forated tube located near the top of the helmet is used for air distribution. Air, exhausted from the helmet, flows between the collar and the user's neck.

Air supplied hoods are useful for some long-term operations where a completely enclosed suit is not necessary. These are particularly applicable in hot, dusty situations.

Respirable air under suitable pressure should be delivered to a hood at a volume of at least six cfm.

Self-contained

When people must work in an atmosphere immediately hazardous to life at distances from the source of fresh air, a self-contained breathing apparatus, which carries its own supply of oxygen, should be used. In an environment that contains a substance that is dangerously irritant or corrosive to the skin, a self-contained breathing device must be supplemented by impervious clothing.

Such devices afford complete respiratory protection in any toxic or oxygen-deficient atmosphere, regardless of the concentration of the contaminant. This equipment is frequently used in mine rescue work and in fire fighting. They also allow relative freedom of movement.

Self-contained breathing apparatus should be worn only by men who are physically fit and well trained. Men should be refresher trained at least every six months in order to maintain efficiency.



When entering a confined space, man is equipped with respiratory equipment and a lifeline, held by a person similarly equipped. (Photo: Scott Aviation)

Because of the extreme hazard, no one wearing self-contained breathing apparatus should work in an irrespirable atmosphere unless other persons similarly equipped are standing by, ready to give help.

The three principal types of self-contained breathing apparatus are the compressed oxygen rebreathing type, the compressed oxygen (or air) non-breathing type, and the oxygen-generating type. The length of time these units may be used is strictly limited. See National Safety Council, *Respiratory Protective Equipment*, Industrial Data Sheet 444, and the Seventh Edition of *Accident Prevention Manual for Industrial Operations*.

Use of respirators

OSHAct regulations require that standard procedures be developed for use of respiratory protection. These procedures should include all information and guidance necessary for their selection, safe use, limitation, and care. Possible emergency and routine uses of respirators should be anticipated and planned for. The type of respiratory protection for each job must be specified by a qualified individual supervising the program. In addition, written procedures must be prepared covering the safe use of respirators in dangerous atmospheres that may be encountered in normal operations or in emergencies. For safe use of any respiratory equipment the user must be trained by a competent person in all aspects of use, fitting, care, and limitations.

Details on the use of respiratory protection are in the OSHA standards as well as American National Standard Z88.2, the source document used by OSHA in promulgating the rules.

Maintenance and care

A program for maintenance and care of respirators shall be adjusted to the type of plant, working conditions, and hazards involved, and shall include the following basic services: inspection for defects (including a leak check); cleaning and disinfecting; repair; storage. Equipment shall be maintained properly to retain its original effectiveness.

Inspection—All respirators shall be inspected routinely before and after each use. A respirator that is not routinely used but is kept ready for emergency use shall be inspected after each use and at least monthly to assure that it is in satisfactory working condition. Air and oxygen cylinders shall be fully charged according to the manufacturer's instructions. The regulator and warning devices must be checked to ensure proper functioning. Respirator inspection shall include a check of the tightness of connections and the condition of the facepiece, headbands, valves, connecting tube, and canisters. A record shall be kept of inspection dates and findings for respirators maintained for emergency use.

Cleaning—Routinely used respirators shall be collected, cleaned, and disinfected as frequently as necessary to ensure that proper protection is provided for the wearer. Respirators maintained for emergency use shall be cleaned and disinfected after each use.

Storage—After inspection, cleaning, and necessary repair, respirators shall be stored to protect against dust, sunlight, heat, extreme cold, excessive moisture, or damaging chemicals. Respirators placed at stations and work areas for emergency use should be quickly accessible at all times and should be stored in compartments built for the purpose. The compartments should be clearly marked.

Safety Belts, Harnesses, and Lifelines

Safety belts and harnesses with lifelines attached should be worn by those who work at high levels or in closed spaces where the air supply may not be adequate, and by those who work where they may be buried by loose material or be injured in confined spaces. This discussion does not include seat (vehicular safety) belts or linemen's belts.

Both normal and emergency types are available. Normal use involves comparatively light stresses applied during regular work—

8004 1238