

CHAPTER XI

Respirators and Respiratory Protective Devices

FRANK A. PATTY

1. Historical Résumé and Present Approval Procedure

A respirator is defined as a device covering the mouth or nose, to prevent the inhalation of noxious substances. The oldest record we have of the use of such a device is that given in the first century A.D. by Pliny the Elder, who wrote of minimum miners wearing bladders over their faces to avoid inhaling mercury-bearing dust. Gas masks, oxygen-supplying apparatus, and hose masks (diving helmets) were introduced into Europe during the nineteenth century but they did not come into general industrial use until after World War I. Oxygen-breathing apparatus was introduced into the United States about 1907. Its first general use came in 1910 with its adoption for mine-rescue work. The canister gas mask was introduced into this country when the United States Bureau of Mines was assigned the problem of developing a military mask for the American soldiers in 1917. This work later grew into the Research Division of the Chemical Warfare Service. A good serviceable mask for war uses was developed, and at the end of the war work was continued by the Bureau with a view toward the development of an industrial mask.

Many of the military masks of the acid-gas and organic-vapor type were thrown on the market by salvage dealers after the war, but were used by returning soldiers for protection against all gases. This error was encouraged by some of the dealers who made extravagant claims concerning the masks. As a result there were many poisonings, mainly nonfatal, around ammonia refrigerating plants and among firefighters who were exposed to carbon monoxide. The alarm caused by these poisonings produced an extensive educational campaign through newspapers, the technical press, and personal instruction. Research gradually developed canisters for various gases, and the universal canister that protects against all common gases or combinations of gases. The next step was the development of the hose mask, which is simple and foolproof, and which offers respiratory protection in any situation that can be reached by 150 ft. of hose.

In each instance, however, personal respiratory protective apparatus that