

# Chapter 5

## Cutting Airborne Silica

⇒ ⇒ ⇒ **IF YOUR SHOP USES SILICA SAND, YOU SHOULD:**

⇒ Reduce the amount of the airborne silica in your shop.

Your first line of defense should be the elimination of silica sand as an abrasive.

**REFER TO APPENDICES I & II FOR INFORMATION ON NON-SILICA ABRASIVES.**

⇒ ***DETERMINE IF YOU CAN ELIMINATE SILICA SAND AS AN ABRASIVE MEDIA. If you CANNOT SUBSTITUTE a non-silica abrasive...***

⇒ **Develop a Health and Safety Program**

All employers should have a Health and Safety program. **Appendix VII** contains a sample health and safety program for General Industry and a Model Construction Safety Program developed by MIOSHA CET. *Construction employers are required by MIOSHA to have an accident prevention program.* In developing the health and safety program, you will identify the main areas of airborne silica dusts in your shop, review your work practices, and decide how to reduce or eliminate the exposures. You may make a plan yourself or get help from an industry expert, industrial hygienist (IH) or worker's compensation consultant.

⇒ ⇒ ⇒ **WHY ARE THESE STEPS IMPORTANT?**

The reduction or elimination of health and safety hazards is the primary goal of a health and safety program. Your first goal in your control of health hazards is the reduction or elimination of airborne, especially respirable silica. Elimination of silica dust requires the use of non-silica medias. If still using silica as an abrasive, several options exist to reduce the amount of airborne silica dusts: installing ventilation systems, using safer work practices, better personal hygiene practices, and by using blast rooms and cabinets. Pros and Cons of each of these options are discussed on subsequent pages.

*Please refer to:*  
***Appendix VII - MIOSHA Occupational Health  
Standard Part 523 – Abrasive Blasting***

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⇒ ⇒ ⇒ **OPTION: Installing a dust collection system.**

<u>PROS</u>	<u>CONS</u>
⇒ Gets silica dust out of the workplace before it can hurt you.	⇒ Expensive - usually ranging in cost from \$5,000 to \$30,000, depending on the type of collection system.
⇒ Systems can provide protection without slowing your work.	⇒ These systems remove heated or cooled air from inside the workplace to the outside, so your utility bills may increase.
⇒ Required, when feasible, under MIOSHA and OSHA regulations.	⇒ Equipment needs to be checked and maintained regularly.

⇒ ⇒ ⇒ **OPTION: Encouraging work practices that reduce airborne silica.**

<u>PROS</u>	<u>CONS</u>
⇒ Generally the cheapest way to reduce your silica exposure.	⇒ It will take time and energy to figure out how to do jobs more safely.
⇒ Focusing on how a job is done makes you and your coworkers more conscious of health and safety.	⇒ You and your coworkers will need training regarding any new work practices. You will need to be watchful and make sure the new practices are used.
⇒ Make sure you look at the personal hygiene aspects too.	

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### ⇒⇒⇒ STEPS TO DEVELOP A HEALTH AND SAFETY PROGRAM

#### Steps to Develop Health and Safety Program

#### What to Do

⇒ Develop **plan of action** that includes both Management and Employee involvement

⇒ Write Health and Safety policy statement  
⇒ Form Health and Safety Committee

⇒ **Designate person** to be responsible for the Health and Safety Program

⇒ Person selected must have:

- Authority to do the job
- Respect of both mgt and employees
- Knowledge of the facility and processes
- Time and resources to implement the program

⇒ **Determine Health and Safety requirements** for your facility

⇒ Where to find Health and Safety Information:

- MIOSHA laws, regulations and standards
- Product Literature
- Industry Publications
- MSDS
- Accident & Injury/Illness history

⇒ **Conduct a Workplace Hazard Assessment**

⇒ Identify and Evaluate:

- Existing and potential hazards which may affect worker health
- Activities that are likely to expose workers and others (include maintenance, cleaning, etc)
- Employee routes of and exposure levels
- Use of personal protective equipment
- Existing control systems – are they working?

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### Steps to Develop Health and Safety Program

⇒ **Correct/Control** identified Hazards

⇒ **Train** Employees

⇒ Schedule **periodic inspections**

⇒ **Re-evaluate program:** Up-to-date and effective?

### What to Do

⇒ Look at control methods that can eliminate/minimize the hazard:

- at the source (substitution, ventilation, enclosure, wet methods)
- at the air path to the worker (housekeeping, maintenance, ventilation)
- at the worker (respiratory protection, personal protective equipment, education and training)

⇒ New employee orientation

⇒ General safety training

⇒ Keep training records

⇒ H&S Committee effective?

⇒ Work procedures developed?

⇒ Training effective?

⇒ Any new hazards?

⇒ Control methods effective?

⇒ Any changes in the workplace?

⇒ On a periodic basis, evaluate the written program and determine if any changes are necessary

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⇒⇒⇒ **SO ... YOU HAVE DECIDED TO DETERMINE OF YOU CAN ELIMINATE SILICA SAND AS AN ABRASIVE AND SUBSTITUTE A NON-SILICA ABRASIVE...**

⇒ How do you proceed to switch from silica to a silica-free abrasive? **Develop a Silica Control Plan!**

⇒⇒⇒ **CONTROL PLAN**

**WHAT TO DO**

1. Decide whether you want an outside consultant from an industry specialist, industrial hygienist OR make plan yourself.	Abrasive media salespersons, MIOSHA CET, and industrial hygiene consultants can assist you in the substitution process
2. Choose which brands and types of medias you will purchase.	Shut other areas down and don't allow blasting in areas without equipment.
3. Decide where you will put dust collection systems and blast rooms/blast cabinets.	Use the outside consultants and your H&S Committee
4. List any work practices that need to be changed.	An employee training component will probably be necessary. New materials will be used and, perhaps, new work practices. The MIOSHA group and IH consultant can also assist you.
5. Make a schedule for buying and installing any new equipment you need.	Include in the schedule any other plans you have for making your workplace safer.
6. Put your plan in writing, including the schedule for getting everything done.	If you decide to work with a third party (industry expert, industrial hygienist) carefully review any plans they prepare for you. Document the implementation steps you complete
7. Let your employees know what your plans are.	Post the plan and accomplishments for everyone to see. Have a safety meeting, or describe your plans.
8. Keep copies of your Control Plan for your records.	Post the plan and schedule so everyone can see the changes that are coming in the future

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⇒⇒⇒ **NOTE:** The Silica Control Plan Decision Tree at the end of this section is another way of illustrating the concepts introduced on previous pages. Notice the formation of a health and Safety Committee is the first step in developing the Control Plan. The assistance, knowledge of operation, and support of Health and Safety Committee members will be valuable in the decision making process.

Some Pros and Cons of Step 1:

⇒⇒⇒ **Consult with an industrial hygienist.**

<u>PROS</u>	<u>CONS</u>
<ul style="list-style-type: none"> <li>⇒ If a third party industrial hygienist does air sampling in your shop, the development of a control plan may be included in the program.</li> <li>⇒ Likely to meet MIOSHA health and safety standards.</li> <li>⇒ Might save money if the industrial hygienist makes a more cost effective plan than you could on your own.</li> <li>⇒ Saves your time.</li> <li>⇒ Working with H&amp;S committee gives credibility and authenticity to the committee and your efforts to improve health and safety at your company.</li> </ul>	<ul style="list-style-type: none"> <li>⇒ Industrial hygienists can be expensive if they are private consultants. (Your worker's compensation provider may have free IH services. MIOSHA Onsite Consultation Section provides free assistance.)</li> </ul>

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⇒⇒⇒ **Make a plan yourself.**

<u>PROS</u>	<u>CONS</u>
<ul style="list-style-type: none"><li>⇒ Much cheaper</li><li>⇒ Will give you a good understanding of what needs to be done and the knowledge to accomplish your goals.</li><li>⇒ Working with H&amp;S Committee gives credibility and authenticity to the Committee and your efforts to improve health and safety at your company.</li></ul>	<ul style="list-style-type: none"><li>⇒ Takes time.</li><li>⇒ A plan you develop without professional help might not be as effective or comprehensive as it should.</li></ul>

NIOSH Alert “Preventing Silicosis and Deaths From Sandblasting” Publication No. 92-102 contains additional information about silicosis, control methods, and provides to reduce crystalline silica exposures in the workplace and prevent silicosis and silicosis-related deaths. This Alert is in Appendix IV and may be accessed via the Internet: [www.cdc.gov/niosh/92-102.html](http://www.cdc.gov/niosh/92-102.html).

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### **Notes**