



Occupational Diseases

Chapter 6

6-1 GENERAL

Most occupational diseases do not develop from occasional exposure; they result from long and continuous exposure to a specific health hazard. Workers engaged in occupations where health hazards may exist should be examined by appropriate medical personnel when necessary and as regulatory requirements prescribe.

In many states, certain occupational diseases are compensable under state compensation laws. Technical and research bureaus, as well as Federal and state agencies, are giving increased attention to the study and determination of the various types and classes of occupational diseases.

Exposure to an occupational disease should be regarded as seriously as other job hazards. Every effort should be made to control disease producing hazards. Close attention should also be given to OSHA requirements governing worker exposure to toxic substances, especially where OSHA has issued a standard addressing a specific substance.

EXPOSURE

Silica Dust

Compressed Air
Carbon Monoxide

Metal (Toxic)

Chemicals (Dermatitis)

Chemical Fumes

Asbestos Dust

SAMPLES OF SOME TYPES OF WORK THAT COULD CAUSE EXPOSURE

Tunneling, sandblasting, grinding, sand and gravel pit operations, brick and stone cutting.

Tunnel and caisson work.

Garages, tunneling, heating, and internal combustion processes.

Painting, plumbing, glazing, working around lead, cadmium, zinc, copper chromates, and/or nickel.

Working around cutting oils, creosote, emulsions, lime, acids, cement, concrete, paints, and solvents.

Working around hot tar, asphalt pitch, TDI (polyurethane foam), and painting.

Demolition, remodeling and asbestos removal.

6-2 SILICA DUST

Silica dust may be produced by the following operations:

Tunneling, Pitwork, and Quarry Operations

- Drilling
- Blasting
- Mucking
- Shoveling and screening dry sand and gravel
- Rock crushing

Miscellaneous Operations

- Sandblasting
- Grinding
- Cleaning
- Refractory brick cutting
- Stone cutting
- Concrete repairs

Preventive Measures:

Drilling

- Keep drills sharp. A dull drill tends to pulverize the rock and create more dust.
- Use wet drilling wherever practicable.
- In dry drilling install a dust collection system that will trap the dust around the drill shank at the surface of the rock.
- Provide appropriate NIOSH/MSHA approved respirators and filters and require drill operators to wear them when exposed to silica dust.

Blasting

- Perform blasting operations outside of regular working shifts whenever possible. Clear the work area of dust before workers return.
- Before blasting, wet down tunnel walls and floors, or ground surfaces in the immediate area of the blast to reduce the amount of dust produced by the blast.

Mucking, Loading Cars or Trucks From Chutes, and/or Rock Crushing

- Wherever practical, moisten material to be handled and keep it moist during operations in order to minimize dust.

Sandblasting and Grinding

- Sandblasters should wear an appropriate NIOSH/MSHA approved respirator.
- In grinding operations, equip wheels with an exhaust hood and/or wetting capability. Operators should wear an appropriate NIOSH/MSHA approved respirator.

Cleaning

- When cleaning the interior of shops, sheds, or other structures, do not blow dust into the air.
- Use a vacuum cleaner whenever possible.
- When sweeping, moisten floors or use a sweeping compound.

Ventilating Systems

- In tunneling operations, provide a continuous supply of clean, fresh air for workers at the working face. The system should also be used to capture and remove contaminants.

6-3 DECOMPRESSION ILLNESS

Decompression Illness See Chapter 30 - Compressed Air Atmospheres.

6-4 CARBON MONOXIDE ASPHYXIATION

Workers in the construction industry may be exposed to harmful concentrations of carbon monoxide gas. Some common sources of carbon monoxide include internal combustion engines, exhaust gases, and fires. The severity of poisoning depends upon the amount of carbon monoxide in the air, the length of time exposed, and the degree of exertion. Carbon monoxide is not easily detected because it is a gas that is odorless, colorless, tasteless, and non-irritating. It may give no warning sign of its presence. Those most likely to be exposed to the hazards of carbon monoxide are:

- Garage mechanics
- Workers in tunnels and caissons
- Sewer workers
- Workers in buildings heated by temporary heaters

Preventive Measures:

- Keep all working areas well supplied with fresh air. Wherever possible, provide exhaust ventilation to remove carbon monoxide at the point of origin.
- Provide NIOSH/MSHA approved respiratory protection for emergency use and where positive exhaust methods are not practical. Periodically test for the presence of carbon monoxide with an appropriate testing device.
- Do not allow persons with anemia or any chronic diseases to work in hazardous environments without approval from qualified medical personnel.
- Do not allow a person who has been ill due to acute poisoning to return to work without written approval from qualified medical personnel.

6-5 LEAD POISONING

In construction operations, the hazards of lead poisoning may be found in plumbing and soldering, painting, glazing, sheet lead burning, sandpapering of paint, welding of painted steel, and removal of old paint. The poison is taken into the body by inhaling lead fumes or dust, by swallowing tiny particles of lead, or by absorbing the lead through the skin.

Preventive Measures:

- Wear appropriate NIOSH/MSHA approved respiratory protection when exposure to lead warrants its use.
- Avoid breathing lead fumes or dust by taking appropriate protective measures.
- Provide workers exposed to lead with suitable outer clothing. At the end of each work period, workers should go through appropriate decontamination procedures before drinking, eating, smoking, applying cosmetics or going home for the day.
- Do not store food in a room containing lead products or waste.
- Do not eat in areas where lead exposure is possible.
- Do not carry or use tobacco on the job.
- Practice good personal hygiene.
- Persons suspected of having contracted lead poisoning should consult a physician immediately.

6-6 SPRAY PAINTING

Although painters are principally affected by spray painting, others in the vicinity of painting operations may be exposed to the same hazards. The preventive measures that should be applied for paint or lacquer exposures are the same as those for lead. Respirators used should be appropriate and NIOSH/MSHA approved.

6-7 CHEMICALS (DERMATITIS)**Cutting Oils and Emulsions**

- Machinists and other workers exposed to cutting oils and emulsions may suffer from skin disease.
- Pimples and boils caused by clogging of the skin may appear.

Preventive Measures:

- Wear protective clothing.
- Use a mineral oil content free from irritants in the cutting medium.

- Keep the cutting fluid clean by filtration and sterilization.
- Encourage workers to scrub their hands and forearms regularly with soap and warm water.

If the skin becomes chapped and dry, rub lanolin ointment on the skin after washing. The use of petroleum jelly or cosmoline should be discouraged.

Lime and Cement

Wet lime and cement principally affect the skin. Some persons are more susceptible than others to a skin reaction from materials. The effect of lime or cement "burns" is drying and subsequent cracking of the skin, which could lead to infection.

Preventive Measures:

- Provide tools, equipment, and personal protective clothing that will minimize worker contact with these materials. Require their use to the fullest extent.
- As much as possible, keep exposed parts of the body away from direct contact with lime and cement.
- When working with lime and cement, hands should be washed and dried regularly.
- When work is finished, wash hands thoroughly with soap and warm water.
- Rub in lanolin ointment.
- On cement work, provide surface finishers with knee pads.
- Burns from lime or cement may require the attention of a physician.

6-8 TAR AND PITCH

Contact with tar may lead to serious skin problems. Hot fumes from tar are harmful to breathe and can irritate the eyes. The total effect depends upon the length of exposure and the concentration of the fumes. Typical symptoms of overexposure to tar include loss of appetite, nausea, diarrhea, headache, numbness, vertigo, bronchitis, and conjunctivitis.

Preventive Measures:

- Tar melting should be done outdoors so that fumes can disseminate into the air.
- Workers should stay upwind of the kettle.
- When applying these materials indoors, keep doors and windows open.
- If necessary, force fresh air into the room when applying hot tar.
- If kettles are used indoors, they should be hooded. It is preferable to keep kettles outdoors.
- Wear eye protection to prevent eye burns from bubbling or splashing hot tar. In cases of eye burns, flush eyes immediately with fresh water and consult a physician immediately.
- Wear clothing and gloves to prevent hot tar from penetrating to the skin.

6-9 CHEMICAL HAZARDS AND CONTROLS

Rapid technological advances in construction methods have resulted in an ever-increasing use of chemical substances. Many chemical substances produce potential health hazards. Refer to AGC's Hazard Communication Compliance Guide For Construction.

6-10 EPOXY RESINS

Because they have an unusual bonding strength, epoxies are used regularly in the construction industry, especially in bonding new concrete to old concrete. They are also used in splicing concrete pile sections, and in many other applications.

The use of epoxy materials often involves uncured compounds, many of which are toxic. The curing agent (amines) and solvents are the principal health hazards associated with epoxies, however, resins are also toxic to a degree. Unless workers take proper precautions, they can develop skin rashes, severe itching, eye irritation, and respiratory ailments. Tolerance to contact varies with the individual worker. However, each additional exposure will increase a worker's sensitivity.

The personal protection needed by workers handling toxic epoxy compounds varies with the epoxy and the application. Troweling with epoxy mortar may require the use of appropriate gloves. A worker spraying epoxy should use an appropriate NIOSH/MSHA approved respirator designed for protection against organic vapors and should wear appropriate protective clothing to prevent skin contact with epoxies.

Epoxies, and particularly those containing solvents, should never be used without adequate ventilation. Confined fumes and solvent vapors can irritate eyes, lungs, and the respiratory tract.

Epoxies coming into contact with the skin should be washed off immediately with soap, and warm water, not with solvents. Many epoxy solvents are irritants and will not remove the epoxy. Instead they will spread the epoxy to cover a greater area of skin.

Care should also be taken to see that other persons working adjacent to epoxy mixing and application processes are provided with adequate personal protection. The operation should also be isolated to minimize exposure to other workers.