NCDOL INDUSTRY ALERT
Division of Occupational Safety and Health

NCDOL Revises Health Hazards Emphasis Program

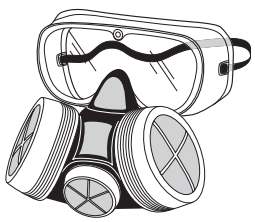
In 2006, the N.C. Department of Labor launched a health hazard special emphasis program for several chemicals that can have serious health effects: lead, silica, asbestos, isocyanates and styrene. As part of the emphasis program, OSH increased the number of inspections in industries that may use these chemicals. The department revised the health hazards special emphasis program effective Oct. 1, 2008, to remove styrene and to add chromium (VI). The following is a brief summary of those chemicals and their effects. If your company has a process that includes one or more of these chemicals, please familiarize yourself with—and consider taking advantage of—some of the resources available to help you eliminate these hazards.

Lead is a heavy metal that is highly toxic to humans and a leading cause of workplace illness. The U.S. Occupational Safety and Health Administration has set as a high priority the elimination of lead hazards in the workplace. Occupational exposure often occurs when air contaminated with lead dust or fumes is inhaled and absorbed in the body. Lead also can be absorbed through the digestive system if ingested. Although lead inhalation is more common, ingestion is most likely to occur when handling food, cigarettes, chewing tobacco or make-up with hands contaminated with lead dust. Chronic overexposure to lead may result in severe damage to the blood-forming, nervous, urinary and reproductive systems. In most cases, exposed employees will not become symptomatic until the degree of poisoning has been extensive and has caused permanent damage. General procedures for particulate control can be used to help reduce exposure to lead. Particular attention should be paid to housekeeping and hygiene practices as specified in OSHA standard *29 CFR 1910.1025* and *29 CFR 1926.62*. Additional information on hazard recognition and control can be found at **www.osha.gov/SLTC/lead/**.

At least 1.7 million U.S. workers are exposed to respirable crystalline **silica** in a variety of industries. The most severe exposure to crystalline silica results from abrasive blasting, which is done to clean and smooth irregularities from molds, jewelry and foundry castings, to finish tombstones, to etch or frost glass, or to remove paint, oils, rust or dirt from objects that are going to be repainted or need other treatment. Exposure to silica dust also occurs in cement and brick manufacturing, asphalt pavement manufacturing, china and ceramic manufacturing, and the tool and die, steel and foundry industries. Crystalline silica is used in manufacturing, household abrasives, adhesives, paints, soaps and glass. Silicosis, an irreversible but preventable disease, is the illness most closely associated with occupational exposure to the material, which also is known as silica dust. Occupational exposure to respirable crystalline silica is associated with the development of silicosis, lung cancer, pulmonary tuberculosis and airways diseases. Exposure may also be related to the development of autoimmune disorders, chronic renal disease and other adverse health effects. Permissible exposure limits can be found in *29 CFR 1910.1000 Table Z-3* and *29 CFR 1926.55 Appendix A*. Additional information on hazard recognition and control, such as the following list, can be found at **www.osha.gov/SLTC/silicacrystalline/**.

What can employers/employees do to protect against exposure to crystalline silica?

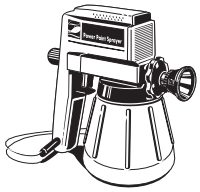
- Replace crystalline silica materials with safer substitutes whenever possible.
- Provide engineering or administrative controls, where feasible, such as local exhaust ventilation and blasting cabinets. Where necessary to reduce exposure below the permissible exposure level (PEL), use protective equipment or other protective measures.
- Use all available work practices to control dust exposure, such as water sprays.
- Wear only a N95 NIOSH certified respirator if respirator protection is required. Do not alter the respirator. Do not wear a tight-fitting respirator with a beard or mustache that prevents a good seal between the respirator and the face.
- 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. Vacuum the dust from your clothes, or change into clean clothing before leaving the work site.
- Participate in training, exposure monitoring, and health screening and surveillance programs to monitor any adverse health effects caused by crystalline silica exposure.
- Be aware of the operations and job tasks creating crystalline silica exposure in your workplace environment, and know how to protect yourself.
- Be aware of the health hazards related to exposure to crystalline silica. Smoking adds to the lung damage caused by silica exposure.
- Do not eat, drink, smoke or apply cosmetics in areas where crystalline silica dust is present. Wash your hands and face outside of dusty areas before performing any of these activities.



An estimated 1.3 million employees in construction and general industry face significant **asbestos** exposure on the job. Heaviest exposure occurs in the construction industry, particularly during the removal of asbestos during renovation or demolition. Employees are also likely to be exposed during the manufacture of asbestos products

(such as textiles, friction products, insulation and other building materials) and during automotive brake and clutch repair work. Asbestos is well-recognized as a health hazard and is regulated by OSHA and the U.S. Environmental Protection Agency. Controlling exposure to asbestos can be done through engineering controls, administrative actions and personal protective equipment. Engineering controls include such steps as isolating the source and using ventilation systems. Administrative actions include limiting the workers' exposure time and providing showers. Personal protective equipment includes wearing the proper respiratory protection and clothing. OSHA standards *29 CFR 1910.1001* and *29 CFR 1926.1101* provide information on hazard recognition and controls in general industry and construction, respectively. Additional information can be found at **www.osha.gov/SLTC/asbestos/**.

Isocyanates are compounds containing the isocyanate group (-NCO). Isocyanates react with compounds containing alcohol (hydroxyl) groups to produce polyurethane polymers, which are components of polyurethane foams, thermoplastic elastomers, spandex fibers and polyurethane paints. Isocyanates are the raw materials used for all polyurethane products. Jobs that may involve exposure to isocyanates include painting, foam-blowing, and the manufacture of many products, such as chemicals, polyurethane foam, insulation materials, surface coatings, car seats, furniture, foam mattresses, under-carpet padding, packaging materials, shoes, laminated fabrics, polyurethane rubber, adhesives and other polyurethane products. Health effects of isocyanate exposure include irritation of skin and mucous membranes, chest tightness, and difficulty breathing. Isocyanates are classified as potential human carcinogens and are known to cause cancer in animals. The main effects of overexposure are occupational asthma and other lung problems, as well as irritation of the eyes, nose, throat and skin. Isocyanate is a chemical type. Specific isocyanates have different exposure limits. For example, Toluene-2,4-diisocyanate (TDI) has a ceiling limit of 0.02 ppm or 0.14 mg/m^3. Methylene bisphenyl isocyanate (MDI) has a ceiling limit of 0.02 ppm or 0.2 mg/m^3, and methyl isocyanate has a PEL of 0.02 ppm or 0.05 mg/m^3 and has a skin designation, signifying the need to use proper hand protection. Some of these limits are located in *29 CFR 1926.55 Appendix A* and *29 CFR 1910.1000 Table Z-1*, while others are located in the N.C. Administrative Code, *13 NCAC 07F.0101(4) (state-specific PEL table)*. Employers must provide a working environment with exposure below established safe limits, preferably eliminating hazardous exposure altogether. Additional information on hazard recognition and control can be found at **www.osha.gov/SLTC/isocyanates/**.



Chromium VI (CrVI) compounds, often called hexavalent chromium, exist in several forms. Industrial uses of hexavalent chromium compounds include chromate pigments in dyes, paints, inks and plastics; chromates added as anticorrosive agents to paints, primers and other surface coatings; and chromic acid electroplated onto metal parts to provide a decorative or protective coating. Hexavalent chromium can also be formed when performing "hot work" such as welding on stainless steel or melting chromium metal. In these situations the chromium is not originally hexavalent, but the high temperatures involved in the process result in oxidation that converts the chromium to a hexavalent state. Workers who breathe hexavalent chromium compounds at their jobs for many years may be at increased risk of developing lung cancer. Breathing high levels of hexavalent chromium can irritate or damage the nose, throat and lungs. Irritation or damage to the eyes and skin can occur if hexavalent chromium contacts these organs in high concentrations or for a prolonged period of time. Controlling exposure to hexavalent chromium can be done through engineering controls, administrative actions and personal protective equipment. Engineering controls include isolating the source and using ventilation systems. Administrative actions include limiting the workers' exposure time and providing showers. Personal protective equipment includes wearing the proper respiratory protection and clothing. OSHA standards *29 CFR 1910.1026* and *29 CFR 1926.1126* provide information on hazard recognition and controls in general industry and construction, respectively. Additional information can be found at: **www.osha.gov/SLTC/hexavalentchromium**.

Main information resource ***www.osha.gov***.

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