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Interoffice Communication

To W. V. Henry - Lake Charles VCM Plant

From J. J. Hall - Houston

Date May 25, 1978

Subject Respirator Training and Fitting

TRAINING

As a general guide for your respiratory training program, listed below are the points OSHA feels should be included in a respiratory training program (from ANSI Z88.2-1969).

"(1) Instruction in the nature of the hazard, whether acute, chronic, or both, and an honest appraisal of what may happen if the respirator is not used.

(2) Explanation of why more positive control is not immediately feasible. This should include recognition that every reasonable effort is being made to reduce or eliminate the need for respirators.

(3) Discussion of why this is the proper type of respirator for the particular purpose.

(4) Discussion of the respirator's capabilities and limitations.

(5) Instruction and training in actual use of the respirator (especially one for emergency use) and close, frequent supervision to ensure that it continues to be used properly.

(6) Classroom and field training in recognizing and coping with emergencies.

(7) Other special training as needed."

The program should emphasize as strongly as possible the need for respiratory protection. The obvious objective is to motivate the employee to accept the fact that the protection is necessary so that he will wear and maintain his respirator properly.

FITTING PROCEDURES

As we discussed, the Irritant Smoke Test is probably the most feasible technique in your situation. It involves exposing the respirator wearer to an irritating aerosol produced by commercially available smoke tubes (MSA Part No. 5645). These are sealed glass tubes, similar to detector tubes, filled with pumice impregnated with titanium tetrachloride. When the tube ends are broken and air is passed through it, a reaction takes place with water vapor in the air to produce a dense, highly irritating smoke, consisting of hydrochloric acid adsorbed on small solid particles.

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The irritant smoke test must be performed with proper safeguards because of the irritating qualities of the aerosol.

A suggested procedure (adopted from NIOSH Publication #76-189, A Guide to Industrial Respiratory Protection) is as follows:

- (1) The wearer puts on the respirator normally, taking care not to tighten the headstraps uncomfortably. He stands with his back to a source of exhaust ventilation, such as a chemical fume hood. Standing outside facing into a slight breeze is also satisfactory.

NOTE: If the respirator is an air-purifying device, it must be equipped with high efficiency filter cartridges, not organic vapor cartridges.

- (2) The tester tells the wearer to close his eyes tightly, even if he is wearing a full facepiece respirator, and to keep them closed until told to open them.
- (3) The tester lightly puffs smoke over the respirator, holding the smoke tube at least 2 ft. from it. At this time, he should keep the amount of smoke minimal and pause between puffs to note the wearer's reaction.
- (4) If the wearer detects no leakage, the tester may increase the smoke density and move the smoke tube progressively closer to the subject, still remaining alert to his reactions.
- (5) When the smoke tube has been brought to within about 6 in. of the respirator with no leakage detected, the tester may start to direct smoke specifically at the potential sources of leakage, around the sealing surface and exhalation valve, while the subject holds his head still.

NOTE: The efficiency of the cartridges is not being tested, directing large amounts of smoke into the cartridges should be avoided.

- (6) At this point, if no leakage has been detected, the wearer may cautiously begin side-to-side and up-and-down head movements, approximating those that might take place on the job.
- (7) If leakage is detected at any time, the tester should stop the smoke and let the wearer readjust the face-piece or headstrap tension. The tester should then start the test at the second step.

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This test is not as time-consuming as it sounds and is more reliable than the isoamyl acetate vapor test. If the wearer keeps his eyes closed and the smoke is increased gradually, there is little danger or discomfort.



J. J. Hall

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cc: M. S. Reynolds

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