

Supervisors Safety Manual



*Better production
without injury
and waste
from accidents*



NATIONAL SAFETY COUNCIL, CHICAGO, ILLINOIS 60611

M175

National Safety Council
Supervisors Safety Manual

3rd. ed.

1967

11/12/17 H. O. Bredemeyer

8/27/69 H. O. Bredemeyer

5/17/71 H. O. Bredemeyer

8-27-73 H. O. Bredemeyer

1-1-75 H. O. Bredemeyer

1-22-82 J. O. Bredemeyer

1-1-83 J. O. Bredemeyer

LIBERTYVILLE

8-17-88 A. Bredemeyer

FIRST EDITION © 1956

SECOND EDITION © 1961

THIRD EDITION

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Council, 425 North Michigan Avenue, Chicago, Ill. 60611

LIBRARY OF CONGRESS CATALOG CARD NUMBER. 67-10644

PRINTED IN THE UNITED STATES OF AMERICA

40M36708

Stock No. 151.05-3

Heat shields, as well as ventilation, may also be used. A large radiant area may heat a person excessively, even if the air surrounding the person is not very hot. In these cases, it is more effective to provide a reflector to return the radiant energy toward its source than it would be to try to cool the person by air blast or to try to insulate the radiant source.

Sheet aluminum reflectors completely surrounding, but not touching, a furnace will reflect 95 per cent (or more) of the radiant energy, and will themselves absorb so little heat that they will be cooled by natural circulation of the air around them. Not only will these reflectors completely protect workmen from excessive radiation, they will also reduce the atmospheric temperature because they decrease the amount of heat received and re-radiated by other objects.

The supervisor should not attempt to use makeshift remedies like asbestos or darkened metal shields. A rusty iron panel, for example, will absorb radiation from the source, become heated, and then act as a radiator itself.

There is another hot weather, or "hot" industry, problem that must be controlled. When people are exposed to high temperatures, they lose much salt in perspiration. A company physician, or outside physician, may prescribe salt tablets to prevent heat cramps or heat exhaustion. Enteric-coated or impregnated salt tablets can be used to prevent nausea which affects some persons when they take salt.

Heatstroke or sunstroke results from hot and humid conditions under which the body loses its ability to cool itself. It does not result only from exposure to the sun, but also it is commonly seen among men exposed to radiant heat from open flames or furnances. The only method of control is to reduce the temperature of the surroundings or to increase the ability of the body to cool itself, so that body temperature does not rise. Heat shields, discussed earlier in this section, are of value here.

Air contaminants

For the most part, occupational diseases are produced by material an individual breathes rather than by a material he swallows or absorbs through his skin. Few compounds poison by direct absorption through the skin. Some will on long-continued contact. Many materials are poisonous if swallowed, but the average person (in a nonfood industry) does not go around eating or drinking the materials he works with.



Exhaust hood at conveyor belt transfer point exhausts dust to an isolated location

Approximately two-thirds of all occupational disease exposures fall into three classifications:

1. Exposures to organic, nonmetallic dusts (mostly from grinding operations). This exposure includes that of silica and asbestos dusts.
2. Exposures to lead and its compounds.
3. Exposures to carbon monoxide.

Exposures to all other dusts, vapors, gases, and fumes make up the remaining one-third, not counting exposures that produce occupational dermatitis.

It is not difficult to recognize an exposure hazard, although specialized knowledge and instruments are needed to tell how severe it may be. The supervisor can, however, recognize a danger spot and ask for expert help. If a supervisor is not alert, a lot of harm can be done.

Here are some of the things to watch for.

A process that produces dust fine enough to remain suspended in the air long enough to be breathed should be regarded as questionable until it can be proved safe. Silicosis, for example, is produced in hard

rock mines. It can also be produced by dry grinding cutlery on naturally quarried sandstone wheels and by quarrying and dressing of granite, which contains free silica.

There is a common belief that the danger of lung disease from grinding disappeared when the natural sandstone wheel was replaced. The Carborundum wheel and also the Alundum wheel in themselves are not producers of silicosis. When they are used to grind castings that contain mold sand, however, they can still present a silicosis hazard.

Methods of drilling rock with power machinery produce more dust than old-fashioned hand methods. This dust, however, is controlled by applying water to the drill steel so that the dust forms a slurry instead of forming an air suspension.

Processes in which inorganic materials are crushed, ground, or transported are potential sources of dust. They should either be controlled by use of wet methods or should be enclosed and ventilated by local exhaust. Points where conveyors are loaded or discharged, transfer points along the conveying system, and heads or boots of elevators should be enclosed and, usually, exhaust ventilated. Powdered material that is simply riding along on a belt or other conveyor should cause no dust problem.

The supervisor must check that someone does not cancel the effectiveness of built-in dust controls by tampering with them or by using them improperly. He must also check closely that required respiratory equipment is worn by those workers who need supplementary protection.

Fumes

Welding, metalizing, and other hot operations produce fumes, many of which are harmful.

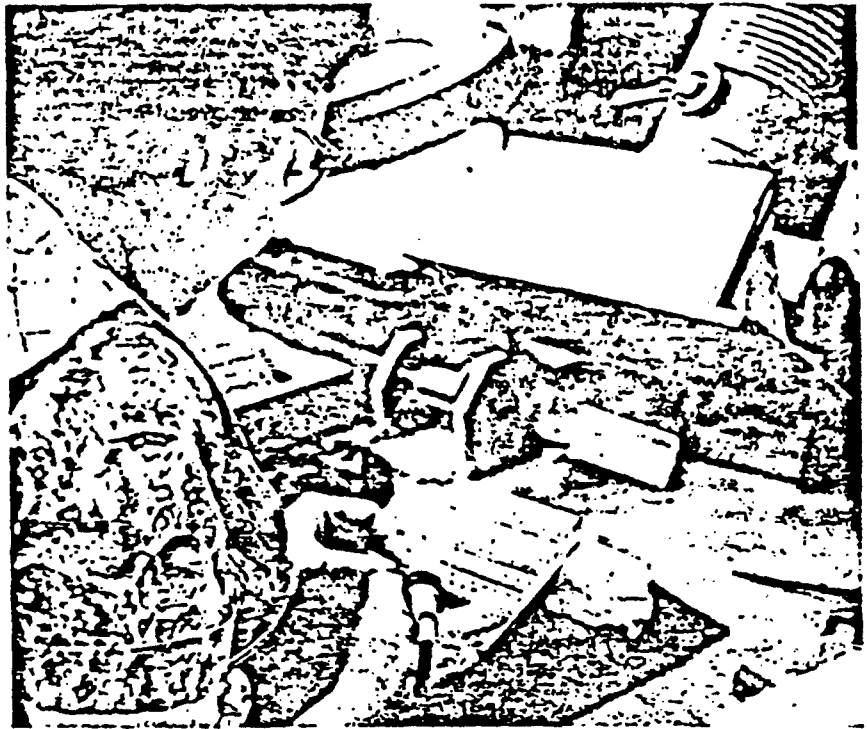
Arc welding volatilizes metal which condenses—as the metal or its oxide—in the air around the arc. In addition, the rod coating is in part volatilized. These fumes, because they are extremely fine, are readily inhaled.

Iron pigment in the lungs appears to have no effect in producing illness or disability. Its presence shows up in lung X-rays and may lead to a mistaken diagnosis of silicosis.

More toxic materials—such as those formed when welding structures that have been painted with red lead, or when welding galvanized metal—may produce severe symptoms of toxicity rather rapidly,

unless fumes are controlled or the welder is protected by respiratory protective equipment.

When pouring leaded brass, zinc volatilizes from the molten mass and oxidizes in the surrounding air to produce a zinc fume, which (in high concentrations) may produce the rather nonspecific disease



Soldering fumes are pulled away from operator by duct (upper right).

known as "metal fume fever" or "brass ague." The zinc carries with it a considerable amount of lead, which is also oxidized and suspended in the air. As a result, brass foundry workers may incur a chronic lead intoxication if they work a long time in the trade.

Most soldering operations, fortunately, do not require temperatures high enough to volatilize an appreciable amount of lead. However, some of the lead in the molten solder is oxidized by contact with air at the surface. If this oxide is mechanically dispersed into the air, it may produce a severe lead poisoning hazard.

In operations where this might happen, such as soldering or lead