

Workplace Ergonomics Analysis

By Anita Goehringer, CIE

You've planned your strategy for a successful ergonomics initiative (*ESM*, May 2003), selected your ergonomics champion (*ESM*, June 2003), found ways to leverage your internal resources (*ESM*, July/August 2003), identified and prioritized ergonomic risk (*ESM*, October 2003) and now it's time to take on the tough jobs. Whether the challenge is uncovering the root cause to a problem, generating the most effective solution, or justifying the control, tough jobs require concentrated evaluation effort and innovative solutions.

Choose your weapon

No matter what methodology employed to evaluate or analyze a job or work task, all tools have a common goal—to assist the evaluator in revealing the primary ergonomic stressors associated with the job, task and/or operation. It's these results that provide direction for the best solution to eliminate or significantly reduce the problem and justification to put it into place.

Evaluation methods range from simple observation of a job and work tasks, to using a checklist to prompt key questions and identify problems in multiple work area components, to conducting a more detailed analysis with measurement tools and quantification techniques. The method selected generally depends on the type of work activity performed, the complexity of the operation or problem and the level of ergonomics knowledge of the evaluator.

Checklists are the most widely used and provide a basic and structured means of collecting and recording information. These formats can be designed for specific types of operations and provide a



quick and consistent means of revealing key concerns. But, if the right questions aren't asked, and the evaluator lacks specific ergonomics knowledge to keep digging, the primary issues may not be uncovered. The evaluation then becomes a frustrating "garbage in-garbage out" process with potentially ineffective solutions implemented.

Solve this potential problem by selecting or developing a checklist that covers all critical components of the work environment so that operations are assessed and/or measured for all ergonomic stressors. The best

checklists clearly reveal problem areas and guide the evaluator to the most accurate conclusions. Train your evaluation team to identify ergonomics stressors in multiple environments and operations and problem-solve to test their skills. If your internal resources are not strong in this area, now's a good time to bring in an outside resource to put you and your team on the right path.

Pulling in the "big guns"

Review collected checklist information and prioritize the concerns within the analyzed job according to

Analysis



Tackling the Tough Jobs

most significant risk of injury/illness development. If reasonable and justifiable solutions are apparent to solve the problem—then get going! But, what happens when problems are more complex and solutions get more complicated? This is when more detailed analysis may be warranted. Detailed, or quantitative analysis as it is called, is utilized to clarify or quantify stressor exposure, conclusively document ergonomic risk, associate root cause to identified stressors, and to justify solutions. Quantitative analysis techniques do not have to be applied in all evaluation situations—just the ones where more “proof” is needed. One or more methods of analysis may be employed and selection will depend on the specific area of concern or focus.

Time and motion study provides a detailed accounting of the tasks, motions and time increments involved in performing the job. Some of the issues to look at here include time spent in awkward or extreme postures, time spent exerting force, rest time between exertions, time spent in sustained positions and situations when stressors occur simultaneously. Spin-offs from this analysis method may involve evaluation of specific postures and job method variations.

Evaluation of manual material

handling tasks often involves the use of the NIOSH Lifting Equation. This is one of the few available tools to measure and calculate risk of injury. Lifting parameters and workplace measurements are plugged into a mathematical equation to derive a recommended weight limit. This tool not only provides a “how much is too much” figure, but can be used to help determine effectiveness of a potential solution—before it’s designed. Evaluators can run

revealed following a thorough evaluation of the job or work task. But, don’t go overboard; look at the job using the simplest evaluation tool or method first. Quantify only when necessary. Remember, sometimes more isn’t better, it’s just more. **ESM**

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In the next issue...

Reacting to Complaints: *Controlling Ergonomics Problems Before They Control You*

When ergonomic incidents occur despite your best efforts to prevent them, you need a workable plan to “nip ‘em in the bud.” In *ESM* January 2004, find out how to incorporate the reactive side of ergonomics into your successful ergonomics initiative.