- Measurement and qualification or quantification of WMSDs (where possible).
- Identification of risk factors for each task or element.
- Identification of the problems contributing to the risk factors.
- Summary of the problem areas and needs for intervention for all jobs and associated new work methods.

These steps can be executed utilizing any combination of scientifically based assessment techniques including checklists, surveys, electronic measurement equipment, software tools, and analysis approaches.

7.12 ERGONOMIC PROGRAM FOR WMSD

In 1999, OSHA culminated years of scientific study into a proposed ergonomic standard to address the frequency and severity of WMSD in the U.S. occupational environment. The standard was implemented but almost immediately repealed with the transition of leadership in the U.S. presidency. Despite the repealing of the legislation, the guidance offered in the standard serves as a guideline for industries to develop programs to reduce and manage WMSD.

The primary elements of the former OSHA Ergonomics Legislation were developed using as guidelines comprehensive organizational involvement. This includes management leadership, demonstration of employee participation and knowledge of WMSD, hazard identification, job hazard analysis control, and finally employee training. The responsibilities that an organization will accept in the implementation of this process can be classified as

- Management leadership and employee participation
- Job hazard analysis and control
- Training
- WMSD management
- Program evaluation

Each of these areas is discussed and presented in more detail in the following text.

7.12.1 Management Leadership

Management leadership requires the leadership to take an active and participatory role in addressing and reducing the presence of WMSDs. Specific activities that demonstrate an active concern for employee health and safety include

- Assignment and communication of responsibilities
- Empowering employees to make changes
- Examination of existing policies and practices
- Communication with employees regarding the program
- Prompt response to employee reports of problems

Employee Participation

Employee participation is designed to allow employees to be active participants in the reduction of the risks and occurrence of these injuries. Specific employee participation should include

- Employee participation in the procedure for reporting signs and symptoms of WMSDs
- Access to OSHA standards and information about the ergonomics program

7.12.3 Job Hazard Analysis and Reporting

Job hazard analysis and reporting is designed to identify and remove risks from the workplace. Some of the activities include setting up a way for employees to report WMSD signs and get quick responses as well as the following:

- Provide information to current and new employees:
  - *Common WMSD hazards.*
  - Signs and symptoms of WMSDs.
  - How to report WMSD signs and symptoms.
- Hazard analysis activities will include the following:
  - Evaluation of the problem job to identify "ergonomic risk factors."
  - Implement controls to help eliminate or reduce WMSD hazards.
  - Use an incremental abatement process.
  - When a WMSD hazard occurs, implement one or more controls to materially reduce the WMSD hazards.
  - If WMSD hazard is still occurring, implement additional feasible controls to reduce WMSDs further.
  - Keep implementing controls until the elimination of WMSD hazards.

7.12.4 Training

An important part of a successful ergonomic program is training. The training of employees is essential and should include training employees an follows:

- When the job is identified as a hazard
- When employee is assigned to the problem job
- Periodically, at least every 3 years

Train the persons involved in setting up and managing the ergonomics program

- When initially assigned to setting up and managing the ergonomics program
- Periodically, at least every 3 years

7.12.5 WMSD Management and Program Evaluation

In WMSD management, the employer continually assesses the condition of the workplace and presence of injuries with respect to WMSDs. This includes evaluation

of injuries that occur after the implementation of the program and incorporation of additional activities to mitigate risks when necessary. Program evaluation is designed to ensure ongoing effectiveness of the program methods in reducing the risks of injury. To evaluate the ergonomics program an employer must

- Consult with employees in problem jobs to assess their views on the effectiveness of the program
- Identify any significant deficiencies in the program
- Evaluate the elements of the program to ensure they are functioning properly
- Evaluate the program to ensure it is eliminating or materially reducing WMSD hazards

Although this legislation is no longer in effect, it serves as a useful guideline for the establishment of a workplace ergonomics program.

7.13 SUMMARY

Awkward postures, repetitive work, or handling heavy loads are among the risk factors that studies have shown to damage the bones, joints, muscles, tendons, ligaments, nerves, and blood vessels, leading to WMSDs. WMSDs are mostly cumulative, resulting from repeated exposure to loads at work over a period of time. Upper limbs (the hand, wrist, elbow, and shoulder), the neck, and lower back are particularly vulnerable to MSDs. The design of tools, equipment, processes, and work spaces can have a tremendous effect on the risks and occurrence of WMSD.

Despite the growing knowledge of CTDs, according to a survey taken in 1992, the number of CTDs had tripled since 1984. Although a minority of dissenters believes CTDs are a sociopolitical phenomenon with no real scientific grounds, most believe the injuries result from the fact that humans were not built to perform certain task requirements at excessive levels. When they do unnatural movements or sit in positions that are not conducive to the human anatomy, the tissue is distorted and swells and eventually begins to tear, causing pain and discomfort. The good news is most CTDs are preventable, if organizations take the time to engineer risk factors out, implement administrative controls and train employees in proper lifting and posturing techniques. Regular job rotation, break enforcement, redesign of the workspace, and personal protective equipment are all preventative measures employers can make to protect their. Companies who manage their CTD risks often find the cost of mitigation will be offset by reduction in medical claims and ultimately a reduction in worker's compensation insurance.

The list in the following text represents ergonomic screening and analysis tools that can be useful in assessing ergonomic risks, particularly for WMSD. These ergonomic tools were obtained from a variety of sources including OSHA; Department of Design and Analysis, Cornell University; Center for Ergonomics at the University of Michigan; Dr. Thomas Bernhard, University of South Florida; and the Human Factors and Ergonomics Society.