You will note the tests required for respirators to protect against very toxic dusts, fumes, and mists, or radionuclides are very severe. It is interesting to note that there are respirators on the market that have been approved for protection against radio-nuclides where the concentration does not exceed the threshold limit value or concentration limits by more than 10 and more than 100 times. However, no mask, at the time of writing this article, has been approved by the United States Bureau of Mines for protecting against radionuclides in a concentration from 100 to 1,000 times the TLV.

Although the Uranine Chamber Test is in Schedule 21B, it is no longer used by the Bureau of Mines or most manufacturers since uranine contaminates the laboratory and the equipment, making it almost impossible to get accurate test results.

A review of all of the previously described test procedures and requirements will give you an idea of the tremendous amount of laboratory work that lies behind an approved respirator. You can see that, if you pass all the necessary tests as we have reviewed them and you have a Bureau of Mines approved respirator, then, as a manufacturer of respirators, you need a little bit more. To the approved respirator you must have added suitable packaging to meet Bureau of Mines standards, proper advertising, suitable literature or catalogs for the users to use as reference, proper quality control for all components during manufacturing, a sales and distribution setup, and you are set to do business.

It is important to note that the United States Bureau of Mines does not condone anything that is improper in any category involving an approved respirator, and this is as it should be.

A look into the laboratory of a well-equipped manufacturer of respirators would provide you with a view of a dust chamber or metal fume chamber that duplicates those of the United States Bureau of Mines in Pittsburgh, Pennsylvania. You would see amazing instrumentation for use in conducting various tests and monitoring them. You would also see in the laboratory a special mist chamber or chambers, instruments for chemical analysis, microbalances for weighing, DOP smoke testers, chambers for conducting man tests and coal dust tests, plus hundreds of other items so vital to the design, development and production of respirators capable of meeting the requirements of Bureau of Mines Testing Schedule No. 21B for dust, mist, and fume respirators.

So, if you need respiratory protection, determine just exactly what that protection should be and get that protection from a reputable source. Above all, make sure that it has the United States Bureau of Mines approval.

INDUSTRIAL SAFETY IN METALS INDUSTRY

By R. C. FULLER
Senior Material Handling Engr., Harrison Radiator Div.,
General Motors Corp., Lockport, N.Y.

The seeds of safety are sown with care; let us all cultivate the plant! G.M. has the seven basic principles of safety: provide active top management support; maintain adequate safety personnel; develop safety instructions for every job; instruct each new employe; operate through supervision; make every employe safety-minded, and extend efforts beyond the plant. At the 25th anniversary G.M. Safety Conference, we of Harrison Radiator were afforded the opportunity to propose the six senses of safety: use common sense; see clearly; hear acutely; respond promptly; standardize consistently; and learn constantly. We offer now the seven safety systems: "Partners in Safety System;" "The Defensive System;" "The Technical System;" "The Suggestion System;" "The Maintenance System;" "The Statistical System;" and "The Quality System."

Let us expand these systems, thus further developing safety standards. Let us also, in