CONNECTICUT DEPARTMENT OF LABOR
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GETTING STARTED WITH JOB HAZARD ANALYSIS

By David Boutin

The objective of a Job Hazard Analysis (JHA) is the prevention of injuries, illnesses and other losses. One of the keys to solving the JHA puzzle is understanding the situation; and then getting the employee to recognize that the environment that they are working in is dangerous.

Hazards exist in both General Industry and Construction but the hazard control methods are very often different. In General Industry, hazards exist but are usually consistently present and repetitive. Once they are evaluated and controlled, they often need little or no further effort. In construction the employee is working in an ever-changing environment and must cope with changing weather patterns and temperatures; construction vehicles and general public vehicle traffic hazards which must be managed; and other contractors. Employers need to frequently evaluate jobs, assess new hazards and incorporate controls, and communicate changes to employees.

Although OSHA uses the term JHA, there are other names that may also be used including Hazard Risk Assessment (HRA) and Job Safety Assessment (JSA). What you call it is not as important as creating it and using it. So what is a job hazard analysis? It is a technique that focuses on job tasks as a way to identify hazards before they occur. It focuses on the relationship between the worker, the task, the tools, and the work environment. Ideally, after you identify uncontrolled hazards, you will take steps to eliminate or reduce them to an acceptable risk level.

CREATING AN ASSESSMENT

OSHA provides a sample JHA in its Job Hazards Analysis booklet (OSHA 3071), but many formats can be found on the internet. Different styles may work better for some applications than others. Use a format that works for you.

The first step is to identify activities performed by the employees in your company. Break the activity into manageable steps and observe employees as they perform each step. Watch for and record tools, materials and work practices having potential to cause injury or illness. Review company first reports of injuries, incident investigation reports and insurance reports of frequent or expensive injuries and illnesses to help you identify additional hazards you may not have observed. You might also consider processes having one or more applicable OSHA standards. Establish at least one control to mitigate each identified hazard. When using assessments from other companies to identify hazards and corrective actions, always verify that the information is correct and effective before use. (*cont. on page 3*)

Can you find the hazards?

Try the Napo hazard hunt
(see page 5 for answers)

Napo is an original idea conceived by a small group of OSH communications professionals. For more information, go to http://www.napofilm.net/en/napos-films

Change is in the Air…Maybe
OSHA's Proposed Crystalline Silica Rule *By Brian Testut*

Cutting block without dust controls
Courtesy New Jersey Dept. of Healt

On September 12th, 2013 the Occupational Safety and Health Administration (OSHA) published a notice of proposed rulemaking to create two new standards: one for general industry and maritime and the other for construction to protect workers from Occupational Exposures to Respirable Crystalline Silica. These new standards propose the same permissible exposure limit (PEL) across all three industries: 50 micrograms per cubic meter of air (µg/m^3) as an 8-hour time weighted average. The current PELs vary between industries and date back to 1971. Currently the permissible exposure limit for respirable crystalline silica [quartz] in construction and shipyards is more than double the concentration allowed in general industry; placing the majority of at risk workers (nearly 85% of the occupationally exposed population works in the construction industry) at levels 2.5 times higher than levels deemed hazardous within the general industry.

Listed below are some of the key changes within the standard.

A. The proposed Permissible Exposure Limit (PEL) would eliminate the obsolete analytical method of particle counting while providing a higher level of protection for workers.
B. Requires exposure assessment for employees who are or reasonably expected to be over the action level of 25µg/m^3.
C. Mandates recordkeeping for air monitoring data, objective data and medical surveillance.
D. Provides two options for compliance under the Construction Standard based on the task-specific activities.

Reducing the Permissible Exposure Limit (PEL)

Current PEL by Industry		Proposed PEL
General Industry	Quartz (Respirable Silica) *100µg/m^3	Respirable Crystalline Silica 50µg/m^3
Construction	Quartz (Respirable Silica) *250µg/m^3	Respirable Crystalline Silica 50µg/m^3
Shipyard	Quartz (Respirable Silica) *250µg/m^3	Respirable Crystalline Silica 50µg/m^3

*Based on OSHA-approved conversion formula from particle counting to µg/m^3.

At the time this article was published the proposed rulemaking process was in the extended post-hearing comment period. Further information on the status of this rule can be found by visiting the Occupational Safety & Health Administration, Crystalline Silica Rulemaking webpage: http://www.osha.gov/silica/index.html

The final rule is still several years away. However, employers and employees need to be aware of current requirements and best practices to control exposures to crystalline silica.

What is crystalline silica? Crystalline silica is made from silicon and oxygen, the two most common elements of the earth's crust. Quartz is the most prevalent form of crystalline silica and is found throughout the world in soil, sand, granite and several other minerals. Many construction and building materials contain crystalline silica. When dust is generated due to cutting, drilling, mixing, sanding or other mechanical processes workers can be exposed.

Cristobalite is another form of crystalline silica typically found in volcanic rock. It's abundance in nature is limited to geographic regions including deserts, recent volcanic eruptions and mine dumps. Additionally, cristobalite forms when quartz is heated to 450°C or higher in processes including refractory brick and diatomaceous earth production and ceramic and pottery manufacturing.

Why is crystalline silica hazardous? Workers who inhale very small particles (respirable dust) of crystalline silica can develop silicosis, a noncancerous incurable lung disease that causes scarring of the lung tissue. This scarring causes the lungs to become rigid, making it difficult to breath: increasing the risk of developing chronic obstructive pulmonary disease (COPD) and lung infections such as tuberculosis. Exposures to respirable silica have also been linked to an increase risk of kidney disease.

Three types of silicosis exist: chronic, accelerated and acute. All three classifications of silicosis result from the inhalation of respirable crystalline silica; however the duration and concentration of exposures define the type of disease.

(*cont. on page 3)*

When applying water to the blade, exposures of handheld saw operators to silica are considerably reduced. Photo courtesy of OSHA.

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Silica Rule (*Cont. from page 2)*

Types of Silicosis

- **Chronic silicosis**, the most common type of silicosis, usually occurs after 10 or more years of exposure to crystalline silica at low concentrations.
- **Accelerated silicosis** occurs 5 to 10 years after exposure and is caused by exposure to higher concentrations of crystalline silica.
- **Acute silicosis** can occur after only weeks or months of exposure to very high concentrations of crystalline silica. Acute silicosis progresses rapidly and can be fatal within months.

In 1996, the International Agency for Research on Cancer [IARC] which evaluates the risk of cancer development from chemical exposures amended its previous evaluation of respirable crystalline silica and classified such exposures as "carcinogenic to humans". This classification, identified as Group 1 is reserved for those substances for which sufficient evidence of carcinogenicity in humans has been found. This change in classification further supports OSHA's proposal for reducing the permissible exposure limit.

What activities are associated with silica exposure? The majority of exposures occur in the Construction industry when workers cut, grind, crush, mix, sand or drill silica-containing materials including concrete, asphalt, brick, ceramic tile, mortar, and decorative stones. General Industry workers can be exposed when performing brick, concrete and pottery manufacturing. Operations using industrial sand products, such as in foundries, sand blasting, and hydraulic fracturing (fracking) pose a significant exposure risk to employees.

How can employers protect their employees from silica exposures? Preventing crystalline silica from becoming airborne is the most effective method for reducing exposures to respirable silica. Several engineering controls exist to capture or control dust generated from processes performed with or on silica containing materials. These include water sprays, vacuum attachments and enclosures for stationary processes. Proper respiratory protection, filtering facepieces, half-face or full-face respirators with particulate cartridges based on exposure assessments, must be utilized until effective engineering controls are in place. Substituting silica-containing materials with less hazardous products, when feasible can eliminate silica exposures.

How can I find out more about protecting workers from respirable crystalline silica exposures?

OSHA, Health & Topic Page Crystalline Silica
https://www.osha.gov/dsg/topics/silicacrystalline/index.html

OSHA, E-Tool Silica Advisor
https://www.osha.gov/dsg/etools/silica/index.html

National Institute for Occupational Safety and Health (NIOSH), Workplace Safety and Health Topics – Silica
http://www.cdc.gov/niosh/topics/silica/

Job Hazard Analysis (*cont. from page 1)*

USING THE ASSESSMENT

Having an assessment is only part of the process, you must also share the information with your employees. Review the JHA with each person that will perform the task and with new employees as they are assigned to the task. When an assessed activity is performed at new location, use the assessment as an aid to identify hazardous site conditions and assure controls are applied. If new hazards are identified during the site assessment, record them on the JHA and assure that an appropriate control is implemented. Assure the JHA is revised as necessary to address the new hazards and changes communicated to affected employees. Periodically review the assessment with employees to maintain awareness.

ADDRESSING CHANGING CONDITIONS

These days, change is inevitable, so assessments should be evaluated regularly to assure changes are addressed. Review injury and illness reports for related incidents and assure any gaps or deficiencies are addressed by the assessment. Where the process and work area stay the same, a JHA may still need revision to address regulatory changes or availability of new technology. Always communicate JHA revisions to affected employees.

Fatality & Casualty Reporting

State & Town: CONN-OSHA (860) 263-6946 (local) or 1-866-241-4060 (toll-free)
Private Employers: Report to Federal OSHA at 1-800-321-OSHA(6742)

Hazard Corner….Silica in Construction

Silica is a naturally-occurring mineral compound that occurs in both crystalline and non-crystalline (or amorphous) forms. The crystalline forms (quartz, cristobalite and tridymite) are significantly more hazardous than the amorphous forms. Exposure to fine particles of crystalline silica has been shown to cause silicosis, a serious and sometimes fatal lung disease. Construction employees who inhale fine particles of crystalline silica may be at risk of developing this disease. Employees produce dusts containing crystalline silica when they cut, grind, crush, or drill construction materials such as concrete, masonry, tile and rock. The small particles easily become suspended in the air and, when inhaled, penetrate deep into employees' lungs. Jobs in construction with high crystalline silica exposures include tunnel and road construction; excavation and earth moving; masonry and concrete work; demolition and sandblasting.

Construction employers should use the following strategies to reduce their employees' exposure to respirable crystalline silica:

- Recognize when silica dust may be generated and plan ahead to eliminate or control the dust at the source. Awareness and planning are keys to the prevention of silicosis.
- Substitute less hazardous materials. Do not use silica sand or other substances containing more than 1% crystalline silica as abrasive blasting materials.
- Use "best practice" engineering controls and containment methods such as blast-cleaning machines and cabinets, wet drilling, or wet sawing of silica-containing materials to control the hazard and protect adjacent workers from exposure. Routinely maintain dust control systems to keep them in good working order.
- Instruct employees to use good work practices such as avoiding dry sweeping and minimizing the use of compressed air.
- Provide appropriate respiratory protection when controls cannot keep silica exposures below permissible limits.
- Teach workers about the health effects and exposure control strategies for crystalline silica.

Reducing and ultimately eliminating the incidence of occupational silicosis has been one of OSHA's primary goals since its inception. OSHA has launched regional and national emphasis programs to address elevated silica exposures in the construction industry. OSHA has issued a "Notice of Proposed Rulemaking" for Respirable Crystalline Silica. Additional information on crystalline silica can be found on OSHA's website:

https://www.osha.gov/dsg/topics/silicacrystalline/index.html or by calling our office (860-263-6900).

When applying water to the blade of the handheld masonry saw, exposures to silica are considerably reduced. (Photo courtesy of OSHA.)

Employee operating a handheld masonry saw without the use of appropriate dust controls. (Photo courtesy of OSHA.)

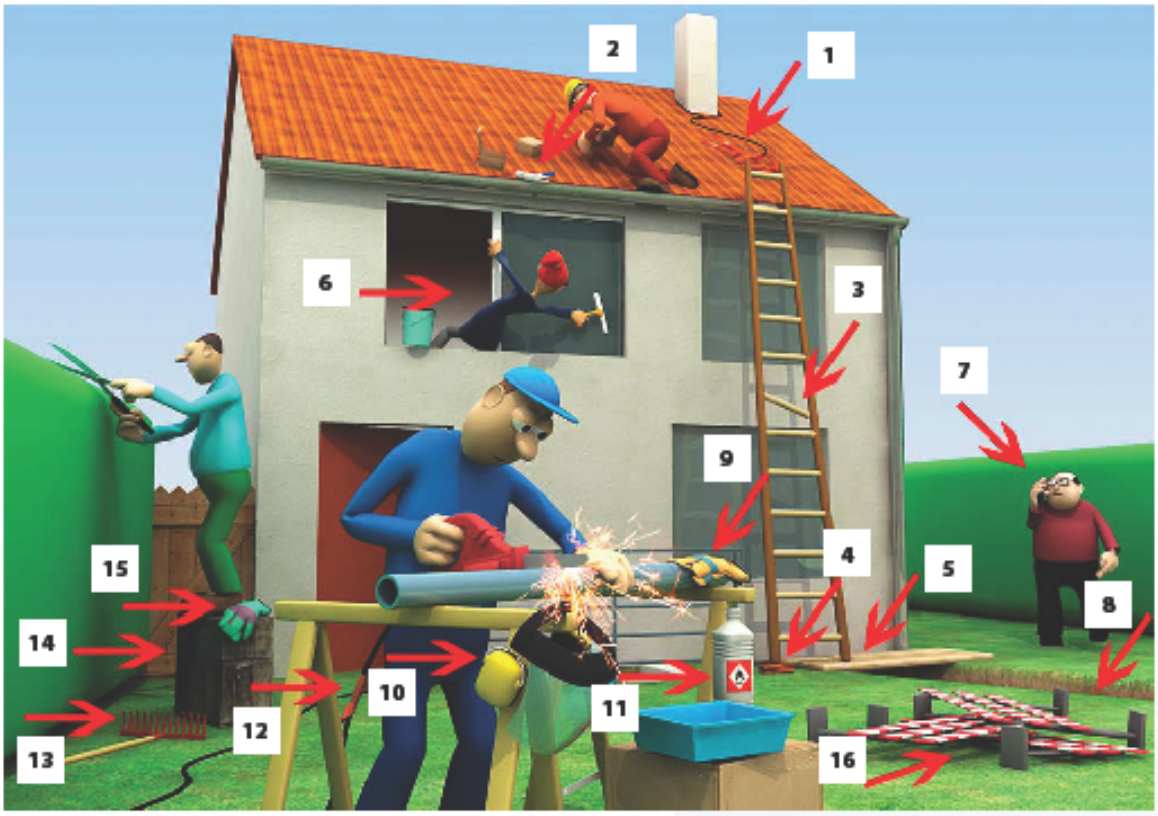
CONN-OSHA~ Training Update…

Ergonomics ***September 10, 2014, from 10:00 a.m. to noon*** This session will help attendees develop a process for recognizing and quantifying risks, creating cost-effective solutions, and documenting the effectiveness.

Breakfast Roundtable This discussion group meets the third Tuesday of every month from 8:15 am to 9:45 am. Pre-registration is required. Visit our web page for more information: http://www.ctdol.state.ct.us/osha/Breakfast/index.htm To be placed on the e-mail distribution list, contact John Able at able.john@dol.gov

Classes are free and are held at 200 Folly Brook Boulevard, Wethersfield, CT in Conference Room A/B (unless otherwise noted). To register, contact Catherine Zinsser at zinsser.catherine@dol.gov. Pre-registration is required. A Photo I.D. is also required to allow entry into a public building. For more training information, visit the CONN-OSHA web site www.ConnOsha.com

Hazard House: SOLUTIONS



1) Worker on roof (not harnessed), harness tied to the chimney which is not a proper anchor point.
2) Tools balancing on roof – likely to fall.
3) Rung broken on ladder – risk of falling.
4) Ladder balanced on uneven surface – risk of falling.
5) Ladder propped across another uneven surface – risk of falling.
6) Napette (not harnessed) leaning out of window to clean it – risk of falling.
7) Boss on phone on construction site. His attention is diverted and he will not identify hazards as easily.
8) Ditch (trip hazard) not marked.
9) Napo not wearing the available protective gloves.
10) Napo not using the protective hearing equipment available.
11) Sparks near to flammable liquid – risk of fire.
12) Cable is a trip hazard (repaired with adhesive tape).
13) Trip hazard with the tool (rake) left on floor.
14) Balancing on wooden box instead of using a proper leader – risk of falling.
15) Not wearing the available protective gloves.
16) Trip hazard left in middle of lawn.

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