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NIOSH Safety Talk: The Emergency Communication Triangle

Introduction

Research has shown that when an emergency occurs, workers often do not get the information they need to take appropriate action. Important information about incidents is either not communicated effectively or not at all to those affected by the event. The "Emergency Communication Triangle" safety talk focuses on the content of emergency warning messages. It presents a procedure using mental cues that can be used by senders and receivers of emergency warnings. The talk includes graphics for use during the presentation, as well as references for more information.

Background

Interviews with 48 miners who had escaped one of three different underground mine fires revealed that warning information provided to them was inadequate. Either insufficient information was provided to miners inby the fire areas or they failed to ask the questions needed to let them plan and execute an effective escape. Most of the miners who evacuated from these three mines did not have information that would allow them to make decisions about efficient escapes. The communication breakdown came from two directions: (1) the individuals providing the warning did not offer details about the situations even though some were known and (2) the individuals who received the warnings did not ask for clarification of the situation. The lack of information allowed miners to continue attempting to place cues into normal frameworks after they should have evaluated the situation as abnormal and threatening. The uncertainty created by the lack of information influenced their decision-making and therefore their actions.

Approach

Researchers at the NIOSH Pittsburgh Research Laboratory have developed a training intervention that can be used by senders and receivers of warnings during a mine emergency. This material was developed for use in short safety training sessions such as start-of-shift safety talks. The information can be presented in about 15 minutes. Although the illustrations were taken from the underground coal mining industry, the training can be tailored to any work setting by substituting appropriate examples.

How It Works

During the safety talk, miners learn about the six categories of critical information that should be provided during emergency communications: *Who, Where, What, Miners, Event,* and *Response*.

- ***Who:*** When reporting an emergency or receiving a warning, the first thing a miner must do is identify himself or herself. This is important because people react differently based on who gives them information.
- ***Where:*** Giving or finding out the location of the problem is important. Of the 48 miners interviewed about their escape, only 2 knew where the fire was located. However, this information was known by either the dispatcher or the person who discovered the fire.
- ***What:*** Miners must tell or ask exactly what is happening. At one mine fire, miners near the phone heard the message to evacuate and went to gather the others on their crew. One worker shouted to a machine operator: "Come on down to the mantrip. We're going out." Because it was close to quitting time, the machine operator thought they were just leaving the section a little early and went through his normal end-of-shift routine, wasting valuable time.

After giving or obtaining the three initial pieces of critical information, miners can then give or obtain details about the response in progress.

- ***Miners:*** Is anyone hurt? Has everyone been accounted for? When and where was a missing person last seen?

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• ***Event:*** Will this situation require a first aid kit or an ambulance? Should we call for mine rescue teams or just a couple of fire extinguishers?

• ***Response:*** What's been done so far? How many people are on the scene? What equipment is on the scene?

Results

After its development in 1999, the "Emergency Communications Triangle" safety talk was extensively field tested with a group of 236 miners at a western underground coal mine. Researchers used a pre-test/post-test design for the field test. Before the safety talk was given, workers were asked to list three pieces of information that should be included in an emergency warning message. After the safety talk had been given to all miners, researchers returned to the mine about 90 days later. Workers were asked again to list three pieces of information to include in a warning message. Considerable improvement was seen in the percentage of miners who accurately reported three information components after versus before the training (see figure 1).

For More Information

The NIOSH safety talk can be downloaded from the NIOSH Web Site (**http://www.cdc.gov/niosh/pdfs/99-157.pdf**). A printed copy can also be ordered from Bobbie Calhoun, NIOSH Pittsburgh Research Laboratory, P.O. Box 18070, Cochrans Mill Rd., Pittsburgh, PA 15236–0070; phone: (412) 386–5091; e-mail: **minetraining@cdc.gov**. For additional information about the NIOSH safety talk, contact Michael J. Brnich, Jr., CMSP, or Launa G. Mallett, Ph.D., NIOSH Pittsburgh Research Laboratory, P.O. Box 18070, Cochrans Mill Rd., Pittsburgh, PA 15236–0070; phone: (412) 386–6840 or (412) 386–6658; e-mail: **MBrnich@cdc.gov** or **LMallett@cdc.gov**.

To receive more information about occupational safety and health problems, call **1–800–35–NIOSH (1–800–356–4674)**, or visit the NIOSH Web site at www.cdc.gov/niosh

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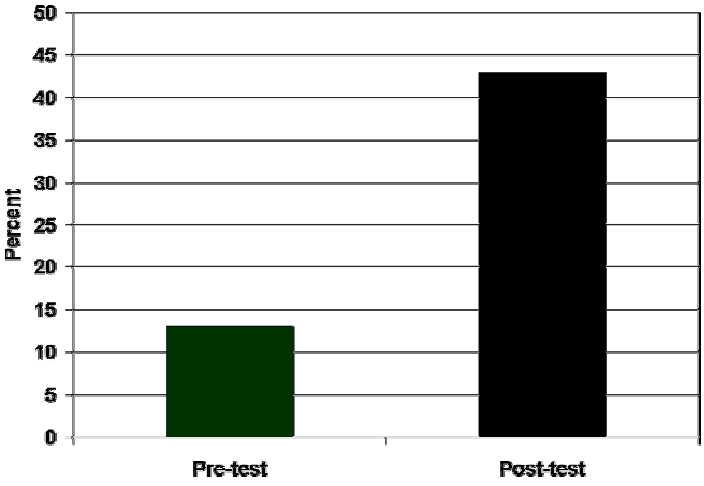

Figure 1.—Percentage of miners able to report three components of an emergency warning message before and after the NIOSH safety talk.