Respiratory Training - A Matter of Life and Breath

Industrial environments and confined spaces hide invisible dangers beyond the scope of human senses. Lack of oxygen, unstable combustibles, toxic and noxious gases-all can surprise workers entering sewers, process tanks, underground vaults, and other potentially hazardous areas. Good respiratory equipment, like gas detection meters and respirators, won't save lives in these situations, unless people are trained to use them properly.

“For a gas detection meter to work correctly, the user has to have a thorough understanding of the principles and terminology,” says Ron McMahan, vice president of AIM USA, a manufacturer of Air Monitoring Equipment.

"We can't afford to have someone think things are okay, if they are in a dangerous situation, and we don't want somebody to think they are going to die every time a pre-warning light comes on. It's critically important that the operator have a thorough understanding of the principles of gas detection. That takes training." Training, according to McMahan, can range from the basic operation of the meter-to-meter repair and calibration. When it comes to gas detection meters, OSHA stipulates that people must be trained in the operation of the equipment, but the agency places the burden of the end user of the product. To assist the end user, AIM provides fee-based training classes. In these classes, AIM's certified technicians teach users a variety of related skills.

Every Breath You Take
The respirator is perhaps one of the most important pieces of personal protective equipment. As with the gas detection equipment, training is a matter of life and breath. According to 3M's Michael Lee Orr, there are four basic elements of a respirator safety program.

"First," says Orr, identify the respiratory hazards and concentrations. Next, determine the health effects. Third, select the proper respirator, and fourth, develop a comprehensive training program."

Orr has identified several critical elements for optimum safety, but he advises those embarking on a program to review the complete OSHA training requirements for respirator training, which can be found in Code of Federal Regulations, Volume 29, section 1910.134.

Orr's tips:
• develop a written program to train management, supervisors, and workers
• determine if each worker can medically wear a respirator, and explain their proper uses and limitations
• develop and follow respirator maintenance procedures, including cleaning, inspection, and repair
• perform respirator fit-testing on an annual or semi-annual basis
Responding to the real world challenges

With Magid's assistance, a scrap metal processing company has taken OSHA's requirements and brought them to bear on the real world challenges of respirator training.

The "Burners," workers who burn scrap metal from heavy machinery, bearings, brass, copper, all wear Willson 2000 Freedom respirators, which are approved by the Mine safety and Health Administration and the National Institute For Occupational Safety and Health. After a complete physical exam, each Burner is put through an exhaustive program that teaches the worker to understand the proper uses and limitations of his respirator.

According to Charles Hilldale, safety and OSHA manager for the scrap metal processing company, a major component of that training is the qualitative "fittest," which is required by law under Title 29 C.F.R. Section 1910.134. Hilldale works with representatives from Magid and Willson as a team to ensure that the respirator issued to each Burner properly fits the worker's face. "It is very important that the person being fit-tested be clean shaven for the unit to fit properly on the worker's face," Hilldale explains. "When the Burner is being fitted, we also show how the device is properly worn and adjusted."

The company puts each person being fit-tested through three important tests. The first test is a "negative" pressure test. "During this test, the person being tested closes off the respirator's vents by holding his palms over the cartridges located on each side of the respirator unit," says Hilldale. "Then, the worker places a hand on the front vent and attempts to inhale. The worker must inhale gently for five to 10 seconds. If no leaks are detected, then we have a good fit. If leaks are detected, we must adjust the mask until we get a proper fit."

A "positive" pressure test is also done. It follows the same procedure as the negative pressure test with one notable exception: the worker exhales instead of inhaling. Exhaling forces the mask to bulge out. When it is extended, it is checked for leaks.

The final test is called an "irritant smoke" test. The worker is asked to move his head from side to side, and breathe normally, as smoke is directed around the mask. Then, the worker counts backwards from 100. "As long as he can't smell anything or taste anything," says Hilldale, "then we know we have a good fit. During normal use, if the worker smells or tastes anything abnormal, or if it becomes difficult to breath, the respirator is replaced. Every time the worker removes the mask, it is cleaned and checked by the individual. In this way, each worker is checking the mask regularly to insure that it remains in good working order. Every six months, each worker is fit-tested again."

At the metal processing company, on-going respirator training is made possible with the help of Magid and Willson. The program also includes information on when to discard the respirator's filters and cartridges, as well as proper instruction on how to clean, maintain, inspect, store, and repair the respirator.

In addition to supplying gas detection and respirator products to its customers, Magid works closely with manufacturers like AIM USA, 3M, and Willson to provide training, fit-testing, and other safety related services.

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