and medical clearance certificates. These records will be updated as new employees are trained, or as existing employees receive refresher training, or as new fit tests are conducted.

The Program Administrator also maintains copies of the medical records for all employees covered under the respirator program. The completed medical questionnaire and the physician's documented findings are confidential and will remain at Gotham City Occupational Medicine Clinic. The company will retain only the physician's written recommendation regarding each employee's ability to wear a respirator. Personnel respirator records are summarized in Table 2.

Table 2: Personnel Respirator Records

Last Name	First Name	Respirator type and size	Medical Certificate Date	Fit Test Date	Training Date
Jones	Robert	3M -model 7500 1/2 face APR (M)	03/01/00	03/04/00 02/12/01	03/04/00 02/12/01
Bidofsky	Paul	Survivair - 7000 1/2 face APR (M)	03/01/00	03/04/00 02/12/01	03/04/00 02/12/01
Ramos	Jose	Survivair - 7000 1/2 face APR (M)	03/01/00	03/04/00 02/12/01	03/04/00 02/12/01
Schwartz	Harvey	3M -model 7500 1/2 face APR (M)	03/01/00	03/04/00 02/12/01	03/04/00 02/12/01

SAMPLE RESPIRATOR SELECTION WORKSHEET - (TLV)

Step 1: Activity												
Step 2: Exposed Workers												
Step 3: Air Monitoring Results (mg/m^3)												
Step 4: Respirator Selected												

SAMPLE RESPIRATOR SELECTION WORKSHEET - (PEL)

Step 1: Activity	Step 2: Exposed Workers	Step 3: Severity of Exposure	Step 4: Assigned Protection Factor	Step 5: Respirator Selected

Infosheet 1: Information to Gather When Hiring a Medical Service

- Is service familiar with the medical evaluation requirements in the OSHA Respiratory Protection Standard (strongly recommended)
- Is it familiar with construction work (recommended)
- Is it familiar with occupational medicine (recommended)
- Can it provide language translations (recommended if necessary)
- Determine where and how service will administer MEQs – see Section 2 for choices
- Is it capable of providing follow-up medical consultations if needed either in person or by phone or both (recommended)
- Establish how long it takes to get medical determination back from the medical service
- Is service capable of providing storage of MEQ records? (Records must be kept for thirty years after retirement)
- Determine the costs of the initial evaluation, follow-up exams, record storage

Job/Task Information Form for the PLHCP

Please provide the following information about respirator users, site working conditions, potential exposures, and respirator selection. Also provide a copy of the company's current respirator program.

1. **Company Name** _____ **Date** _____

   Respirator Program Manager _____ Phone _____

   Address _____

2. **Description of work tasks requiring respirators e.g. torch cutting**

   _____

   _____

3. **How often are respirators being worn by employees?**

   hours per day _____ days per week _____ escape/rescue only _____

4. **Potential Exposures: (check all that apply)**

   ___ lead ___ asbestos ___ crystalline silica

   ___ methylene chloride ___ solvents, paints, lacquers ___ oxygen deficiency

   other(s) _____

5. **Work Effort:**

   __ light (sitting, standing) __ moderate (walking, pushing, lifting)

   __ heavy (pick and shovel work, heavy lifting)

6. **Site Conditions:** ___ extreme heat or cold ___ outdoors

   ___ confined spaces ___ elevated work ___ other

   ___ protective clothing/equipment (other than respirator) Please list: _____

   _____

7. **Please attach a copy of the company's respirator program.**

8. Please complete the chart below for workers who will be assigned a respirator (check all that apply).

Name	Date of Birth	Respirator	Facepiece
		APR ____ PAPR ____ SAR ____ SCBA ____	1/2 ____ full ____ hood/helmet ____
		APR ____ PAPR ____ SAR ____ SCBA ____	1/2 ____ full ____ hood/helmet ____
		APR ____ PAPR ____ SAR ____ SCBA ____	1/2 ____ full ____ hood/helmet ____
		APR ____ PAPR ____ SAR ____ SCBA ____	1/2 ____ full ____ hood/helmet ____
		APR ____ PAPR ____ SAR ____ SCBA ____	1/2 ____ full ____ hood/helmet ____
		APR ____ PAPR ____ SAR ____ SCBA ____	1/2 ____ full ____ hood/helmet ____
		APR ____ PAPR ____ SAR ____ SCBA ____	1/2 ____ full ____ hood/helmet ____
		APR ____ PAPR ____ SAR ____ SCBA ____	1/2 ____ full ____ hood/helmet ____
		APR ____ PAPR ____ SAR ____ SCBA ____	1/2 ____ full ____ hood/helmet ____
		APR ____ PAPR ____ SAR ____ SCBA ____	1/2 ____ full ____ hood/helmet ____
		APR ____ PAPR ____ SAR ____ SCBA ____	1/2 ____ full ____ hood/helmet ____
		APR ____ PAPR ____ SAR ____ SCBA ____	1/2 ____ full ____ hood/helmet ____
		APR ____ PAPR ____ SAR ____ SCBA ____	1/2 ____ full ____ hood/helmet ____

Notes:

APR - Air purifying respirator
PAPR - Power air purifying respirator
SAR - Supplied air respirator (air line)
SCBA - Self-contained breathing apparatus
1/2 - Half face respirator
full - Full face respirator
hood/helmet - covers nose, mouth, head and neck and may cover portions of the shoulders and torso

OSHA Respirator Medical Evaluation Questionnaire

To the employee: Can you read English (check one): ☐ Yes ☐ No

Your employer must allow you to answer this questionnaire during normal working hours, or at a time and place that is convenient to you. To maintain your confidentiality, your employer or supervisor must not look at or review your answers, and your employer must tell you how to deliver or send this questionnaire to the health care professional who will review it.

Part A. Section 1. (Mandatory) The following information must be provided by every employee who has been selected to use any type of respirator (please print).

1. Today's date: _____
2. Last name: _____ First name: _____
3. Age (to nearest year): _____
4. Sex (check one): ☐ Male ☐ Female
5. Height: _____ft. _____in.
6. Weight: _____lbs.
7. Job title: _____
8. A phone number where you can be reached by the health care professional who reviews this questionnaire (include area code): (____) _____
9. The best time to reach you at this number _____
10. Has your employer told you how to contact the health care professional who will review this questionnaire: ☐ Yes ☐ No
11. Check the type of respirator you will use (you can check more than one category):
    a. _____ Disposable respirator N, R, or P (filter-mask, non-cartridge type only).
    b. _____ Other (for example, half or full-facepiece, powered-air purifying, supplied-air, self-contained breathing apparatus).
12. Have you ever worn a respirator in the past: ☐ Yes ☐ No
    If "yes," what type(s): _____

Part A. Section 2. (Mandatory) Questions 1 through 9 below must be answered by every employee who has been selected to use any type of respirator (please circle "yes" or "no").

1. Do you ***currently*** smoke tobacco, or have you smoked tobacco in the last month: Yes No

2. Have you ***ever had*** any of the following conditions?
   a. Seizures: Yes No
   b. Diabetes (sugar disease): Yes No
   c. Allergic reactions that interfere with your breathing: Yes No
   d. Claustrophobia (fear of closed-in places): Yes No
   e. Trouble smelling odors: Yes No

3. Have you ***ever had*** any of the following pulmonary or lung problems?
   a. Asbestosis: Yes No
   b. Asthma: Yes No
   c. Chronic bronchitis: Yes No
   d. Emphysema: Yes No
   e. Pneumonia: Yes No
   f. Tuberculosis: Yes No
   g. Silicosis: Yes No
   h. Pneumothorax (collapsed lung): Yes No
   i. Lung cancer: Yes No
   j. Broken ribs: Yes No
   k. Any chest injuries or surgeries: Yes No
   l. Any other lung problem that you've been told about: Yes No

4. Do you ***currently*** have any of the following symptoms of pulmonary or lung illness?
   a. Shortness of breath: Yes No
   b. Shortness of breath when walking fast on level ground or walking up a slight hill or incline: Yes No
   c. Shortness of breath when walking with other people at an ordinary pace on level ground: Yes No
   d. Have to stop for breath when walking at your own pace on level ground: Yes No
   e. Shortness of breath when washing or dressing yourself: Yes No
   f. Shortness of breath that interferes with your job: Yes No
   g. Coughing that produces phlegm (thick sputum): Yes No
   h. Coughing that wakes you early in the morning: Yes No
   i. Coughing that occurs mostly when you are lying down: Yes No
   j. Coughing up blood in the last month: Yes No
   k. Wheezing: Yes No
   l. Wheezing that interferes with your job: Yes No
   m. Chest pain when you breathe deeply: Yes No
   n. Any other symptoms that may be related to lung problems: Yes No

5. Have you ***ever had*** any of the following cardiovascular or heart problems?

a.	Heart attack:	Yes	No
b.	Stroke:	Yes	No
c.	Angina:	Yes	No
d.	Heart failure:	Yes	No
e.	Swelling in your legs or feet (not caused by walking):	Yes	No
f.	Heart arrhythmia (heart beating irregularly):	Yes	No
g.	High blood pressure:	Yes	No
h.	Any other heart problem that you've been told about:	Yes	No

6. Have you ***ever had*** any of the following cardiovascular or heart symptoms?

a.	Frequent pain or tightness in your chest:	Yes	No
b.	Pain or tightness in your chest during physical activity:	Yes	No
c.	Pain or tightness in your chest that interferes with your job:	Yes	No
d.	In the past two years, have you noticed your heart skipping or missing a beat:	Yes	No
e.	Heartburn or indigestion that is not related to eating:	Yes	No
f.	Any other symptoms that you think may be related to heart or circulation problems:	Yes	No

7. Do you ***currently*** take medication for any of the following problems?

a.	Breathing or lung problems:	Yes	No
b.	Heart trouble:	Yes	No
c.	Blood pressure:	Yes	No
d.	Seizures:	Yes	No

8. If you've used a respirator, have you ***ever had*** any of the following problems? (If you've never used a respirator, check the following space and go to question 9:)

a.	Eye irritation:	Yes	No
b.	Skin allergies or rashes:	Yes	No
c.	Anxiety:	Yes	No
d.	General weakness or fatigue:	Yes	No
e.	Any other problem that interferes with your use of a respirator:	Yes	No

9. Would you like to talk to the health care professional who will review this questionnaire about your answers to this questionnaire: Yes No

Questions 10 to 15 below must be answered by every employee who has been selected to use either a full-facepiece respirator or a self-contained breathing apparatus (SCBA). For employees who have been selected to use other types of respirators, answering these questions is voluntary.

10. Have you ***ever lost*** vision in either eye (temporarily or permanently): Yes No

11. Do you ***currently*** have any of the following vision problems?
    a. Wear contact lenses: Yes No
    b. Wear glasses: Yes No
    c. Color blind: Yes No
    d. Any other eye or vision problem: Yes No

12. Have you ***ever had*** an injury to your ears, including a broken eardrum: Yes No

13. Do you currently have any of the following hearing problems?
    a. Difficulty hearing: Yes No
    b. Wear a hearing aid: Yes No
    c. Any other hearing or ear problem: Yes No

14. Have you ***ever had*** a back injury: Yes No

15. Do you ***currently*** have any of the following musculoskeletal problems?
    a. Weakness in any of your arms, hands, legs, or feet: Yes No
    b. Back pain: Yes No
    c. Difficulty fully moving your arms and legs: Yes No
    d. Pain or stiffness when you lean forward or backward at the waist: Yes No
    e. Difficulty fully moving your head up or down: Yes No
    f. Difficulty fully moving your head side to side: Yes No
    g. Difficulty bending at your knees: Yes No
    h. Difficulty squatting to the ground: Yes No
    i. Climbing a flight of stairs or a ladder carrying more than 25 lbs: Yes No
    j. Any other muscle or skeletal problem that interferes with using a respirator: Yes No

Part B: Any of the following questions, and other questions not listed, may be added to the questionnaire at the discretion of the health care professional who will review the questionnaire.

1. Describe the work you'll be doing while you're using your respirator:

   _____

   _____

2. Will you be using any of the following items with your respirator?
   a. HEPA Filters (pink, red): Yes No
   b. Canisters (for example, gas masks): Yes No
   c. Cartridges: Yes No

3. How often are you expected to use the respirator (circle "yes" or "no" for all answers that apply to you)?:
   a. Escape only (no rescue): Yes No
   b. Emergency rescue only: Yes No
   c. Less than 5 hours *per week*: Yes No
   d. Less than 2 hours *per day*: Yes No
   e. 2 to 4 hours *per day*: Yes No
   f. Over 4 hours *per day*: Yes No

4. During the period you are using the respirator, is your work effort:
   a. ***Light***: [e.g., sitting while typing or writing; performing light assembly work; or standing while operating a drill press (1-3 lbs.) or controlling machines.] Yes No

      If "yes," how long does this period last during the average shift:_____ hrs._____mins.

   b. ***Moderate***: [e.g., sitting while nailing or filing; driving a truck or bus in urban traffic; standing while drilling, nailing, or assembling a moderate load (about 35 lbs.) at trunk level; walking; pushing a wheelbarrow with heavy load (about 100 lbs.) on a level surface.] Yes No

      If "yes," how long does this period last during the average shift:_____hrs._____mins.

   c. ***Heavy***: [e.g., lifting a heavy load (about 50 lbs.) from the floor to your waist or shoulder; working on a loading dock; shoveling; standing while bricklaying or chipping castings; walking up an 8º grade about 2 mph; climbing stairs with a heavy load (about 50 lbs.).] Yes No

      If "yes," how long does this period last during the average shift:_____hrs._____mins.

5. Will you be wearing protective clothing and/or equipment (other than the respirator) when you're using your respirator: Yes No

   If "yes," describe this protective clothing and/or equipment:

   _____

   _____

6. Describe any special or hazardous conditions you might encounter when you're using your respirator (e.g., confined spaces, life-threatening gases):

   _____

   _____

7. List the hazardous substances that you work with while wearing a respirator:

   _____

   _____

8. Describe any special responsibilities you'll have while using your respirator that may affect the safety and well-being of others (e.g. rescue, security):

   _____

   _____

9. Have you ever worked with any of the materials, or under any of the conditions, listed below:
   a. Asbestos: Yes No
   b. Silica (e.g. in sandblasting): Yes No
   c. Beryllium: Yes No
   d. Tungsten/cobalt: Yes No
   e. Aluminum: Yes No
   f. Coal (for example, mining): Yes No
   g. Iron: Yes No
   h. Dusty environments: Yes No
   i. Tin: Yes No
   j. Solvents (e.g. paints, lacquers) Yes No
   k. Any other hazardous exposures: Yes No

If "yes," describe these exposures:

_____

_____

10. At home have you been exposed to hazardous solvents, hazardous airborne chemicals (e.g., gases, fumes, or dust), or had skin contact with hazardous chemicals: Yes No

    If "yes," name the chemicals if you know them:

_____

_____

11. List any second jobs or side businesses you have:

_____

_____

12. Have you been in the military services? Yes No

    If "yes," were you exposed to biological or chemical agents (either in training or combat): Yes No

13. Have you ever worked on a HAZMAT team? Yes No

Cuestionario de Evaluación Médica Obligado por OSHA
(Administración de Seguridad y Salud Ocupacional)
Parte 29 CFR 1910.134 Obligatorio para la protección del sistema respiratorio

Marque con un círculo para indicar sus respuestas a cada pregunta

Para el empleado: ¿Puede usted leer? (circule uno) Sí No

Su empleador debe dejarlo responder estas preguntas durante horas de trabajo o en el momento y lugar que sea conveniente para usted. Para mantener este cuestionario confidencial, su empleador o supervisor no debe ver ni revisar sus respuestas. Su empleador debe informarle a quién dar o cómo enviar este cuestionario al profesional de salud que lo va a revisar.

Parte A. Sección 1. (Obligatorio). La siguiente información debe ser provista por cada empleado que ha sido seleccionado para usar cualquier tipo de respirador (escriba claro por favor).

1. Fecha: _____

2. Nombre: _____
APELLIDO NOMBRE

3. Edad:_____

4. Sexo (circule uno) Masculino o Femenino

5. Altura:_____ pies_____pulgadas

6. Peso:_____libras

7. Su ocupación, título o tipo de trabajo:_____

8. Número de teléfono donde le puede llamar un profesional de salud con licencia que revisará este cuestionario (incluya el área):_____

9. Indique la hora más conveniente para llamarle a este número:_____

10. ¿Le ha informado su empleador cómo comunicarse con el profesional de salud con licencia que va a revisar este cuestionario (circule una respuesta)? Sí No

11. Anote el tipo de equipo respiratorio que va a utilizar (puede anotar más de una categoría)
a._____Respirador desechable de clase N, R o P (por ejemplo: respirador de filtro mecánico, respirador sin cartucho).

b._____Otros tipos (respirador de media cara o cara completa, purificador de aire accionado por un motor, máscara con manguera con soplador (PAPR), máscara con manguera sin soplador (SAPR), aparato personal de auto-respiración (SCBA)

12. ¿Ha usado algún tipo de respirador? Sí No

Si ha usado equipo protector respiratorio, qué tipo(s) ha utilizado:

_____

_____

Parte A. Sección 2. (Obligatorio): Las preguntas del 1 al 9 deben ser contestadas por cada empleado que fue seleccionado para usar cualquier tipo de respirador. Marque con un círculo para indicar sus respuestas.

1. ¿Fuma tabaco actualmente, o ha fumado tabaco durante el último mes? Sí No

2. ¿Ha tenido algunas de las siguientes condiciones médicas?

   a. Convulsiones Sí No
   b. Diabetes (azúcar en la sangre) Sí No
   c. Reacciones alérgicas que no lo dejan respirar Sí No
   d. Claustrofobia Sí No
   e. Dificultad para oler excepto cuando ha cogido un resfriado Sí No

3. ¿Ha tenido alguno de los siguientes problemas pulmonares?
   a. Asbestosis Sí No
   b. Asma Sí No
   c. Bronquitis crónica Sí No
   d. Enfisema Sí No
   e. Pulmonía Sí No
   f. Tuberculosis Sí No
   g. Silicosis Sí No
   h. Neumotorax (pulmón colapsado) Sí No
   i. Cáncer en los pulmones Sí No
   j. Costillas quebradas Sí No
   k. Lesión o cirugía en el pecho Sí No
   l. Algún otro problema de los pulmones que le haya dicho su médico Sí No

4. ¿Tiene actualmente alguno de los siguientes síntomas o enfermedades en los pulmones?
   a. Respiración dificultosa Sí No
   b. Respiración dificultosa cuando camina rápido sobre terreno plano o subiendo una colina Sí No
   c. Respiración dificultosa cuando camina normalmente con otras personas sobre terreno plano Sí No
   d. Cuando camina normalmente en terreno plano ¿siente que tiene que detenerse para coger aire? Sí No

e.	Respiración dificultosa cuando se está bañando o vistiendo	Sí	No
f.	Respiración dificultosa que le impide trabajar	Sí	No
g.	Tos con flema	Sí	No
h.	Tos que lo despierta temprano en la mañana	Sí	No
i.	Tos que ocurre mayormente cuando está acostado	Sí	No
j.	¿Ha tosido sangre en el último mes?	Sí	No
k.	Respiración dificultosa y con ruido	Sí	No
l.	Respiración dificultosa y con ruido que le impide trabajar	Sí	No
m.	Dolor en el pecho cuando respira profundamente	Sí	No
n.	Otros síntomas que cree usted están relacionados a los pulmones	Sí	No

5. ¿Ha tenido algunos de los siguientes problemas con el corazón?

a.	Ataque cardíaco	Sí	No
b.	Ataque cerebrovascular	Sí	No
c.	Angina de pecho	Sí	No
d.	Insuficiencia cardíaca	Sí	No
e.	Hinchazón en las piernas o pies (que no sea por caminar)	Sí	No
f.	Latidos irregulares del corazón	Sí	No
g.	Presión alta	Sí	No
h.	Algún otro problema con el corazón	Sí	No

6. ¿Ha tenido algunos de los siguientes síntomas cardiacos?

a.	Dolor de pecho frecuente o pecho apretado	Sí	No
b.	Dolor o pecho apretado durante actividad física	Sí	No
c.	Dolor o pecho apretado que no lo deja trabajar normalmente	Sí	No
d.	En los últimos dos años ha notado que su corazón late irregularmente	Sí	No
e.	Dolor en el pecho o indigestión que no es relacionado a la comida	Sí	No
f.	Algunos otros síntomas que usted piensa son causados por problemas del corazón o de la circulación	Sí	No

7. ¿Está tomando medicinas por alguno de los siguientes problemas?
   a. Problemas pulmonares
   b. Problemas del corazón
   c. Presión alta
   d. Convulsiones

8. Si ud. ha usado un respirador ¿ha tenido alguna vez alguno de los siguientes problemas? (si no ha usado un respirador deje esta pregunta en blanco y continúe con la pregunta 9).

a.	Irritación de los ojos	Sí	No
b.	Alergias del cutis o salpullido	Sí	No
c.	Ansiedad que ocurre solamente cuando usa el respirador	Sí	No
d.	Debilidad, falta de vigor o fatiga desacostumbrada	Sí	No
e.	Algún otro problema que le impida utilizar su respirador	Sí	No

9. ¿Le gustaría hablar con el profesional de salud que va a revisar sus respuestas? Sí No

Las preguntas de la 10 a la 15 deben ser contestadas por los empleados seleccionados para usar un respirador purificador de aire de cara completa con filtros o un aparato personal de auto-respiración?

10. ¿Ha perdido la vista en cualquiera de sus ojos (temporalmente o permanente)? Sí No

11. ¿Actualmente tiene algunos de los siguientes problemas con su vista? Sí No

a.	Usa lentes de contacto	Sí	No
b.	Usa lentes	Sí	No
c.	Daltonismo (dificultad para distinguir colores)	Sí	No
d.	Algún problema con los ojos o la vista	Sí	No

12. ¿Se ha hecho alguna vez daño en los oídos, como romperse el tímpano? Sí No

13. ¿Tiene actualmente alguno de los siguientes problemas para oír?

a.	Dificultad para oír	Sí	No
b.	Usa un aparato para oír	Sí	No
c.	¿Tiene algún otro problema con los oídos o de audición?	Sí	No

14. ¿Se ha lesionado alguna vez la espalda?

15. ¿Tiene alguno de los siguientes problemas óseos o musculares?

a.	Debilidad en los brazos, manos, piernas o pies	Sí	No
b.	Dolor de espalda	Sí	No
c.	Dificultad para mover sus brazos y piernas completamente	Sí	No
d.	Dolor o rigidez cuando se inclina para adelante o para atrás	Sí	No

e.	Dificultad para mover la cabeza para arriba o para abajo completamente	Sí	No
f.	Dificultad para mover la cabeza de lado a lado	Sí	No
g.	Dificultad para agacharse doblando las rodillas	Sí	No
h.	Dificultad para agacharse hasta tocar el piso	Sí	No
i.	Dificultad para subir escaleras cargando más de 25 libras	Sí	No
j.	Algún problema muscular o con sus huesos que le impida usar un respirador	Sí	No

Parte B. Las siguientes preguntas pueden ser agregadas al cuestionario a discreción del profesional de salud con licencia del estado.

1. ¿Está trabajando en alturas arriba de 5.000 pies o en sitios que tienen menos oxígeno de lo normal? Sí No

   Si la respuesta es "sí", ¿se ha sentido mareado o ha tenido dificultad para respirar, palpitaciones o cualquier otro síntoma que no tiene cuando no está trabajando en estas condiciones? Sí No

2. ¿En el trabajo o en su casa ha estado expuesto a solventes o contaminantes peligrosos en el aire (como por ejemplo humos, neblina o polvos) o ha entrado su piel en contacto con sustancias químicas peligrosas? Sí No

Escriba las sustancias o productos químicos a los que ha estado expuesto, si sabe cuáles son:

_____

3. ¿Ha trabajado con los siguientes materiales o las condiciones anotadas abajo?

a.	Asbesto	Sí	No
b.	Sílice (limpieza con chorro de arena)	Sí	No
c.	Tungsteno/cobalto (pulverizado o soldadura)	Sí	No
d.	Berilio	Sí	No
e.	Aluminio	Sí	No
f.	Carbón de piedra (minando)	Sí	No
g.	Hierro	Sí	No
h.	Estaño	Sí	No
i.	Ambiente polvoriento	Sí	No
j.	Solventes	Sí	No
k.	Algún otra sustancia o material peligroso	Sí	No

Describa las exposiciones peligrosas

_____

_____

4. ¿Tiene usted otro trabajo o un negocio aparte de éste?

_____

_____

5. ¿En qué ha trabajado antes?

_____

_____

6. ¿Qué le gusta hacer en su tiempo libre?

_____

_____

7.	¿Hizo servicio militar?	Sí	No
	Si la respuesta es “sí” ¿ha estado expuesto a agentes químicos o biológicos durante el entrenamiento o combate?	Sí	No
8.	¿Alguna vez ha trabajado en un equipo de HAZMAT (equipo de respuesta de emergencia a incidentes de materiales peligrosos)	Sí	No
9.	¿Está tomando alguna medicina que no haya mencionado en este cuestionario (tales como remedios caseros o medicinas que compra sin receta médica)?	Sí	No
10.	¿Va a usar algunas de las siguientes partes con su respirador?	Sí	No
	a. Filtros HEPA (filtro de alta eficiencia que remueve partículas tóxicas en la atmósfera)	Sí	No
	b. Canastillo (por ejemplo, máscara para gas)	Sí	No
	c. Cartuchos	Sí	No
11.	¿Cuántas veces espera usar un respirador?		
	a. Para salir de peligro solamente (no rescates)	Sí	No
	b. Rescates de emergencia solamente	Sí	No
	c. Menos de 5 horas por semana	Sí	No
	d. Menos de 2 horas por día	Sí	No
	e. 2 a 4 horas por día	Sí	No
	f. Más de 4 horas por día	Sí	No

12. ¿Durante el tiempo que tiene puesto el respirador su trabajo es…?

a. ***Ligero*** (menos de 200 kcal por hora) Sí No
Si la respuesta es "sí", cuánto tiempo dura la obra_____horas_____minutos
Ejemplos de trabajos ligeros: estar sentado escribiendo, escribir a máquina, diseñar, trabajar en la línea de montaje, o manejar de pie un taladro o máquinas

b. ***Moderado*** (200-350 kcal por hora) Sí No
Si la respuesta es "sí" cuánto tiempo dura en promedio por jornada____horas____minutos
Ejemplos de trabajo moderado: estar sentado clavando o archivando, manejar un camión o autobús en tráfico pesado, estar de pie taladrando, clavando, trabajando en la línea de montaje o transfiriendo una carga (de 35 libras) a la altura de la cintura; caminar sobre terreno plano a 2 millas por hora o bajar a 3 millas por hora; empujar una carretilla con una carga pesada (de 100 libras) sobre terreno plano.

c. ***Pesado*** (más de 350 kcal por hora):
Si la respuesta es "sí" cuánto tiempo dura en promedio por jornada____horas____minutos
Ejemplos de trabajo pesado: levantar cargas pesadas (más de 50 libras) desde el piso hasta la altura de la cintura o los hombros; trabajar cargando o descargando; traspalear; estar de pie trabajando de albañil o partiendo moldes; subir a 2 millas por hora; subir escaleras con una carga pesada (más de 50 libras).

13. ¿Va a estar usando ropa o equipo de protección cuando use el respirador? Sí No

Si la respuesta es "sí" describa qué va a estar usando
_____
_____

14. ¿Va a estar trabajando en condiciones calurosas?
(temperatura de más de 77 grados F)? Sí No

15. ¿Va a estar trabajando en condiciones húmedas? Sí No

16. Describa el tipo de trabajo que va a estar haciendo cuando use el respirador
_____
_____

17. Describa cualquier situación especial o peligrosa que pueda encontrar cuando esté usando el respirador (por ejemplo, espacios encerrados, gases que lo pueden matar, etc.)
_____
_____

18. Provea la siguiente información, si la sabe, por cada sustancia tóxica a la que vaya a estar expuesto cuando esté usando el respirador (o respiradores):

Nombre de la primera sustancia tóxica_____

Máximo nivel de exposición por jornada de trabajo_____

Tiempo de exposición por jornada_____

Nombre de la segunda sustancia tóxica_____

Máximo nivel de exposición por jornada de trabajo_____

Tiempo de exposición por jornada_____

Nombre de la tercera sustancia tóxica_____

Máximo nivel de exposición por jornada de trabajo_____

Tiempo de exposición por jornada_____

Nombre de cualquier sustancia tóxica a la que vaya a estar expuesto cuando tenga puesto el respirador_____

19. Describa alguna responsabilidad especial que vaya a tener cuando tenga puesto el respirador (o respiradores) que pueda afectar la seguridad o la vida de otros (por ejemplo, rescate, seguridad).

_____

EMPLOYEE INSTRUCTIONS FOR FILLING OUT RESPIRATOR MEDICAL EVALUATION QUESTIONNAIRE (MEQ)

Attached is a medical evaluation questionnaire for you to fill out. The OSHA standard requires that any employee who wears a respirator must be medically evaluated to ensure the safety and health of the employee. Your answers to this questionnaire will be kept confidential. Your employer does not have the right to view your answers.

A physician or licensed health care professional (PLHCP) will review the questionnaire. If you have any questions about the questionnaire or concerns about respirator use and your health, you can call the PLHCP _____ at (_____) -- (_____)

It is essential that you answer every question.
If you need assistance, please contact the PLHCP listed above.

If the PLHCP has any questions for you, s/he must be able to contact you. It is important that you include your home phone number and a time that you can be reached at home.

If you answer "yes" to any of the questions, please include any comments you might think important in helping the doctor evaluate your answers. (For example, if you have ever had pneumonia, note how long ago, or if you have high blood pressure, note if you are seeing a physician or taking medication to control it.) You can make notes near the question or on the back of the last page of this questionnaire.

The PLHCP may determine that a physical examination is necessary in order to better assess your ability to use a respirator. If so, your employer is required to provide you with a confidential medical examination at no cost to you.

The PLHCP will send a letter to you and your employer indicating if you are cleared for respirator use.

Thank you for your cooperation.

INSTRUCCIONES PARA LLENAR EL CUESTIONARIO DE EVALUACIÓN MÉDICA DE EMPLEADOS QUE USAN RESPIRADORES

Adjunto encontrará un cuestionario de evaluación médica para que lo llene. La norma de OSHA exige que cualquier empleado que vaya a utilizar un respirador, pase por una valoración médica para asegurar su salud y su seguridad. Las respuestas que dé en el cuestionario son confidenciales. Su empleador no tiene derecho de ver sus respuestas.

Un médico o un profesional médico autorizado (en inglés PLHCP) va a revisar el cuestionario. Si tiene alguna pregunta sobre el cuestionario o alguna inquietud sobre el uso del respirador y su salud, puede llamar al PLHCP
_____ al teléfono (_____) - _____.

Es muy importante que conteste todas las preguntas.
Si necesita ayuda, llame al PLHCP que se nombra arriba.

Si el PLHCP tiene alguna pregunta para usted, debe poder contactarlo. Es muy importante que incluya su número de teléfono y una hora a la que se le pueda llamar a su casa.

Si responde que "sí" a cualquiera de las preguntas, le agradeceríamos que nos dijera cualquier cosa que considere importante para ayudarle al médico a evaluar sus respuestas. (Por ejemplo, si le ha dado neumonía, diga hace cuánto tiempo le dió, o si tiene presión alta, diga si su médico se la está tratando o si está tomando medicamentos para la presión). Puede escribir notas cerca de la pregunta o en la parte de atrás de la última página de este cuestionario.

Es posible que el PLHCP determine que es necesario que usted se haga un examen físico para poder valorar mejor si usted puede usar un respirador. De ser así, su empleador deberá proporcionarle un examen médico confidencial sin costo para usted.

Si el PLHCP considera que usted está en capacidad de utilizar el respirador, le enviará una carta a usted y a su empleador para notificarle.

Muchas gracias por su cooperación.

Checklist 1: Suggested Respirator Training Topics

Topic	✓
General requirements of OSHA Respiratory Protection Standard	
Company respirator program; supervisor and worker responsibilities	
Crystalline silica hazards on site; specify tools and tasks *	
Health effects of crystalline silica dust exposure *	
Respirator selection (why respirators are necessary), which respirators are required for each task	
Limitation and capabilities of selected respirator type	
How the respirator works, including type of filter, how to put it on, and how to inspect it for defects; sealing surfaces, valves, straps, cartridges and filters	
Positive and negative pressure seal checks	
Review fit testing and brief explanation of exercises	
Cleaning, storage, maintenance, procedures and supplies	
Emergency procedures: what to do if respirator fails, leaks, or causes skin irritation	
How to maintain a good fit - facial hair policies, eyeglasses or any other personal protective equipment	
When to change filters and where to get new filters and parts	
Medical signs or symptoms that may effect respirator use; shortness of breath, dizziness	

*Crystalline silica dust hazard awareness training topics

Respirator Fit Test Record

Employee Information

Name: _____ Date of Birth: _____

Home Address: _____

Employer Information

Employer: _____ Site: _____

Address:: _____

Fit Test Information

Test Date:_____ Test method:(circle) Qualitative/Quantitative Test givers name:_____

1. Respirator: Brand: _____ Model # : _____ Size: _____

2. Respirator: Brand: _____ Model # : _____ Size: _____

Sensitivity check: how many sprays (10) (20) (30)

Preliminary Procedures	✓
Clean shaven	
Positive/Negative face seal check	

Fit Test Exercises *(one miute each)*	✓
Normal breathing	
Deep breathing	
Turn head side to side	
Moving head up and down	
Talking	
Jogging in place	
Normal breathing	

Pass Fit Test	**Fail Fit Test**

_____

Employee Signature

Checklist 2: Respirator Supplies

Item	✓
Spare respirator facepieces in various sizes (small, medium, large)	
Replacement 100 series (HEPA) filters (N/R/P)*: keep 2-4 week supply on hand	
Spare parts: valves, valve covers, straps	
Cleaning and sanitizing solutions, mild soaps, diluted disinfectant	
Respirator cleaning wipes for use in the field	
Respirator storage containers: heavy duty, ziplock bags or rigid plastic containers	

*N/R/P -100 designation indicate resistance to oil. N=not oil resistant /R = oil resistant /P=oil proof

Infosheet 2: Respirator Use Practices

- Use a respirator when performing any crystalline silica dust generating activity or if you are in an area where other workers are generating silica dust.
- Remain clean shaven when using a respirator.
- Inspect the respirator before each use. Do not use a defective respirator.
- Do positive and negative pressure seal checks every time you put on your respirator – at the beginning of the shift and after each break.
- Use P-100 (HEPA) filters. They're color-coded purple, pink, or red. Know where to get replacement filters.
- Change filters when they are difficult to breathe through, dirty, or damaged and in accordance with change-out schedule in the program.
- Keep your respirator clean.
- Store your respirator in a clean place when not in use.

Emergencies: If you detect leakage into the mask or skin irritation, leave the work area and deal with the problem.

Limitations: Respirators with P-100 filters will not protect you from solvents, paints, adhesives, other chemicals or in a low oxygen environment

Display this sheet where workers can easily see it.

SAMPLE RESPIRATOR RECORDS SUMMARY

Last Name	First Name	Date of Birth	Respirator Type/Size	Medical Clearance Date	Fit Tes Date	Training Date

Checklist 3: Evaluation of Site-Specific Respirator Program

Item		✓
Have any new silica dust disturbing tasks been added to project? Have exposures been evaluated?		
Are new employees receiving medical evaluation/fit testing /training in a timely manner?		
Selection	Have respirators been selected for these new tasks?	
	Ask workers if respirators:	
	• are comfortable	
	• are compatible with other personal protective equipment	
	• interfere with vision or communication	
Medical Clearance	Have all wearers been medically cleared to use respirators?	
	Have arrangements been made to complete outstanding evaluations?	
Training	Have all wearers been trained in respirator use in the past year?	
	Have arrangements been made to complete outstanding training?	
	Is training site-specific?	
Fit Testing	Have all wearers been fit tested in the past year?	
	Have plans been made to complete outstanding fit tests?	
Respirator Use	Are workers using their respirators when needed?	
	Are they wearing them correctly?	
Storage & Maintenance	Are respirators being properly cleaned, stored and maintained?	
	Are cleaning supplies available?	
	Are convenient and clean storage facilities available?	
Does the written program reflect changes to the program?		

Guide for Managing Safety Meetings for Crystalline Silica Hazards

Overview

This guide describes how to organize and run safety meetings at construction projects. It is especially written for silica projects but should also be useful for dealing with general worksite safety and health issues.

Why have Safety Meetings

- Bring people together to review current and up-coming silica safety issues on the site.
- Maintain good communications.
- Increase awareness of potential hazards.
- Solve problems.
- Keep track of progress

At some sites, safety meetings are formalized as safety and health committees.

- Health and safety committees, often with a labor-management structure are effective ways of maintaining management's commitment and labor's involvement in site safety and health.
- Safety meetings and committees also fulfill some OSHA requirements for accident prevention programs and are common requirements on OSHA Partnership Projects and Voluntary Protection Programs (VPP) sites.

The most successful safety meetings:

- Are attended by both management and labor/supervisors, safety officer foremen and shop stewards
- Are held regularly
- Follow an agenda
- Reinforce best health and safety practices
- Pinpoint problems and assign corrective actions
- Promote communication throughout the site
- Keep track of progress

Overview of the Guide

1. **Planning safety meetings**
   a) Assign a chairperson
   b) Decide who should attend
   c) Set up a schedule
   d) Write an agenda

2. **Running the Meetings**
   a) Designate action items
   b) Address follow- p items
   c) Take minutes

– This Guide will elaborate on these tasks –

Planning

SECTION 1

Who plans the weekly safety meeting

- Assign a safety chairperson to plan each safety meeting, write an agenda, and run the meeting.
- Make sure the chair is familiar with work activities and the health and safety issues related to the work.
- The chair can be the same person each week or meeting members can take turns running the safety meetings.

Who attends safety meetings

- People from each work area and trade
- The project manager, project engineer, safety officer, subcontractor representatives, supervisors, foremen and shop stewards
- People from areas or operations affected by the meeting topic.

What information will be covered in a safety meeting

- Action items: potential safety and health issues related to current or upcoming operations
- Outstanding safety issues
- Safety inspection reports
- Injury or accident reports and near misses
- Complaints/concerns
- Toolbox talks topics
- Follow-up items
- Feedback from weekly toolbox talks

When should safety meetings be scheduled?

- Set a regular day and time for safety meetings.
- Pick a time that is convenient for meeting members.
- Hold once a week, or less frequently, depending on the nature of the project.
- Keep meetings brief – 15 to 30 minutes.

Safety committees and meetings help project management involve supervisors, subcontractors, and workers in controlling silica hazards at the site.

Successful safety meetings rely on solid commitment from management and labor.

How to write a safety meeting agenda

- An agenda is a brief outline of the topics to be discussed at the meeting.
- The meeting chair is usually responsible for writing up the agenda and using it to keep the meeting on track.
- The agenda contains:
  - action items
  - follow-up actions
  - weekly toolbox talk topics
  - new business
  - announcements.

Action items are health and safety issues that need follow–up. Action items should be first on the agenda and described by the chair or by someone knowledgeable about the issue. It's important that each action item be assigned to someone with a time frame to complete it.

- Use the Safety Meeting Agenda Worksheet in Section 3.

Follow-up actions are responses to the action items and include the person(s) responsible for the follow-up and a date when the follow-up will be completed.

Weekly toolbox topics can be distributed and discussed briefly. Many projects coordinate toolbox topics with current operations or potential problems, for example, a toolbox talk on silica exposure on concrete barriers.

Safety Meeting Planning Checklist

Item	Comments	✓
Select the chair	Rotate between labor and management representatives; or assign a permanent chair	
Assign meeting members	Assign supervisors, foremen, subcontractors, and shop stewards to the safety meetings. Make sure that all project sectors are represented.	
Make an agenda	Use the agenda worksheet. Make copies for the meeting.	
Pick a time	Establish a regular day and time for the meeting.	
Pick a location	Use a space that is quiet and away from distracting activities. Meeting participants should be able to hear, ask questions, and participate in discussions.	

Running the Meeting

SECTION 2

Responsibilities of the Chair:

- Making sure that everyone has the agenda and any other materials needed for the meeting.
- Assigning someone to take meeting minutes.
- Calling the meeting to order on time.
- Following the agenda, keeping the meeting on track and resolving issues as they arise.
- Assuring that each action item is briefly discussed and someone is assigned to follow up for the next meeting.

Taking Minutes:

Meeting minutes should be taken to track progress of the safety program and keep track of action items and follow up. Meeting minutes should be brief and simple. Include the following:

- Meeting date/time
- Attendees (attach sign up sheet)
- Chair
- Action items: list
- Follow up actions: who, what, when
- Attach inspection and injury reports
- Toolbox topics
- New business

The Safety Meeting Agenda Worksheet can also be used to record the minutes of the meeting.

Members should eliminate distractions during the meeting, e.g. phone calls, other business

Safety Meeting Tips

- Encourage participation from all members of the group.
- Never make fun of any one and treat all comments seriously.
- Respond to all legitimate complaints and make a point to follow up.
- Safety meetings are a way to resolve issues and maintain good communication on the site. They are not meant to be gripe sessions.

Sample Safety Meeting Agenda Worksheet

SAFETY MEETING AGENDA WORKSHEET

Meeting date/time: 09/25/03	Meeting Chair: J. Brown
List action items	Follow-up actions; who; when
New Business	
Review Toolbox Talk for the Week	
Announcements	

Guide for Managing Toolbox Talks for Crystalline Silica Hazards

Overview

Toolbox Talks are a good and effective ways to communicate safe work practices for silica generating activities and to reinforce jobsite training. OSHA requires construction employers to have hazard communication and accident prevention programs that include worker training on hazard awareness and controls. Toolbox Talks help satisfy these requirements.

The most successful Toolbox Talks:

- Make the topic site specific
- Use actual examples from the site to illustrate the topic
- Involve workers in a brief discussion about the topic
- Reinforce best safety and health practices

Overview of the Guide

1. **Planning Toolbox Talks**
2. **Conducting Toolbox Talks**
3. **Toolbox Talks Topics and Worksheets**
   - Silica Health Effects
   - Silica Control Methods & Respirators
   - Silica Air Monitoring and Results

– This Guide will elaborate on these tasks –

Planning

SECTION 1

Who plans the Toolbox Talks

- Health & Safety Committee
- Company Health & Safety Department
- Site Health & Safety Officer

What to Plan

Planning the Toolbox Talk is straightforward. Remember the most important aspects of Toolbox Talks are selecting a topic related to current work activities and involving workers in a brief discussion.

- Do a quick inspection and focus on site conditions that illustrate the topic.
- Use the Planning Checklist below.
- See the Toolbox Talks for Silica worksheets in Section 3.
- Use these worksheets to prepare for each individual topic.
- Handout copies of the completed worksheet during the talk.

When to hold toolbox talks

- Meetings are generally held weekly but may be held more frequently.
- The meetings are brief – usually lasting 5 to 15 minutes.

Planning Checklist

Item	Comments	✓
Select the topic	Make sure it relates to the site; review site activities and conditions	
Prepare a Handout	Use the worksheets in Section 3 as examples. Add site specific activities and concerns to illustrate the topic, and discussion questions.	
Pick a Time	Establish a regular day and time, usually at the beginning of the shift.	
Pick a Location	Use a space that is quiet and away from distracting activities. Workers should be able to hear, ask questions, and participate in discussions.	
Inform Workers the Day Before	Time, place, topic	
Language	Be sure that all Toolbox Talks are given in words and a language that workers can understand. Use translators if needed.	

Toolbox Talks are required on many projects. They help workers keep up-to-date about work operations and related hazards.

Taking time to plan the Toolbox Talk results in maintaining good communication and reinforcing safe work practices.

Conducting Toolbox Talks

SECTION 2

Who should conduct the Toolbox Talks?

- Supervisors, foremen, and union stewards are the best people to help plan and deliver Toolbox Talks.
- Sometimes other people with a particular expertise or interest, like the company safety officer, project staff, industrial hygienist, or insurance representative may be recruited to lead a talk.

Use the completed worksheet for the talk. Read it directly or use the highlighted points as discussion starters. It's a matter of style. Some people are more comfortable reading the sheet and others like to use their own words. Use the filled in worksheet for a handout and encourage workers to participate. Be prepared to follow up on issues that arise. See the Toolbox Talk Tips below.

Toolbox Talks

- Adults learn best when the topic:
  - relates to what they do
  - gives them a chance to discuss the issues.
  - allows them to use what they have learned.
- Back up the Toolbox Talk with questions. Ask the group questions about the topic and conditions at the site. Give people a chance to answer.
- Ask about personal experience. What are the conditions at this site? Has this issue come up at other sites? How were any problems fixed?
- Encourage participation from the group but don't let a single person dominate. Wait till he/she catches their breath, say "Thank You" and move on.
- Never make fun of any one and treat all comments seriously.
- Respond to all legitimate complaints and make a point to follow up.
- If you don't know an answer - say so - make a note of the question and follow up.
- Allow a <u>little</u> time for general discussion, e.g. accidents or near misses. This is not a gripe session.

Topics and Worksheets

SECTION 3

This section contains four worksheets for Silica Toolbox Talks. Each worksheet contains general information on the topic, places to fill in site specific information, and suggested discussion questions. A suggested schedule for giving each topic is listed in the chart below. Keep in mind that Toolbox Talks are intended as updates and reminders – not as a replacement for training. All of these topics should be covered in the initial silica orientation training.

Topic	Schedule
Health Effects of Silica	Before silica work begins; repeat as needed
Silica Control Methods and Respirators	As controls and respirators are introduced at site; repeated as needed
Silica Air Monitoring and Results	Before and after air monitoring is done

TOOLBOX TALK WORK SHEET: HEALTH EFFECTS OF SILICA

Silica is a mineral naturally found in rock, gravel, sand, and dirt. Materials made from these things, like concrete, masonry, brick, and block, also contain silica. Silica is a hard crystalline material, sometimes called quartz. Don't confuse it with silicone which is a synthetic rubber product used in caulk, sealants, and adhesives.

Construction workers may be exposed to silica dust when they work with rock, concrete, masonry, and bricks.

Group question: On this site, what activities might generate silica dust?

List activities at this site that may expose workers to silica dust. (For example: chipping or drilling rock or concrete; sawing or grinding concrete and masonry; crushing rock or concrete)

Group question: Has anyone heard of silicosis?

Silicosis is a very serious lung disease caused by breathing silica dust.

- Silica dust causes scarring and damage in the lungs. It is a serious disease like emphysema.
- Miners, tunnel workers, sand blasters, and other construction workers are at risk for silicosis.
- Silicosis can occur after 10 or more years of exposure to silica dust.
- The disease is not often noticed in its early stages but eventually causes shortness of breath, fatigue, loss of appetite, chest pains, and lung failure.
- People with silicosis are more susceptible to tuberculosis and bronchitis.
- Smoking increases lung damage.
- Silicosis also increases the risk for lung cancer and can be fatal.

There are no medical tests for early detection and no treatment for silicosis so preventing exposure is very important.

Group question: How is silica dust controlled on this site?

List silica dust control methods and where they are required (For example: Water spray for drills, dust collectors on grinders, respirators for jack hammers)

If there is a dust control method for your work use it. If your work requires a respirator, wear it.

Group question: Does anyone have any questions or comments about silica exposures or control methods at the site?

TOOLBOX TALK WORKSHEET: SILICA CONTROL METHODS & RESPIRATORS

Some work activities on this site might result in high exposures to silica dust and fume.

Group question: What are the dust control methods used on this site?

List silica dust control methods on this site. (For example: water spraying for drilling, dust collector on grinder)

Group question: What jobs do you need to wear respirators for?

List silica jobs at this site that require a respirator (Example: Jack hammer: Half-face respirator)

Task	Respirator Selected

Respirator Reminders

- Always wear your respirator when doing silica work or working near others who are.
- Check the facepiece seal each time you put on the respirator. Do positive and negative pressure checks.
- Make sure you use P-100 filters (the pink ones). Get replacement filters and other spare parts from: _____.
- Change your filters whenever it is hard to breathe through them or if they are dirty or damaged.
- Keep your respirator clean. Wash it with warm soap and water and let it air dry. In the field, use respirator wipes. Each foreman has some at each gang box or respirator cleaning area.
- Store your respirator in a clean container when you are not using it. Sturdy plastic bags or rigid containers are best.
- Be clean shaven – this keeps a good seal between the face and the mask.
- If you have any problem with your respirator, report to your supervisor and get it fixed. Go to a clean area before you take off your respirator.
- Never wear a dust mask when doing silica tasks!

Group question? Does anyone have any questions or comments about silica controls on the site? Wet methods? Respirators? Are controls effective- if not why not? Any suggestions for additional controls.

TOOLBOX TALK WORKSHEET:
SILICA AIR MONITORING AND RESULTS

Air monitoring is the best way to evaluate worker exposure to silica dust. We will be doing air monitoring for the different tasks at this site from time to time.

- Air monitoring equipment includes a small air pump, tubing, and a filter.
- An industrial hygienist (IH) clips the pump to your belt and positions the filter on your upper chest. This is called a breathing zone sample.
- If the IH asks you to wear the pump, it is important to cooperate.
- The IH will advise you to work normally and will periodically check the pump. Sometimes the IH will change the filter.
- If the pump interferes with your work or the pump malfunctions, let the IH know.

The IH for this project is: _____

The first air monitoring date is: _____

These activities will be monitored: _____

Group questions: Has anyone here ever worn an air monitoring pump? Can you tell the group what it was like?

Air monitoring results.

- At the end of the shift, the IH will send the filter to a special laboratory.
- The lab will measure two things: the amount of total dust on the filter and the amount of silica dust.
- These results will be compared to the exposure limits for silica and dust.
- The results will be used to pick controls for the activity and to make sure that the right respirator is used.
- The lab usually takes 2-4 weeks to do the measurement and send the results.
- Individual results will be given to monitored workers.
- We will post the results and go over them in a Toolbox meeting when we get them.

Group question: Does anyone have any questions or comments about air monitoring on the site?

Resource List

The following list represents a sampling of information available on select topics presented in the Guides. It is not a definitive list, but if the user of the Guides cannot find the appropriate information, these web sites can be useful as a jump off point for further inquiries.

The listing of private companies should not be construed as an endorsement of those companies or their products. Such resources are meant only as a limited directory of products and services available in the marketplace.

General Information on Lead and Silica

OSHA has many publications that are useful for general background on lead and silica hazards and programs:

- Crystalline silica related publications
  http://www.osha-slc.gov/SLTC/silicacrystalline/index.html
- Lead publications http://www.osha-slc.gov/SLTC/lead/index.html
- Program highlights for various OSHA programs, including the Lead in Construction Standard (6 pages)
  http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=FACT_SHEETS&p_id=161

The Washington State Department of Labor and Industries Safety & Health Assessment & Research for Prevention (SHARP) publish a variety of information including information on lead exposure
http://www.lni.wa.gov/sharp/publications.htm#Lead

eLCOSH (The Electronic Library of Construction Occupational Safety and Health) provides information from a wide range of sources, in English, Spanish and other languages, for anyone interested in improving safety and health on the job for construction workers. http://www.cdc.gov/elcosh/index.html

Workers Compensation Board of British Columbia, Canada
http://construction.healthandsafetycentre.org/s/Home.asp

Training

Although there was no Guide on training, the need was mentioned throughout. Training on occupational health hazards, respirators, lead and silica health hazard controls are available in most parts of the country.

OSHA Office of Training & Education Training Resources:
http://www.osha.gov/fso/ote/training/training_resources.html

OSHA Training Institutes (OTI) Education Centers:
http://www.osha.gov/fso/ote/training/edcenters/edcenter_contact.html

NIOSH provides training through its Educational Resource Centers (ERCs) located around the U.S. ERCs provide classes on topics such as lead, respirators, construction safety and industrial hygiene.
http://www.niosh-erc.org/
Also available at 1-800-35 NIOSH.

Local organizations can often times be a resource for worker training classes. In New York City the Greater New York Safety Council offers free training classes on a variety of topics including respirators. http://www.emergencycorps.com/WCA092003.pdf

The Society for Protective Coatings (SSPC) is one of the leading organizations for coatings for steel structures, including lead paint. Their web site has a variety of information services including control options and lead paint abatement classes for supervisors and competent persons. http://www.sspc.org/training/default.html

Industrial Hygiene Services

The American Industrial Hygiene Association (AIHA) listing of local state chapters most of which have a list of consultant members, including web sites, telephone numbers and specialties:
http://www.aiha.org/LocalSections/html/lsontheweb-state.htm
AIHA consultants list by location and/or specialty
http://www.aiha.org/ConsultantsConsumers/html/consultantslist.asp

For links to International occupational health and safety sites: http://www.ohs.com.au/Sites/index.htm

Medical Services

Association of Occupational and Environmental Clinics www.aoec.org

New York State occupational health clinics http://www.health.state.ny.us/nysdoh/environ/occupate.htm

New Jersey Department of Health and Senior Services (NJDOHSS) provides a list of occupational physicians (New Jersey) http://www.state.nj.us/health/eoh/survweb/oemdlist.htm

Look to your local state DOH for similar listings.

Respirators

OSHA's Small Entity Compliance Guide for the Revised Respiratory Protection Program provides a wealth of information on the new standard in a readable format http://www.osha.gov/Publications/secgrev-current.pdf

Washington State Department of Labor offers listings of several respirator manufacturers addresses and web sites http://www.lni.wa.gov/wisha/p-ts/RespiratoryProtection/resp-man.htm

Respirator manufacturers offer training classes and a great deal of informational material:

- 3M http://www.3m.com/market/safety/ohes2/
- Bullard http://www.bullard.com/products/Resp/
- Moldex http://www.moldex.com/trainingresources.htm offers train the trainer classes

Equipment Distributors
National Safety Company located in Washington State a local distributor
http://www.nationalsafetyinc.com/index.htm

Lab Safety offers a full line of safety products www.labsafety.com

American EHS offers a line of safety products and training classes http://www.healthsafety.com/

Lead/Silica Abatement Contractors/Equipment
The Industrial Bluebook has a search engine for regional listings of lead paint testing/removal/abatement contractors
http://www.thebluebook.com/

Lead/silica abatement systems

- Pentex systems scabblers, wall walker, surface preparation system http://www.pentekusa.com/index.html
- Trelawny Surface Preparation Equipment, equipment manufacturer vacuum shrouded tools, HEPA vacuums http://www.trelawnyonline.com/home/
- CS United power tool manufacturer, vacuum shrouded masonry tools, HEPA vacuum http://www.csunitec.com/masonry/masonrytools.html

Toolbox Talks
The Center to Protect Workers Rights (CPWR) web site includes hazard alerts in English and Spanish,
http://www.cpwr.com/Hazardalert.htm

eLCOSH has training materials on many construction safety topics in English, Spanish and Creole
http://www.cdc.gov/elcosh/docs/training/materials.html

Labor Occupational Health Program, School of Public Health, University of California, Berkeley has downloadable tailgate trainings forms.
http://socrates.berkeley.edu/~lohp/Publications/Tailgate_Training/tailgate_training.html

NIOSH produces informative pamphlets on a variety of topics that can be accessed electronically or directly from NIOSH. The information can be adapted to toolbox talks.

- for instance Preventing Silicosis in Construction Workers http://www.cdc.gov/niosh/consilic.html
- Procedures for cleaning 1/2 face APRs http://www.cdc.gov/niosh/respcln.html
- Preventing Lead Poisoning in Construction Workers http://www.cdc.gov/niosh/91-116.html