

dusts of the following size characteristics:

99 per cent smaller than 2.80 microns					
95	"	"	"	"	1.80 "
90	"	"	"	"	1.40 "
80	"	"	"	"	1.00 "
70	"	"	"	"	0.85 "
60	"	"	"	"	0.72 "
50	"	"	"	"	0.60 "

It will be noted that 80 per cent of the dust used in these approval tests is below one micron (1/25,000th of an inch) and 50 per cent is below 0.6 microns. Canisters will not remove dusts of these characteristics and should not be used as dust respirators.

In order to obtain the desired protection, it is essential that the facepieces of the mechanical-filter respirators fit the face of the workman snugly but with a minimum of head-band tension. A simple practical test, suggested by Carlton E. Brown of the U.S. Bureau of Mines Experiment Station in Pittsburgh, Pennsylvania (Jour. Indust. Hyg. Feb. 1937 Vol. 19, No. 2, p. 98), that anyone can run to determine whether a respirator facepiece is making a tight seal, is to wear it in a high concentration of coal dust. The time of the test can be shortened by blowing a stream of air containing a high concentration of coal dust around the edges of the facepiece. The location and approximate magnitude of the leaks are shown by streaks of coal dust on the part of the face covered by the facepiece. Another test, according to Mr. Brown, consists of plugging the intakes of the respirator and then attempting to inhale. This type of test could well be supplemented by the Coal dust test.

(b) Supplied Air Respirators - Industrial processes such as pneumatic drilling, abrasive blasting and spray coating have introduced atmospheric conditions for which the air-purifying type of respirators are not particularly suitable. Certain kinds of pneumatic drilling are responsible for dust concentrations so high that they would rapidly overload a dust respirator. The operator of an abrasive blasting outfit must be protected not only against the inhalation of air containing high concentrations of dust, but also against impact and abrasion of the head and shoulder by the rebounding abrasive and loosened abraded material. Spray coating is responsible frequently for pollution of the surrounding atmosphere by a combination of particulate matter (mists that are liquid particles or a combination of solid and liquid particles) and harmful vapors resulting from the evaporation of the liquid vehicle of the coating used in the spray gun.

Since these operations are carried out frequently in isolated places and at different locations at various times, they do not lend themselves always to general control measures. Therefore, supplied air respirators perform a definite service. The types in general use are those commonly known as hose masks, air-line respirators, and abrasive blasting respirators such as sand blast masks, helmets, and hoods.

Supplied-air respirators have the following advantages for routine non-emergency use over those of the air-purifying respirators such as gas masks, mechanical-filter respirators and the combination of gas mask with a mechanical filter:

1. NO resistance to inhalation.
2. Freedom from inward leakage of contaminated air.
3. Protection against all kinds of contaminants and even against atmospheres deficient in oxygen which will not poison or irritate the skin.