unless they are properly cleaned, adjusted, expendable parts replaced, canisters discarded after shelf-time is up, and all other recommendations (usually in small print in the instruction manual) taken, protection is an illusion, not a reality.

3. Training. The more complex the mask, starting with the self-rescuer and the dust mask to the self-contained breathing apparatus, the more the need for training. Unfortunately, the U. S. Bureau of Mines does not specify a real training course for wearers of self contained breathing apparatus other than mine-rescue devices. But train you must, in dark, smoke, wetness, cold, and heat, if you are to really acquire the degree of familiarity which will give you assurance about a mask or breathing apparatus when the chips are down and the emergency is real. The extreme importance of this statement is emphasized by numerous fatal cases which, while beyond the scope of this presentation, are sobering and should some day be published by an impartial scientific organization.

To emphasize again, we must consider respiratory protection as part of the system — man, environment, control. Each part of the system, with all variations, must be carefully evaluated, weighed, and understood before any successful protection either by control measures or by protective devices can be effective. It is far more complicated than buying devices from a salesman who himself may not have all the necessary information or whose zeal for essential details may be less than enthusiastic.

If one wishes to succeed in using respiratory protective devices, we would recommend he look at it as part of a system — man, environment, and control. To ignore an in-depth analysis of any one of the three is essentially to negate any value from a device, no matter how high its rating or how costly its price.

Human life demands our best, and nothing is more vital or urgent to life than our next breath. As our three candles die out, so will life, but hopefully we have encouraged you to look deeply at breathing systems.

To emphasize that my concern for the inadequate state of respiratory protection is not unique, but is shared by others, I have invited a panel to sit with me, to attempt to answer questions.

MacLeod: We are advocates of the positive-pressure approach, with an air-supplied hood. This overcomes many objections of the usual devices or masks. We feel the positive-pressure approach is the device of the future, and it is gradually being recognized as such.

Sirdlecki: Representing the medical end of the problem, I would emphasize the necessity for team work by the industrial physician, the nurse, the industrial hygienist, and the safety engineer in a complete evaluation and monitoring of the system. Employees with certain functional impairments or mental or emotional problems should not work in areas where there is potentially hazardous exposure to toxic substances requiring the use of respiratory protective equipment. Employees protected by respirators should have the same medical supervision as those protected by ventilation or other control measures.

Mrs. Seaver: The industrial nurse has a very real part in the education of workers in the need for and proper use of protective equipment, including respiratory. There is a great need in the nursing profession for more information about the system you mentioned. While we concentrate on the man, the environment and control components must be of concern to us as part of the health and safety team. We are anxious to help in this activity.

Hyatt: Even though respirators are the oldest known control measure for protection of the respiratory passages, health and safety men know less about selection and use of respirators than any other aspect of health and safety. I would stress one phase — in working with radioactive materials we knew we had to have a very high degree of protection. Looking at all the respirators made in the United States and other countries to see if they would fit, the one thing that I have learned that many health and safety men do not realize is that the half-mask face piece fits well only three out of four men, and not nearly that high a percentage of women.

Revoir: The use of respirators requires a complete program: knowing the hazard, selecting the proper device, training the user, supervising the use, maintenance, and medical surveillance. I feel that the greatest problem involving the use of respirators is poor