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## IMPROVING WORKER SAFETY & COMFORT: SUPERVISORS GAIN NEW SKILLS TO CORRECT PROBLEMS WITH "HUMAN FACTORS"

A two-year study of ergonomics problems affecting factory workers has found that many on-the-job aches and pains result from relatively simple problems that could be corrected by supervisors -- if they were trained in ergonomics.

Conclusions from the study provide the basis for a new training program designed to give supervisors a practical understanding of how to identify and correct problems arising from the work environment. The researchers hope the five-part training manual and videotape will offer an inexpensive means of improving worker safety and comfort.

During the past two years, scientists from the



*Research Scientist Ted Courtney measures light levels near an apparel workstation, part of research into ergonomics issues. (Color slides/B&W prints available).*

Georgia Tech Research Institute talked to more than 130 factory workers about what causes them pain at work: problems like uncomfortable chairs, tables that are too high, dim lighting and machines that force them into awkward positions. In addition to causing physical pain, these problems can lead to injuries -- a source of increasing concern to companies.

"There is a growing awareness among companies

about problems known as cumulative trauma disorders, which are associated with repetitive movement of the hands and arms," explained Daniel J. Ortiz, a senior research scientist and ergonomics program manager at the Georgia Tech Research Institute. "With this increased awareness, it is our purpose to

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provide the supervisor with some tools to identify the factors associated with these problems so they can prevent or control these disorders."

Pain and injuries that result from ergonomic problems affect worker morale, boost medical claims and increase staff turnover, Ortiz noted. But the problems often result from relatively simple factors -- and can have relatively simple solutions.

For instance, chairs and tables that cannot be adjusted to fit the workers using them often cause back and shoulder pain. Dim lighting hurts the eyes and forces workers to lean forward, causing back pain. Awkward hand positions may cause pain in the wrists.

"We found in our study that most of the complaints focused on the upper back and hands," explained Ortiz. "This was due in large part to incompatibilities between workstations and the workers."

By far the most common problem involved chairs. More than 90 percent of the workers studied by the Georgia Tech research team had customized their workstation chairs, in many cases by adding pillows to make them more comfortable. "That's a pretty good indicator of problems," Ortiz said.

To find out just how important chair height could be in worker comfort, researchers at one plant provided training in proper posture, then brought in new chairs that could be easily adjusted by the workers themselves.

"What we saw," Ortiz reported, "was that complaints about back discomfort virtually disappeared with use of the easily-adjustable chairs."

The cost? The easily-adjustable chairs sell for about \$200, versus \$50 to \$75 for the older type.

"When you talk about productivity and comfort and morale, the chair is a worthwhile investment," said Ortiz. "You have to consider the well-being of your employees and the morale of the work force."

Other changes may be more expensive, however. Automation to eliminate a repetitive task or mechanical alterations to change the position of machine controls can take time and money companies may not be able to afford.

In addition to offering supervisors an overview of ergonomics, the course gives guidelines for recognizing the risk workers may face -- and offers practical suggestions on how to prevent, eliminate or reduce the problem through changes in the work environment. The course also offers help in training workers.

"Supervisors on the floor generally do not have a lot of knowledge in ergonomics issues, but they are the people who see the problems and talk to workers every day," said Dr. Michael J. Kelly, head of GTRI's Human Factors Branch. "The most common problems, things like work tables that are too high or lights that are aimed in the wrong direction, can be solved by the supervisors."

Part of the training involves teaching supervisors which problems they can solve -- and which they should refer to experts in ergonomics.

While some studies have linked ergonomic improvements with boosts in productivity, the Georgia Tech research did not find significant production effects. Nevertheless, Kelly said companies are finding that ergonomic improvements can be justified on the basis of reduced medical claims, lower turnover and higher worker morale.

The study was conducted with support from the U.S. Defense Logistics Agency, which is concerned about the competitiveness of the U.S. apparel industry. The research took place in three apparel manufacturing facilities, but the recommendations would apply to many other labor-intensive industries.

"Many of the concepts we have presented have application to other industries -- certainly industries where cumulative trauma disorders have been a problem," Ortiz explained. "The hand postures and the awkward postures that are associated with these disorders are present in virtually all labor-intensive industries."

The next stage in the research will assess how well "modular manufacturing" might solve problems such as cumulative trauma disorders. In modular manufacturing cells, workers are responsible for several production operations. Giving them a variety of tasks may reduce the strain from repetitive activities, but it can create new problems in workstation design and worker training.

Other researchers participating in the project include Theodore Courtney and Dr. Dennis Folds.

The training manual, called "A Stitch in Time: The Supervisor's Guide to Ergonomics," and the supporting videotape each are available from GTRI for \$10. Contact Schryl Rose, Environmental Sciences Branch, Georgia Tech Research Institute, Atlanta, Georgia 30332-0800. (404) 894-2646.

**EDITOR'S NOTE:** This research was first described in a April 16, 1990 news release "Scientists Study Human Factors to Improve Employee Safety, Comfort and Productivity."