

Impact of Implementing the Washington State Ergonomics Rule

Final Report

SHARP Technical Report 73-1-2004

Barbara Silverstein PhD, MPH, CPE
Michael Foley PhD
Safety & Health Assessment and Research for Prevention (SHARP)
Washington State Department of Labor & Industries

Nayak L. Pollisar, PhD
Blazej Neradilek, MS
Mountain Whisperlight Statistical Consulting

Sharon L. Morris, BA
Janice Camp, MSN, MSPH
Barbara Brooner, BA
Kit Galvin, MS
Katherine Hall, MA
Department of Environmental and Occupational Health Sciences
School of Public Health
University of Washington

March 26, 2004

EXECUTIVE SUMMARY

The overall goal of this research was to determine whether the implementation of an ergonomics rule results in the reduction in workplace musculoskeletal hazards and work-related musculoskeletal disorders (WMSDs). This study was conducted to evaluate whether the implementation process (2-6 year phase-in) of the Washington State ergonomics rule:

- 1) Increased employer awareness of WMSDs, workplace risk factors and prevention activities,
- 2) Reduces the amount of time required to identify and reduce hazardous exposures for those employers required to be in compliance at a later stage in the phase-in period,
- 3) Increased trade association/union communication with members regarding ergonomics awareness, hazard identification and industry specific best practices to reduce hazardous exposures,
- 4) Decrease WMSD workers compensation claims rates at a faster rate than a state without an ergonomics rule.

Methods

In order to do this,

- 1) SHARP developed and analyzed surveys conducted by Gilmore Research Inc. among approximately 10,000 business establishments that were selected in industry-size weighted random samples in 2001 and 2003 and compared them to a similar employer survey from 1998. Company identifiers were stripped and data was sent to SHARP for analysis.
- 2) University of Washington researchers conducted more than 1,000 interviews during site visits in 2001 and 2003 to 30 Group 1 (large high-risk industry) employers and 30 Group 2 (small-medium sized high-risk employers and all other large) employers to assess awareness of the ergonomics rule by management and workers, progress in identifying and fixing hazards, as well as training and involvement of workers in the process, and results of these efforts. Fifteen in-depth site visits were conducted
- 3) University of Washington researchers monitored trade association and union newsletters and journals for percent increase in articles on ergonomics awareness, hazard identification and ergonomics solutions for 2.5 years prior to rule adoption and 2.5 years after rule adoption (1998-2002).
- 4) SHARP analyzed workers compensation trend data from 1997-2002 for Washington State Fund claims related to WMSDs and all other claims.

Results

The ergonomics rule was adopted May 26, 2000 with the first phased in enforcement date of July 1, 2002 when large high-risk establishments needed to have identified caution zone jobs, provided ergonomic awareness education for exposed workers and evaluated these jobs for hazards. Hazards needed to be abated by July 1, 2003. There were three other rule groups, with sequential implementation to be completed by the last group by 2006. The rule was challenged from the beginning in the courts, legislature and finally by ballot initiative, which resulted in the repeal of the rule in

November 2003. The continuing controversy about the rule undoubtedly had an impact on employer response to the various “due dates.”

S1. SHARP Employer Survey

Baseline and two follow-up surveys of over 10,000 businesses over a six-year period constitute one of the largest surveys of employers on health and safety issues ever undertaken. Response rates for the 1998 (prior to rulemaking process), 2001 and 2003 surveys were 75%, 62% and 62% respectively. The largest category of respondents was “owner” (45%), followed by “other management or supervisor” (28%), administrative assistant (10%), personnel manager (9%) and safety and health officer (5%). Reporting of any WMSDs decreased within every rule group between 2001 and 2003 by about 5%. About 64% of those in Group 1 reported having WMSDs compared to 12.8% in Group 4, suggesting the breakdown of rule groups was appropriate.

Exposures

There were few significant reductions in exposures reported between 2001 and 2003 within rule groups with the exception of a decrease in awkward lifting in all groups by 5-6%, and intensive keyboard use that decreased significantly (almost by half since 1998) in all but Group 4. For more hazardous exposures (more than four hours), there was a broad decline across groups, especially in rule Groups 1 and 2, but they did not achieve statistical significance, except in intensive keyboard work, and awkward lifting.

Taking steps to reduce hazards, WMSDs

A significantly smaller proportion of establishments reported taking steps in 2003 than in 2001 or 1998. Of those who reported having had WMSDs in the previous 3 years, the proportion that reported taking steps to address WMSDs was 61.4% in 1998, 70.6% in 2001 and 67.9% in 2003. For the roughly 63% of establishments indicating they had not taken steps to address WMSDs in 2003, the major reason given was that WMSDs were not considered a problem (from 20% of the total in Group 1 to 62% in Group 4).

Of the 37% who reported taking steps in 2003, the major reason was because they wanted to reduce injuries and workers compensation claims, followed by expecting other benefits (improved productivity, less absenteeism), and requested by employees or health and safety committees. The highest percent of such responses was in Group 1 and lowest in Group 4. The percent reporting wanting to improve employee morale was significantly lower in all groups between 2001 and 2003, perhaps reflecting a poor economy. For those who took steps, there were significant increases in the percent reporting using adjustable workstations or equipment between 1998-2001 but no difference between 2001 and 2003. On the other hand, there was a significant decrease in improving maintenance and providing personal protective equipment between 2001 and 2003. Group 1 establishments that reported taking prevention steps between 1998 and 2001, in general reported better success, followed by Group 2, then Group 3 and Group 4. There were similar findings for 2003, although the “unchanged category” was slightly higher in 2003.

Firms in Groups 1 and 2 were clearly more active in ergonomics than Groups 3 and 4. Overall there was a 10% increase in having an ergonomics program between 1998-2001 and more reported ergonomic coverage of the entire organization in 2001. Between 2001-2003, Group 1 had a significant increase in ergonomic program activity

(42.8% to 52.2%), whereas other groups had little difference. Groups 1 and 2 especially reported greater use of health and safety committees for ergonomics and an increased awareness of the ergonomics rule.

Resources

Large firms in the high hazard industries (Group 1) were much more likely to use multiple sources of information than Groups 3 or 4. The smaller firms in Group 4 are much more likely to obtain no information (increased from 35% in 2001 to 45% in 2003). The two major sources of ergonomics information from all groups are business associations and WISHA/OSHA. When queried about sources of ergonomic solutions in 2003, the same distribution was seen but the percentages dropped to 10-12% in Group 1 to 3% in Group 4. Very few firms reported evaluation of their ergonomics activity. The highest percent was using workers compensation data (2% in Group 4 to 19% in Group 1) and employee observation (7% in Group 1 to 19% in Group 2).

Ergonomics Rule

There was significant increased awareness of the ergonomics rule in all groups between 2001 and 2003, with the highest percent in Group 1 (48.5%) and lowest in Group 4 (18.9%). There were similar increases in the first two groups regarding knowing the ergonomics rule applied to them, but no change in Groups 3 and 4.

By the 2003 survey, Group 1 should have examined their jobs to identify caution zone jobs, trained employees, identified hazards and instituted measures to reduce the hazards. Group 2 should have completed all steps except completing hazard reduction. However, among Group 1 firms, 52% completed caution zone identification, 36% evaluated caution zone jobs for hazards, 32% instituted controls, 50% provided training for supervisors and employees, while 30% indicated not having hazards. Among Group 2 firms, 39% performed caution zone evaluation, 22% determined caution zone jobs were hazardous, 26% instituted controls, 32% provided training while 28% identified no hazardous jobs.

S2. Site Visits

UW researchers conducted site visits to 68 workplaces out of 197/250 eligible sites in the first two rule groups, 54 in both 2001 and 2003. Employer and employee interviews were conducted (n=1,020). Sites from all 12 Group 1 SIC industries were visited. In-depth site visits were conducted at 15 sites that indicated implementation of the rule to some degree.

Ergonomic Activities

By 2001, a high proportion of Group 1 management respondents reported they conducted ergonomics activities including training (94%), making ergonomics changes (88%), evaluating jobs (85%), and health and safety committee involvement in addressing ergonomics issues. A high proportion of Group 2 management respondents also indicated ergonomics activities including training (70%), making ergonomics changes (85%), evaluating jobs (70%) and health and safety committee involvement (56%). Managers were much more interested in reducing injuries (84-94%) and workers compensation costs (72-91%) than in complying with the ergonomics rule (58-68%) or seeing it as a competitive advantage (60-65%) in 2001. Managers in both groups reported few problems with preventing WMSDs in 2001 and even fewer by 2003

(16% in Group 2). 67% of Group 1 and 80% of Group 2 workplaces reported benefits from ergonomics activities, including reduced frequency and severity of injuries, increased comfort, decreased production costs and time loss, increases in morale.

Ergonomics Rule Compliance

At least one manager was aware of the ergonomics rule in 87% of Group 1 sites and 83% of Group 2 sites in 2001. There was a slight increase in knowledge of "Caution Zone Job" for both groups between 2001 and 2003, and in the identification of caution zone jobs. When queried individually about jobs with any of the risk factors on the caution zone job checklist, all but one identified such jobs in their workplace. The majority of respondents who were aware of the rule recognized that it applied to their worksite, however less than half of Group 1 had completed any (17% completed all requirements) requirements by 2003 and less than 30% of Group 2 had completed any of their requirements with none completing all requirements. This was likely due to the fact that the governor had postponed enforcement of rule requirements two years.

Approximately 270 worker interviews were conducted in each year. A high proportion in both groups at both times were aware of the potential for WMSDs (more than 90%) and of activities that could cause WMSDs (more than 85%), with more than half reporting experiencing symptoms in the previous six months. Few workers were aware of the ergonomics rule in 2001 and this did not increase substantially. However, a much higher proportion had received training on causes of WMSDs and identifying and reducing hazards than on the rule requirements or how to recognize WMSDs. More than 30% indicated having ergonomics changes to their job (43% of Group 1 in 2003 and 32% of Group 2 in 2003). Most reported changes in equipment or workstation.

When queried about specific risk factors using the caution zone checklist, managers and workers agreed in virtually all cases that caution zone jobs were present, suggesting that specific risk factors can be identified even when the term Caution Zone Job is not recognized.

Resources

A much higher proportion of Group 1 (80%) and Group 2 (83%) site visit management respondents indicated using WISHA information in 2003 than in the surveys. In both groups there was a reduction in percent using trade publications. Internet use increased modestly in both groups (53% to 60% and 33% to 42% respectively).

In-depth Interviews

In-depth interviews were conducted with 10 Group 1 managers in 2001 and 5 Group 2 in 2003 that had assessed their jobs for caution zone and hazard zone jobs, in order to ascertain experience with implementing the rule. In the beginning, 70% of Group 1 and 80% of Group 2 managers had been very concerned about how difficult it would be to implement the rule. After some experience with implementation, no Group 1 and only 1 Group 2 manager found it very difficult. Ergonomic awareness education was the easiest component to implement, followed by evaluation of caution zone jobs. Implementing controls was the most difficult for Group 2. Construction managers found implementation the hardest due to task variety.

L&I resources were viewed as very helpful in implementing the rule including workshops, consultations, videos and website. Other useful resources included Puget

Sound Safety Summit, UW training, and private consultants. Construction managers wanted construction specific materials (and rule). Materials development for those with English as a second language was advocated. Managers advocated improvement in equipment available to reduce hazards.

S3. Comparison of Site Visits to Surveys

There is some evidence that sites visited were more proactive than the overall picture from the surveys. They completed two surveys and agreed to have researchers explore what they had done in ergonomics. Nonetheless when comparing responses to the surveys and site visits for the same firms, there was relatively moderate agreement on taking steps, minimal agreement on whether there was an ergonomics rule, but for those who said there was, there was high agreement that the rule applied to them in 2001 and less agreement in 2003.

S.4 Coverage of Ergonomics in Trade Publications

We hypothesized that the presence of the ergonomics rule would increase media activity. During the 5 years of review, 153 ergonomics articles were identified in the 15,000 pages reviewed from 19 publications. Coverage peaked in 2001, the first year after the state and federal rules were adopted. The drop-off may reflect the normal "issue-attention cycle". During the process, there was an increase in implementation information coverage, more so in state than in national publications, but this was a minority of the coverage. More than 2/3 of all ergonomics articles were primarily about the status of regulation and positions on the regulation, rather than implementation. It appears that extended controversy surrounding the rule and uncertainty about its enforcement may have overshadowed informative content. This suggests that publications produced by membership organizations fulfilled an advocacy role for their opposing positions during the period of extended uncertainty.

S5. Trends in Workers Compensation Incidence Rates

An attempt was made to compare Washington State WMSD workers compensation trends over time to Ohio, which did not have an ergonomics rule (but was affected by the federal ergonomics rule development). However, the lack of comparability in codes that identify non-traumatic musculoskeletal disorders made comparisons unrealistic. Using Washington State data (methods described in Silverstein, Kalat and Fan, 2003), the annual percent decrease in State Fund WMSDs was 2.9% during 1997-1999 and 6.8% in 2000-2002. While this was a significant difference between the periods, the drop was not significantly greater than for non-WMSD claims.

Discussion

The extensive outreach about the Washington State ergonomics rule, combined with the extended controversy surrounding this rule, clearly increased awareness of the existence of ergonomics rulemaking, but a small proportion was devoted to information on the contents of the specific rule, or ways to identify and fix hazards. More than 14,500 participants attended ergonomics rules workshops and more than 1,300 ergonomics rule consultations were conducted. More than 50 ergonomics demonstration projects were completed that demonstrated ways to be in compliance with the rule making.

Results from this research suggest that the extended controversy over the rule overwhelmed the phased-in implementation process. From the 3 surveys, there was some suggestion of reduction in exposure and more firms taking steps between 1998 and 2001 and little evidence of improvement between 2001 and 2003. Rather, there was a significant decrease in the percent of employers reporting having taken steps in rule Group 1 (large employers in high risk industries) and rule Group 3 (all other medium sized firms, 11-49 FTEs), and decreases in the other groups that were not statistically significant. Between 2001 and 2003, there was a large decrease in the percentage of firms reporting employee exposure to more than four hours of intensive keying activities, and a significant decrease in awkward lifting. However, there was little significant change in any other risk factor exposures. Approximately 32% of those reporting WMSDs in the 2003 survey had taken no steps to reduce exposures, compared to 38% in 1998. It is likely that firms decided to take a “wait-and-see” stance with respect to the ergonomics rule before instituting control measures. This was likely exacerbated by the downturn in the economic cycle during 2001-2003. Nonetheless, for those firms who did take steps, a high percent reported positive results in injury and severity reduction, product quality and employee morale.

In all rule Groups between 2001 and 2003, there were significant increases in percentage of firms reporting that the health and safety committee addresses ergonomics, with the highest percentage in Group 1. There was a significant increase in rule awareness, again highest in Group 1 and lowest in Group 4. Large firms in the high hazard industries tend to use a variety of resources, including in-house personnel, to address ergonomics issues. One of the more disturbing results in the 2001 to 2003 comparison was the increase in firms from all groups who didn't obtain any information (approximately 10% increase in seeking no information in Groups 3 and 4). The major sources of information were trade associations and WISHA.

These survey results are in part corroborated by the site visits (to the more proactive employers). Site visit employers in both Groups 1 and 2 were aware of the ergonomics rule (more than 80%). Most employees were aware of WMSDs and risk factors but less than half were aware of the ergonomics rule. The in-depth site visits provided important indicators of implementation in the most proactive firms. For example where there had been concern about implementation in 2001, by 2003, where implementation had been attempted, the firms found it much easier than anticipated. Their biggest difficulty was in finding solutions.

Finally, while there was a significant decrease in WMSD workers compensation claims rates after the rule, it was not significantly different than the decrease in all non-WMSD claims. This is not particularly surprising given the little evidence of reduction in exposures identified in the employer survey or from the site visits noting no one had completed hazard reduction activities by their due date.

Conclusions

There is little indication from this research that rules/regulations in the absence of the threat of enforcement results in significant implementation of those rules or even voluntary guidelines, particularly by those who were not already proactive in addressing health and safety issues. Much of this research was conducted during a time of controversy, but when the possibility of enforcement at some future date was still

considered likely. It would be important for public health policy to determine whether greater implementation of prevention measures take place under strictly voluntary conditions, with no foreseeable threat of enforcement. This is a critical question to answer as more government health and safety efforts are taking on a consultative, voluntary approach.