Training

Highlighted "versus degraded" technique

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What do fighter pilots and miners have in common? They are learning to recognize hazards using the "degraded" technique developed by the U.S. military. Traditionally, fighter pilots learned to recognize targets by studying photos taken under the best of conditions (a "highlighted" training approach). However, research showed that the pilots did better when trained with less than ideal ("degraded") pictures of the targets. "Degraded" refers to pictures where cloud cover, rain, poor weather conditions, natural barriers, buildings, or other obstructions partially hide the object—conditions that pilots would likely encounter in real life.

This approach can also be used for mine hazard recognition training. One example used a "highlighted" photo of a miner's foot positioned within a trailing cable loop on a mine floor. The photo showed the potential dangers of tripping or being caught by a retracting cable. The second photo showed a "degraded" version of the scene. The cable loop hazard is obvious. However, other more subtle dangers are present, including working without safety gloves and glasses.

Other examples include working in a confined area between rib and equipment, and placing tools on machinery (especially if the machinery is powered up or moving). One advantage of the degraded approach is that it encourages group discussions about workplace hazards.

To compare the effectiveness of "highlighted" versus "degraded" hazard recognition training, we developed experimental and control training modules. These modules were used alternately during Part 48 training and followed with the same individual test of hazard recognition. Miners trained with the "degraded" training module scored significantly higher on the test than those trained in the more traditional "highlighted" manner. We conducted two further field studies in underground coal mines in the South and Midwest involving more than 2,600 miners. Both sites experienced more than a 25% drop in incident rates, which management and researchers attributed in part to the "degraded" hazard recognition program. However, in field studies such as this, one cannot rule out the possibility that factors other than the change of training method contributed to this reduction.

We are currently working with the Illinois Department of Natural Resources and Illinois Eastern Community College to develop a "degraded" hazard recognition training package for the mining industry. The package, including a video, slides, overheads, and an instructor's manual, will be available from MSHA's National Mine Health and Safety Academy, Beckley, WV (304-256-3257) by fall of 1997.

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