

OSHA Safety Training

Health Hazards in Construction, Noise and Hearing Conservation, and Silica



It is important that safety and health programs contain provisions to protect workers from health hazards, including those presented by toxic or hazardous chemicals, elevated levels of occupational noise, and crystalline silica dust (a byproduct of operations in which quartz is ground into an airborne inhalant). Here, we give an overview of the major points covered in the module named above.

Health Hazards in Construction

OSHA's construction industry safety standards for Hazard Communication (*29 Code of Federal Regulations, Subpart Z, Toxic and Hazardous Substances, 1910.1200*) outlines systems and procedures meant to protect employees from the deleterious effects of hazardous chemicals.

"Chemicals pose a wide range of health hazards (such as irritation, sensitization, and carcinogenicity) and physical hazards (such as flammability, corrosion, and reactivity). OSHA's Hazard Communication Standard (HCS) is designed to ensure that information about these hazards and associated protective measures is disseminated."

Source: OSHA; *What is Hazard Communication*
<http://www.osha.gov/SLTC/hazardcommunications/whatishazcom.html>

The key elements of a standard chemical hazard communication program are:

Labeling and Other Warnings - All chemicals in the workplace have to be labeled! The name of the chemical, the manufacturer's name and address (or that of the source of the sale), and any hazards it presents are required to be listed on the label. Warning information such as symbols, pictures (such as a skull for poison), etc. must be present, and the labels must be in English and clear and easy-to-read.

Safety Data Sheets - A readily available document that pinpoints crucial information about a material, including any health and/or physical hazards associated with it.

Hazard Determination - The process of evaluating available scientific evidence to determine if a chemical is hazardous pursuant to the HCS. This evaluation identifies both physical hazards (e.g., flammability or reactivity) and health hazards (e.g., carcinogenicity or sensitization). The hazard determination provides the basis for the hazard information that is provided in SDSs, labels, and employee training."

Employee Information and Training - Employers must provide employees with effective information and training on hazardous chemicals in their work area at the time of their initial assignment, and whenever a new physical or health hazard employees have not previously been trained about is introduced into their work area.

Written Hazard Communication Program - requires that employers fully document the actions taken to comply with all of the provisions of the standard and to list the person(s) responsible for each area of the program. A copy of the written program must be made available, upon request, to all employees and OSHA officials.

Trade Secrets – A chemical manufacturer may withhold the chemical identity, including the chemical name and other specific information, from the SDS. In certain circumstances, however (such as an accident involving the chemical), this secret information must be disclosed to health care professionals or designated employees or representatives.

Noise and Hearing Conservation

Occupational noise – distracting and/or intrusive unwanted sound - is among the most pervasive occupational health problems, particularly in a field such as construction or manufacturing. **Hearing protection measures are necessary when the level of noise over an 8-hour time-weighted average is 85 dB or higher.**

OSHA's hearing conservation program is designed to protect workers with significant occupational noise exposures. You should not suffer hearing impairment from your job, even if you are subject to high noise over your entire working lifetime. The following components are the most important points in a successful hearing conservation program:

- Monitoring
- Engineering and administrative controls
- Audiometric testing
- Hearing protection
- Employee participation

The following steps should be taken in any monitoring procedure:

- Monitoring should be done at any site where noise exposure might be a problem, and should be repeated if changes at the site might increase the noise exposure.
- The monitoring process must be done during a normal workday, and workers may observe the process if they wish.
- The results of the monitoring should be made available to the employees as soon as possible, and should be in a format which can be easily understood.

Engineering and administrative controls are the first two steps toward resolving hazardous situations: remove the hazard if possible, and if not, then remove the worker from the situation (the third step is employing personal protective equipment (PPE) to minimize the remaining risks).

Your employer has to establish and maintain an audiometric testing program, which must be available free of charge to anyone exposed to 85 dB or more in an 8-hour (TWA) shift. There are several important elements of a testing program:

- Baseline audiograms
- Annual audiograms
- Follow-up procedures

Some types of hearing protection include:

- **Single-use earplugs** are made of waxed cotton, foam, silicone rubber or fiberglass wool. They are self-forming and, when properly inserted, they work as well as most molded earplugs.
- **Pre-formed or molded earplugs** have to be fitted for you by a professional, and can be disposable or reusable. Reusable plugs should be cleaned after each use.
- **Earmuffs** require a perfect seal around the ear. Glasses, facial hair, long hair or facial movements such as chewing can reduce the protective value of earmuffs.

Employers must provide their employees with a selection of at least one kind of ear plug and at least one type of earmuff. Workers should decide, preferably with the help of someone trained in OSHA-compliant hearing protection, which size and type of protection is most suitable for their work environment.

Silica

Crystalline silica is a common substance that is the main component of sand, quartz and granite rock. Occupational exposure to crystalline silica dust has long been known to produce silicosis, a dust disease of the lung.

Silica dust is produced during sandblasting, rock drilling, jack hammering, foundry work, stonecutting, quarrying, brick and concrete cutting and sawing, gunite operations, and many more procedures. But perhaps the most familiar use of quartz sand is as an abrasive blasting agent to remove surface coatings – particularly on bridges and concrete structures – prior to repainting or treating.

Silicosis is classified into three types: chronic /classic, accelerated, and acute.

Chronic/classic silicosis, the most common, occurs after 15–20 years of moderate to low exposures to respirable crystalline silica. Symptoms may or may not be obvious, so workers should have a chest x-ray to see if there is lung damage. As the illness progresses, shortness of breath upon exercising and clinical signs of poor oxygen/carbon dioxide exchange may become evident. In the later stages, fatigue, extreme shortness of breath, chest pain, or respiratory failure can occur.

Accelerated silicosis can occur after 5–10 years of high exposures to respirable crystalline silica. Symptoms include severe shortness of breath, weakness, and weight loss. The onset of symptoms takes longer than in acute silicosis.

Acute silicosis occurs after a few months or as long as 2 years following exposures to extremely high concentrations of respirable crystalline silica. Symptoms of acute silicosis include severe disabling shortness of breath, weakness, and weight loss, which often leads to death.

How Can You Protect Yourself?

- Replace crystalline silica materials with safer substitutes, whenever possible.
- Use all available work practices to control dust exposures, such as water sprays.
- Wear only a N95 NIOSH certified respirator, if respirator protection is required.
- Wear only a Type CE abrasive-blast supplied-air respirator for abrasive blasting.
- Wear disposable or washable work clothes and shower if facilities are available.
- Do not eat, drink, smoke, or apply cosmetics in areas where crystalline silica dust is present.
- Provide engineering or administrative controls, where feasible, such as local exhaust ventilation, and blasting cabinets.