

INDUSTRIAL HYGIENE

fortable after wearing for extended periods, the worker must fully realize the need for protection or he will not wear it. To get the worker's cooperation, these factors are important:

1. Prescribe respiratory protective equipment only after every effort has been made to eliminate the hazard.
2. Explain the situation fully to the worker.
3. Fit the respirator carefully.
4. Provide for maintenance and cleanliness, including sterilization before reissue.
5. Instruct the worker in the use of the respirator.

Protective creams and lotions help minimize skin contact with irritant chemicals. Their effectiveness varies, but if properly selected and correctly used, they can be very helpful. The cream or lotion must be selected on the basis of competent medical advice. The worker must then be instructed in the value of the protection and its proper application.

Housekeeping

Housekeeping, including immediate clean-up of any spills of toxic material, is a very important control measure. If allowed to accumulate, toxic dust can be redispersed to other parts of the building and many workers may be exposed to hazardous concentrations. A regular cleanup schedule using vacuum cleaners or lines is the only truly effective method of removing dust from the work area. An air hose for blowing away dust should not be used.

Good housekeeping is also essential where solvents are stored, handled, and used. Leaking containers or spigots should be remedied immediately by transferring the solvent to sound containers or by repairing the spigots. Spills should be cleaned up promptly by workers wearing protective equipment. All solvent-soaked rags or absorbents should be disposed of in airtight metal receptacles and removed daily from the plant.

Special control methods

Many of the general methods mentioned previously (either alone or in combination) can be used for the control of most occupational health hazards. A few additional situations, however, deserve special mention. Shielding is one of the best protective measures employed to reduce or eliminate exposures to ionizing radiation. Lead and con-

crete are two materials commonly employed to shield high-energy sources such as high-voltage X-ray, particle generators, and radioisotopes. Shielding is also used to protect against exposure to a radiant heat source. For example, heat-treating furnaces can be shielded with aluminum panels. Non-reflective sheet metal is not effective for it is a "black body", which absorbs heat and then acts as a secondary source of radiation.

Reduction of work periods is another method of control in limited areas where engineering methods are too costly or impracticable. In the job forge industry, especially in hot weather, a shorter work day is used to minimize exposures to extremely high temperatures, thereby lessening the danger of heat exhaustion or heat stroke. For workmen who must labor in a compressed air environment, schedules of maximum length of shift and length of decompression have been prepared. The higher the pressure, the shorter the shift and the longer the decompression period.

Proper illumination of the work area is necessary to prevent eyestrain leading to increased accidents or loss of visual acuity and to eliminate glare that may interfere with vision. Lighting is discussed in Chapter 14, "Industrial Buildings and Plant Layout," and levels of illumination are given in Table 45-G2, in Chapter 45.

Training and education

Engineering controls and protective equipment are no substitutes for safety education. They can only supplement it. When a toxic material is used in a process, workers must be given detailed information regarding the material and the safe practices used to prevent exposure to it.

The worker must also know the proper operating procedures that make engineering controls effective. If he performs an operation away from an exhaust hood, he will not only defeat the purpose of the control but also contaminate the work area. Workers can be alerted to safe procedures through booklets, instruction signs, labels, safety meetings, and other educational devices. (See Chapters 6 and 7.)

Since new materials are constantly being marketed and new processes developed, re-education and followup instruction must also be part of the training program.