

# Hazard Analysis at Simpson Door



November 2002



## **Introduction**

In September 2002, Labor and Industries began an ergonomics demonstration project with Simpson Door of McCleary, Washington, a manufacturer of high quality wood stile and rail doors. The goal of this demonstration project is to describe the process that Simpson Door uses to identify and address WMSD hazards in their manufacturing process. Though Simpson is aware of the Washington State Ergonomics Rule, and their responsibilities in complying with it, they use it more as a guide with which to determine their employees' risk of injury than as a rule with which they must comply. Through their efforts, both before and after the ergonomics rule became a factor, Simpson Door believes they are close to coming into compliance with the rule well before it becomes enforceable for employers of their size and industry. The following sections detail some of the steps they have taken in each area of their ergonomics process.

## **Plant Organization**

The Simpson Door plant is divided into two sides, the cutting side and the door side. The cutting side cuts lumber into the dimensions to be milled on the door side. Each side has an ergonomics committee that meets every week.

## **Education and training**

Simpson Door first received ergonomics training in the late 1980's. This training proved to be valuable when the plant retooled in 1991. Much of the learning from the training was integrated into the upgrade.

In March of 2002 Labor and Industries' Southwest Washington regional office provided "ergonomics education for employers" for the Simpson Door ergonomics committee members, supervisors and management. This education followed the formation of the committees and was part of the beginning of Simpson Door's compliance effort. It is Simpson's plan to provide ergonomics education every year for the employees of the plant well beyond the awareness education requirements of the rule).

## **Employee involvement**

In February 2002, the door plant formed two ergonomics committees (one for each side of the mill), composed of machine operators and other employees. Through the committees, hourly employees are heavily involved in both analyzing jobs and identifying solutions. Ergonomics issues are also discussed at weekly and monthly crew safety meetings.

## **Hazard analysis**

The ergonomics teams follow the steps in this bulleted list in their analysis of machine centers and other jobs within the plant.

- Simpson Door ergonomics teams meet every week for a half hour
- They use the machine center crew's knowledge and ideas
- They use video and/or field observation to complete evaluation form (Caution Zone Checksheet)

- They generate exposure data using:
  - Weight scales
  - Stop watches
  - Neck bent and back bent indicators
  - Jumper cables (to estimate grip forces)
  - Clothes pins (to estimate pinch forces)
- They use any and all resources to reduce or eliminate risk factors, including:
  - On-site physical therapist
  - WISHA consultants
  - Union officials
  - Simpson management
- They include a supervisor in each evaluation session
- They conduct yearly evaluations
- When processes change the affected workstation must be re-evaluated

When doing the analysis, they use the caution zone jobs checklist provided by L&I to evaluate the physical risk factors for certain tasks. While the rule does not require changes to jobs at the caution zone level, the company likes to use the more protective criteria as an indication of when a job should be fixed.

All of the observation data is analyzed, and the Ergonomics Committee then creates an action plan.

### **Solution development and implementation**

When the data analysis shows that a job is hazardous and should be fixed, the committee identifies and implements solutions, most of which are based on ideas from employees and supervisors.

### **Continuous improvement process**

Simpson Door has pursued a course of continuous improvement since 1991. In that year Simpson Investment Corporation provided capital to the door plant to make significant upgrades to existing processes and machine centers. The improvements were largely designed to limit if not eliminate employee handling of wood. A partial list of engineering controls introduced to the door manufacturing process includes:

- Coupling machines
- Hoists
- Vacuum lifts
- Door turners
- Scissor lifts

### **Management commitment**

Simpson door management fully supports the ergonomics committee structure and function. There is money available for making changes to work stations. Their commitment is further demonstrated through the placement of on-site physical therapy, which employees can use on paid time.

## Physical Therapy Program

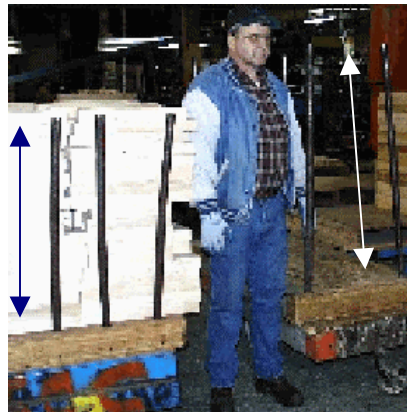
In 1996, Simpson Door brought physical therapy on-site by dedicating a small area for an office and some weight equipment for employees. They began to emphasize early reporting of symptoms, and people who showed symptoms of MSDs were given time (paid) to discuss their symptoms with a physical therapist and begin a course of stretching and/or exercise conditioning if necessary.

## Conclusions

Well before the current Ergonomic Assessment Program was in place, Simpson Door was active in finding solutions to ergonomic related problems. The company's philosophy, which both encourages and enables individuals to make a contribution, helps efforts like this.

### Example – Working with arms above the head

A diverse group of Simpson employees led by the Cutting Department Superintendent and work area safety agents sought a solution to the shoulder injuries that had plagued the Cutting Department for some time. Manufacturing processes often required employees to work at "above the shoulder" heights. With everyone's help, the height to which a pallet could be loaded for transfer was lowered to a level that was within all employees' arm extension and lifting comfort zone. This was done by reducing the length of the pipes, which were used to contain the wood while it was in transport on the carts used to move wood throughout the plant.



**Figure 1: Pipe length difference of 1 foot**

Since the changes, there have been no serious shoulder injuries in the Cutting Department.

### **Example – High Hand Grip Force**

Pistol grip guns used in the Glazing Department required one finger and significant force to activate the trigger and appeared to have risk factors for hand and wrist WMSDs, such as tendinitis and carpal tunnel syndrome. There were no “ergonomically friendly” guns available in the market place. A group led by the Maintenance Superintendent and plant machinist began to experiment and develop a series of prototypes that ultimately led to designing a gun with an air switch control.



Figure 2: home made glue applicator (air pressure)

These new, in-house designed putty guns and some full grip actuated dispensers they purchased later



Figure 3: full grip actuated glue guns

allowed employees to use very little force to activate the guns, almost eliminating injuries in the Glazing Department.