# CONTROLLING RISK FOR THE TELECOMMUTING WORKFORCE WITH AN EMPHASIS ON ERGONOMICS

**by**

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## ABSTRACT

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**Controlling Risk for the Telecommuting Workforce with an Emphasis on Ergonomics**

Ten million people or nearly 4.5 % of the United States workforce characterized themselves as telecommuters at the end of 1998. Telecommuting generally involves extensive use of a personal computer workstation. Ergonomic risk factors identified as repetition, awkward postures, force, and the combination of these factors exist in the

traditional office workplace. These risk factors are expected to be present in the telecommuters work situation as well.

To maintain the health of employees and reduce potential corporate liability due to employee injuries, risk professionals must control ergonomic risk factors faced by the telecommuter. United States corporations have developed a number of different strategies to address ergonomic risks and they are presented in this study. Two specific strategies used are providing in-home workstation evaluations and furniture for the telecommuter. Several large US companies were informally surveyed to determine whether or not they provide these services to their telecommuting workforce.

Similarly, the Occupational Safety and Health Administration has been evaluating different methods to control employee injuries associated with ergonomic factors in the office workplace through regulation. These regulatory strategies are also described in this investigation.

Document collection and literature review was used as the primary data collection method throughout the study. In addition to the reviews, a set of questions was prepared to provide a framework for informal interviews with several companies. This interview process was used to collect information on the strategies the selected companies employ to control general and ergonomic risks faced by their telecommuting workforces. Data covering general risks associated with telecommuting was presented in paragraph format. Information collected on corporate risk control strategies was provided in a table format. Finally, a time line was created to present OSHA information related to telecommuting.

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# CHAPTER I

## Statement of the Problem

### Introduction

"Ten million people, or 4.5% of the workforce, characterized themselves as telecommuters in 1998. By 2001, nearly 8% of the United States workforce could be telecommuters" (Barker, 1999). An employee would be considered a telecommuter or tele-worker if they work away from the office and in their home at least 1-3 days per week. Companies are increasing the number of tele-workers in their employee base to address growing real estate and facility space pressures.

Just because the telecommuting employee has left the office, the burden of the risk manager or safety professional to properly manage risks associated with the telecommuter's job does not disappear. The corporation that sends their workers home must address safety and environmental conditions and practices and their accompanying compliance issues.

Telecommuter work generally involves extensive use of a personal computer workstation (including keyboard and monitor). OSHA and NIOSH have identified repetition, force, posture, and the combination of these factors in office workplaces and associated office duties as risk factors which have the potential of causing cumulative trauma disorders (CTD's). CTD's are also known as Work-Related Musculoskeletal Disorders (WMSD's).

Risk factors associated with CTD's that are present in the traditional office setting can also be found in the telecommuter's computer workstation and job tasks. The position of the keyboard and monitor in reference to the employee's wrists and eyes, the position of the mouse in reference to the keyboard, and the position of the employee's

torso in reference to the keyboard and monitor, all may result in awkward positions and the potential for CTD symptoms and/or injuries. Repetitive motions, like keying for more than two to four hours at a time, also contribute to the potential for CTD problems.

Cases of cumulative trauma disorder, associated with workstation set-up, are on the rise in the traditional office setting. The potential for cumulative trauma disorders in the telecommuter situation can also be expected. OSHA is also formulating strategies to respond to the increase in potential injuries to the telecommuting employee and provide a measure of protection and regulatory control over companies with a home work force.

After extensive research, OSHA has found that CTD work-related injuries can be prevented when companies use sound ergonomic practices. Companies wishing to compete in today's marketplace must reduce employee suffering and injury and the associated monetary losses. Worker injuries cannot be thought of as simply a cost of doing business. The dollars, due to employee injuries, are given up right at the profit line, with ultimately both the company and the employee losing.

As part of some company's ergonomic practices, risk professionals provide individual workstation evaluations in the traditional office setting and make recommendations on ergonomic interventions. These "interventions" include, but are not limited to, providing office workstation furniture and seating products, making work-surface height changes, adjusting monitor heights, and providing alternative keyboards and mousing devices. The logistics of providing this service to the tele-worker in their home is something companies must contemplate as a way to prevent WMSD's.

In addition to CTD losses, there are several other issues of safety and environmental risk that must be evaluated and addressed by the risk professionals to

control possible losses in the telecommuting work environment. Maintaining the physical safety of the tele-worker is of primary concern, but demonstrating compliance with OSHA driven ergonomic and other health and safety standards must also be accomplished in the remote location. (Sanger, 1999)

In terms of risk financing, investigating, processing and managing tele-worker compensation claims is anything but traditional. The concept of privacy within the home puts a twist in the way the risk manager can investigate and control claim losses. This could lead to fraudulent claims in some cases. Within the loss time arena, short-term disability may actually decline, as more workers may be willing to perform work from their bed, as opposed to making the drive to work and committing to an eight-hour workday while ill. The method used to determine insurance premium coverage must take into consideration the growth in the telecommuting workforce. The risks faced by the tele-worker in the home will fuel the re-evaluation of risk financing in terms of insurance coverage and claim reserving (methods of risk financing) for the corporations that employ them.

Conscientious companies want to reduce the risk of ergonomic injuries, as well as other losses associated with tele-working, to improve the in-home workplace for its employees, the company's bottom line and ultimately its ability to continue to compete in the marketplace.

## Purpose of the Study

The purpose of this study was to identify strategies to reduce general areas of risk specific to the telecommuting workforce, with an emphasis on ergonomics. As with

current in-office related work situations, ergonomic concerns stand out as a primary area of potential injury and loss in today's telecommuting employment world.

## Objectives of the Study

The objectives of this study were to:

1. Identify elements of risk control programs used to reduce general risk exposures faced by home office workers and the companies that employ them.
2. Compare current ergonomic strategies used by Company Q (at the request of the corporation, the company will remain anonymous) and select group of competitor corporations, to control potential telecommuting employee WMSD's and their associated losses.
3. Describe the recent strategies OSHA has contemplated to control injuries and losses associated with a growing corporate telecommuting workforce in the United States.

## Background and Significance

Telecommuting expert, Gil Gordon, has been making estimates about the future number of tele-workers in the United States work force since early 1982 and will openly admit that his predictions haven't always been on the mark. However, he will stake his reputation on the fact that the "the number of tele-workers has continued to increase by approximately 10% to 15% each year in the US and in many countries" (Gordon, 1999). Corporations must be prepared to deal with the risks associated with their current number of tele-commuters as well as an expected increase.

According to the Bureau of Labor Statistics (BLS) in the BLS Annual Survey of Workplace Injuries and Illnesses for 1997, there were over 276,600 cumulative trauma

disorders (CTD's) in the United States. This represented over 64 percent of all workplace illnesses in that year (Brigham, 1999). In a recent national news release, OSHA said it expects that approximately 300,000 workers will experience pain and potentially disabling injuries in 1999 at a potential cost of over 9 billion dollars in worker compensation and other direct costs (USDL 99-333, 1999).

As with current in-office related work situations, ergonomic concerns stand out as a primary area of potential injury and loss in today's telecommuting employment world. In response to WMSD figures, OSHA is proposing standards to control ergonomic risk factors of repetition, awkward motions, force, etc. to protect workers. The standard "relies on a practical, flexible approach that reflects industry best practices and focuses on jobs where problems are severe" (USDL 99-333, 1999).

Ergonomic concerns are not the only risk exposures faced by the telecommuters and their companies. Other safety exposures, similar to those found in office settings can be found in the home workplace including trips, slips, falls, electrical issues, fire protection, and housekeeping. Protection of company equipment and intellectual property is an area of potential loss for the company as well.

Ergonomic risk factors have been identified in the office workplace and are likely to be present in the telecommuters work situation. These risk factors, left uncontrolled, will result in an increase in office ergonomic injuries. We can expect a similar rise in injuries in today's telecommuting workforce as well. Uncontrolled ergonomic risks mean potential liability for the corporation sending workers home to telecommute. The cost of workplace injuries can mean the difference between being competitive or not.

Ultimately, if a corporation is sending employees home to work, they must be aware of the general safety concerns, ergonomic risks, and potential regulatory compliance changes that are on the horizon. The objective is to control risk exposures that are unique to the telecommuter, achieve compliance, and compete in the free market.

Limitations

1. The availability of literature covering telecommuting risk management concepts and strategies to control risks, especially ergonomic risks, is likely to be limited.
2. The ability to collect ergonomic risk strategies used by select corporations may be difficult. In addition, the information is only as reliable as those that are providing information on the company's behalf.
3. Time constraints may be a factor in survey data collection and ultimately may jeopardize the timely completion of the study.

Definitions

**Cumulative Trauma Disorder (CTD's)**- Occur over a period of time after exposure to risk factors in the environment and can result in conditions that involve the nerves, tendons, muscles and supporting body structures of the body. Risk factors include repetition, force, awkward postures, static load, and local contact stress. Occupational Safety and Health Administration (OSHA) and the National Institute for Occupational Safety and Health (NIOSH) have a slightly different term for CTD's. The term they use, and we will consider interchangeable with CTD's for this study, is Work-Related Musculoskeletal Disorders (WMSD's).

**Ergonomics** – The science of fitting workplace conditions and job demands to the capabilities of workers (NIOSH Document No. 705005, 1997).

**Telecommuter** – Interchangeable with tele-worker. An employee that works away from the office and in their home at least 1-3 days per week.

Summary

As telecommuting increases and expands across the United States, more risk and regulatory professionals will be faced with preventing various types of losses associated with a home telecommuting workforce to help their companies stay competitive and reduce the potential of employee injury.

# CHAPTER II

## Review of Literature

The following literature review will, from a risk financing and loss control perspective, identify various risk issues associated with telecommuting, and associated ergonomics. In addition, the review will include an investigation of how companies with telecommuters are furnishing the home office and what they are doing to protect workers from ergonomic risk factors associated with computer intensive jobs. Specific strategies used by Company Q will be described in detail. Finally, the review will examine the recent strategies OSHA has considered or proposed to address potential injuries and losses for the home tele-worker.

### Telecommuting

The explosion of hardware, software and telecommunications technologies is transforming what has been the traditional workplace over the last 300 years. This is, as Gil Gordon says, "the first time in the history of the workplace that we can separate activity from location" (Gordon, 1998). In our current information age, telecommuting gives us the option of separating what people do from where they do it, with "gains in output, quality, and multi-tasking"(Gordon, 1998). These benefits to today's companies are the result of telecommuting employees who are less distracted and more satisfied in an employment situation, where work and personal needs are balanced.

Pursuing telecommuting seems like a natural path for today's techno-driven businesses, however, many companies underestimate what it takes to implement a successful program. Effective telecommuting programs are the result of "careful

planning, involving not just top management and human resources people but also information technology, financial, and legal staffs, all of whom will have important input on the needs and ramifications of a telecommuting program" (Roberts, 1998).

Choosing the most appropriate employees, in the right job tasks, to participate in a telecommuting situation, also adds to the success of the program. Companies should avoid sending an employee home whose job tasks "involve highly sensitive data or regular use of critical equipment such as mainframe computers" (Roberts, 1998). An employee who lacks self-direction, time management skills and who is uncomfortable with less personal interaction like e-mail or phone, should not be considered for telecommuting. (Roberts, 1998).

From an overall employment perspective, the only thing different about an employee in a telecommuting situation is their work location. Things like "pay, benefits, employment status and all other company and regulatory protection and entitlements are unchanged" when the telecommuter heads home (Gordon, 1998).

In terms of outfitting the home office, most companies provide computer equipment, additional phone lines, software, office supplies etc. needed by the telecommuting employee to do their work, just as they would the on-site employee. However, household expenses like heating, cooling, and electricity are not usually covered by the employer for the home office (Gordon, 1998).

Again, whether it is identifying good telecommuting candidates, determining the best areas for telecommuting, or supplying equipment for the home telecommuter, a successful program requires company planning and the development of clear telecommuting policies.

**Ergonomics in Home Office Set-up**

A sound ergonomic home-office computer workstation set-up includes a variety of components from the office location, furniture, lighting, computer set-up, and equipment use and accessories. There was a measure of literature available from government and science based organizations, including: ANSI (American National Standards Institute), Human Factors Society (HFS), and AIHA (American Industrial Hygiene Association) as well as private industry information. These references were available to guide the telecommuter in the set up of their home work environment.

Private industry information reviewed included website based guides from Hewlett Packard - Working in Comfort (Hewlett Packard, 2000), Compaq Corporation - Comfort Guide (Compaq, 2000) and a booklet written by CIGNA Corporation - Setting Up a Successful Home Office, reviewed and edited by the Center for Office Technology (Center for Office Technology, 1999).

Literature from each of the private sources included ergonomic information related to proper positioning and height for the keyboard and monitor, making adjustments to seating, and armrests, and achieving neutral, comfortable positions for wrists, hands, arms and shoulders while working on computers. The private references also included recommendations on how to avoid eyestrain and tips on using ergonomic tools such as pointing devices and document holders. They each encouraged the practice of taking “mini-breaks” to stretch various body parts and changing postures periodically throughout the day, to reduce the strain and stress that tends to develop while working at computer workstations.

The information developed by Compaq and Hewlett Packard provided visual and verbal descriptions on how to achieve correct postures for particular body parts when doing computer intensive work. Environmental conditions such as lighting and indoor air qualities were also discussed in the home office ergonomic reference materials from the private entities. Emphasis was placed on arranging and organizing the work area so that the worker can work in comfort and be more productive at the same time.

Specific numerical ranges were listed in the Hewlett Packard web-guide for parts of the home work area set up including recommended work-surface size, depths, distance to maintain between the thighs and the work-surface, monitor height, workplace temperature and humidity and lighting levels. (Hewlett Packard, 2000). Hewlett Packard lists the ANSI/HFS 100-1988 VDT standard, the ISO 9241, and the European Community Display Screen Equipment Directive, as references for the numerical ranges given in their web-guide. HP also noted that the information provided, including the numerical ranges, was based on the use of a Hewlett Packard desktop computer or a notebook computer using a full size keyboard and monitor arrangement. An additional caveat stated that the information provided in the HP web-guide was based on accommodating people of average stature.

Information on electrical and mechanical product safety precautions was provided for a wide variety of Compaq products in the web-based information prepared by Compaq (Compaq, 2000) for the home office environment. The equipment included products with laser devices, modems, telecommunications and lan options, precautions for server and network products, and use of portable computer products.

In addition to ergonomic information, the CIGNA guide made recommendations that the home office telecommuter ensure the security of company information, consider equipment power demands and possible energy limitations in the home, and the review of home and employer insurance provisions (CIGNA, 1999). Each private source offered a basic checklist that could be used to help guide the computer based office worker to arrange and adjust their work area to be more comfortable and productive in their home office environment.

In terms of science based organizations, AIHA recommended following similar ergonomic principles as those presented by Compaq, Hewlett Packard and CIGNA. However, the AIHA considered and instructed those preparing a home office on additional safety areas such as fire safety, indoor air quality, lead exposure and protecting children in the home office environment, and office related illnesses (American Industrial Hygiene Association [AIHA], 2000).

The most extensive and scientifically founded information reviewed was the ANSI/HFS 100-1988 standard prepared by the Human Factors Society. The standard specifies "requirements for visual display terminals (VDT's), the associated furniture, and office environment, where the use of a VDT is a required and substantial part of the work performed" (American National Standards Institute, [ANSI], 1988).

The ANSI standard provides ergonomic information in several forms. For example, in Section 8 - Furniture of the standard, general "underlying" principles are presented in the first part of the section. Then the standard section goes on to give "general and specific solutions" for each area of furniture and workstation component set-up (ANSI, 1988). The general solution gives guidance to the set-up, and the specific

solutions provide actual measured distances of different furniture component adjustments and arrangements, each based on anthropometric data. The ranges for various furniture adjustments and features are based on trying to accommodate what is considered the 5$^{th}$ percentile female and the 95$^{th}$ percentile male anthropometric data and measures. Two additional sections of the standard that apply extensively in a computer based work environment are visual display and keyboard particulars.

The ANSI/HFS 100-1988 standard and information provided from the private sector is intended to help people make adjustments in their working arrangement to be more comfortable and effective. And, they apply to a general office workstation situations where computers are in use, as well as in similar telecommuter home office environments.

**General Risks associated with Telecommuting**

When a corporation makes a decision to send a worker home to work, it takes on similar risks as those found in the traditional work setting. However, in this case, the company must rely on the tele-worker to help prevent potential losses, due to both injury to themselves or losses associated with equipment and the employee work space. In terms of loss control, we might divide various types of risk issues into three categories - environmental, safety and health.

In terms of environmental considerations, the company with the telecommuter at home will eventually have to develop an appropriate solution for the disposal of chemicals, such as printer toners, screen and component cleaners, video display terminals, and batteries.

According to a local hazardous waste regulator for Company Q, disposal responsibility for waste that is "generated from a non residential use, i.e.business, such as electronics, cathode ray tubes (CRT's), and small quantities of hazardous waste" lies with the business (Reed, 2000). Essentially, that would mean wastes generated in the home telecommuting situation would be the responsibility of the business who sent the worker home (Reed, 2000). The regulator also stated that business hazardous waste generated in the home could technically be considered "a separate generation point requiring an EPA (Hazardous Waste Generator) ID# and maybe a license" (Reed, 2000).

An additional remark made by the regulator was that some other states do not make as clear a distinction between household hazardous waste (HHW) and waste generated by a very small quantity generator (VSQG), allowing them to be managed similarly (Reed, 2000). This means the waste would either be disposed of in the Municipal Solid Waste stream or through existing Household hazardous waste collection sites, that accept small business wastes.

Based on the current state environmental regulations where Company Q operates, companies must properly manage their hazardous waste from its generation point to its final disposal. Severe criminal and civil penalties can be waged against a company that does not properly manage its hazardous wastes. With this in mind, the company must instruct and rely on the employee to properly manage waste generated in the course of doing company business at their home or face the potential environmental regulatory ramifications and associated losses.

As was mentioned, it is likely the tele-worker will use or be exposed to chemicals in the course of computer-related office work. Not only does the company have to ensure

that the home-based employee is aware of environmental risks associated with these chemicals, they must also manage the safety and health issues related to chemical exposure as well as other aspects of safety.

Strict OSHA regulations require companies to train employees to know what chemicals they are being exposed to and how to protect themselves from over exposure. Losses can occur due to employee injury if chemicals are not used safely. Just because the tele-worker is at home, the company is not likely to be relieved from complying with OSHA requirements. However, which standards will be applied in the home telecommuting work environment has not yet been defined. Jerry Laws, editor for Occupational Health and Safety believes "the legal responsibility for an employee's safety while he works does not cease or change when he does that work at home, nor should it" (Laws, 2000). Hearings are expected to be held in the near future by the Federal House Education and Workplace Committee to determine just "what current OSHA standards apply to employees working at home" (DeCarlos, 2000).

Safety regulations likely to apply to the telecommuter employer include - hazard communications/Right-to-Know, electrical safe work practices, fire prevention and protection, hazardous energy control/lockout-tagout, and emergency evacuation.

The OSHA general duty clause requires the employer to offer a safe workplace for the employee. If the company intends to control risks faced by the tele-worker, they must be thinking about things like preventing electrical circuit overload, ensuring proper use and storage of chemicals, training employees to work safely with electricity in repair situations, and helping the employee plan for emergencies (Company Q, 1997).

**Ergonomic Risk Exposures in Telecommuting**

In terms of specific health related concerns for the tele-worker, we need only look to the current injuries occurring in the traditional office setting to see the potential for injury and loss in the telecommuting situation. According to a 1997 NIOSH study, there is significant epidemiological evidence for a causal relationship between WMSD of the neck, upper extremity and low back and certain physical work factors. These factors are found in the traditional office and are expected in the home office.

The foremost of these factors are repetition, force, posture, vibration and these factors in some combination (DHHS (NIOSH) Publication No. 97-141. Musculoskeletal Disorders (MSDs) and Workplace Factors, 1997). The level of risk depends on how long a worker is exposed to these conditions, how often they are exposed, and the level of exposure (NIOSH Document No. 705005, 1997). In addition, there is strong evidence that ergonomic programs and "specific ergonomic interventions" can reduce WMSD's (OSHA Proposed Ergonomic Rule Introduction, 1999).

The combination of repetition and awkward postures are at the forefront of injury risk factors faced by the employee in the traditional office setting and those working in their homes. In many cases, employees working at home may work extended hours and work longer periods of time without rest (Lord, 2000). Controlling risk due to repetition should be formally addressed to protect the employee from injury, and the company from loss.

Encouraging regular work hours and intermittent work breaks are ways to control risks associated with repetition in computer work. Preventing employees from having to perform computer work in awkward postures (increased shoulder and neck flexion) is

affected by the way in which the computer workstation is set up around the employee and the ability to position the computer keyboard and monitor screen (Straker et al, 1997). Focusing on ensuring proper work-surface heights, seating, storage, and computer equipment is essential to preventing employee WMSD's in the telecommuting setting. The intent is to get the tele-worker into a neutral working position to prevent pain and subsequent injuries due to computer keying while increasing their efficiency at the same time.

**Corporate Ergonomic Interventions**

Ergonomic interventions are critical to making a safe workplace for the employee. A primary "intervention" used by some companies offering a telecommuting work-setting is the provision of office furniture and various types of ergonomic equipment (i.e. wrist-rests, monitor blocks, articulating keyboard trays). If the company provides the equipment so the employee can achieve and work in a neutral position in the telecommuting workspace, it has the opportunity to reduce the risk of WMSD's. Most companies provide computer equipment, fax machines, printers, and phones. However, not all companies are providing furniture or ergonomic accessories (Gordon, 1998). The cost, choosing the appropriate type and components of furniture, and dealing with installation at the variety of home office workspaces, have deterred some companies from providing furniture to the tele-worker.

Another ergonomic "intervention" a company could use to prevent WMSD's is to actually review the employee's in-home workstation, resulting in recommendations to help the employee achieve a neutral work position. American Express is one company

that is reviewing individual telecommuter workplaces for not only ergonomic risk factors, but also other safety related factors, in addition to providing office furniture and ergonomic accessories (Gordon, 1994).

**Risk Financing and Insuring the Telecommuting Workforce**

The potential for injury in the telecommuting work setting still may exist regardless of how substantial the employer's loss control program might be. The employing company must be prepared to finance these losses, as well as those that may be the result of other safety issues in the home workplace (i.e. fire).

Risk financing (methods to obtain funds to pay the cost of a loss) can be achieved through several routes including insurance cost transfer and retention (maintaining enough funds to internally pay for a loss) (Garvey, 1999). Considering the risk of loss related to tele-working cited by NIOSH above, the employing company has to pay particular attention to the rising costs of WMSD's and how to control and finance these losses. The tele-worker is less likely to report symptoms related to computer work at home, and is less likely to have access to onsite, company provided health services.

The ultimate extent and severity of WMSD's developed by the tele-worker may be greater than those experienced by the traditional office worker. A more serious injury would likely result in more extensive treatments and days lost from work. This all translates into funding greater amounts of injury loss and employee replacement costs. To control these losses, the risk manager/ESH professional is advised to develop ergonomic programs and employ ergonomic interventions.

Additional insurance concerns arise based on whether or not the tele-worker is using company equipment or their own and the question of home insurance coverage. For example, if a fire occurs in the employee's home and computer equipment is damaged or someone is injured, which insuring entity would cover the losses? Towers Perrin, a New York based consulting firm, believes "liability would first fall on the employee on whose premises the accident occurred" (Brady, 1996). The corporation would be next in line as a liable party because they are the beneficiaries of the work performed by the telecommuter. Liability related to the equipment would tend to follow ownership.

Worker compensation claims and insurance premiums are uncharted territory for the employer and the insurance companies. The company bears the burden of proving that an accident or injury to an employee in the home was not work-related. The insurance industry itself is not experienced with home-based injuries or with determining associated premium prices (McClay, 1998).

The Alliance of American Insurers (AAI), encourage employers that pursue telecommuting to –

a. Define a dedicated workspace in the home that is ergonomically designed for comfort and injury prevention and help the employee set up their in home workspace for safety.
b. Develop work guidelines for the employee that include approved reasons for leaving the home office and work hours.
c. Discourage customers from visiting home offices.

**Telecommuting Agreements**

In an HR Focus article, Brady remarked that "some companies ask employees to certify in writing that they have set up a safe work area, and then inspect it at agreed upon times" (Brady, 1996). He also suggests that companies and their tele-workers consider appropriate workspace lighting, to be watchful for environmental hazards, locate computer equipment away from dusty vents and sunlight, use caution with electrical extension cords and take precautions to protect computer files and other equipment in their home office.

Roberta Maynard, writing for the Nation's Business magazine finds as telecommuting grows, companies are finding ways to address a variety of safety concerns through "tools" like tele-work agreements with their employees. The agreements cover specifics such as established work hours, care of equipment and use and storage of chemicals and supplies; also in the agreements are provisions to allow the company periodic visits into the employee's home office (Maynard, 1994).

An aspect of Hewlett Packard's work option agreement spells out that employees are covered by workers' compensation at their "alternative" worksites as long as they are engaged in work. And as a part of the agreement, company officials reserve the right to inspect their home offices (McClay, 1998).

Although OSHA is in the process of developing guidelines for telecommuting safety, Corry McClay writes for Professional Safety, that firms should develop their own interim "work-at-home" safety programs to identify and control hazards for the purpose of protecting employees and the corporation from injury and other losses related to tele-

work. McClay also identifies the following areas for consideration when planning telecommuting situations:

- Defining Work Time
- Home Hazards
- Safety Equipment
- Employee Training – Worker training would include basic hazard recognition skills to identify electrical, tripping, repetitive trauma and fire hazards.
- Location
- Home Inspections
- Ergonomics
- Air Quality
- Incident Investigation (McClay, 1998).

Ultimately, financing losses and the prevention of loss due to environmental, safety, and health issues will be effected by an increase in a company's telecommuting population. In 1998, Company Q's CIO reported that within the entire worldwide corporation, "roughly 12,000 of the company's 32,000 employees regularly work remotely" (Roberts, 1998). Corporations must be prepared to deal with the risks associated with their telecommuters now and in the future. A risk professional's control of losses related to WMSD's and other environmental and safety issues will be critical to the corporations they serve if they want to remain competitive in today's computer intensive work world.

**OSHA Risk Strategies and Policy Activities**

Corporations aren't the only entities concerned about controlling safety and health risk exposures for the telecommuting workforce, especially in terms of ergonomics. After 10 years of study, consultation and analysis, OSHA announced a proposed ergonomics standard on November 22, 1999. The proposed rule would require employers to establish a reporting system for ergonomic injuries as well as provide time off and medical care for workers. If an injury is reported, it triggers the ergonomic rules that apply to company's workers who use equipment from computers to grocery scanners (Eilperin, 1999). The injury sets in motion the requirement for the employer to implement a full OSHA ergonomics program. Elements of the program include:

a. Job hazard analysis and control;
b. Training of employees, supervisors, and staff on jobs with covered WMSD's;
c. WMSD management for workers who have WMSD's;
d. Program evaluation, and;
e. Record keeping (BNAC Communicator, 2000).

The ergonomic standard's intent was to protect workers that were exposed to certain risk factors in their work environment. OSHA and NIOSH identified these risk factors as repetition, awkward postures and force. A combination of these factors have been found in office workplaces and associated office duties.

It must be considered that evidence of ergonomic risk factors in the business office areas, can, and will, be a predictor of similar risk factors in the telecommuter's home office. The question that cannot be clearly answered is whether or not the ergonomic standard that OSHA has proposed was intended to protect employees from

injury when they work at home as well as in the traditional company setting. Similar "application" issues apply when considering whether or not other OSHA general industry safety standards would effect the employer and the telecommuter (Maynard, 1994).

Two distinctly opposing responses have come from the publications - Risk & Insurance and Compliance Magazine. First, in an article by Donald T. DeCarlo in the April issue of Risk & Insurance, it is stated that OSHA "should have no inspection and enforcement role in workplace safety for homeworkers at this time" (DeCarlo, 2000). DeCarlo believes that privacy issues and the inability to determine the legitimacy of workrelated injuries in the home pushes OSHA out of its traditional role. Instead, he thinks OSHA should "collect statistics, identify trends, provide literature and offer voluntary on-site inspections and training" (DeCarlo, 2000). This information gathering may then lead to further application of safety regulations for the telecommuter.

The second response comes from the staff at Compliance Magazine (CM). In one breath OSHA has stated that employers will not be held responsible for the safety of home office workers. But as CM staff point out in their article, Assistant Labor Secretary Charles Jeffress reminded employers in his statement, that those who are required to report on job injuries must continue to do so "regardless of whether those injuries occur in the factory, on the road, in a home office or elsewhere, as long as they are work-related" (Compliance Magazine, 2000). These injuries may have a variety of root causes, including ergonomic risk factors.

In a recent court of appeals decision in Utah, a company was ordered to pay compensation benefits to a home-based worker who "in the course of business" (it was decided) incurred a serious neck injury from a fall while spreading salt on their driveway

(J.J. Keller, 2000). This decision may have future implications on injury claims in other telecommuting situations.

Along similar lines, the California Ergonomic standard, implemented in 1997, does not specifically state that home office work related repetitive motion injuries (RMI's) are excluded as ergonomic program trigger injuries. Part of the requirements of the standard state that when RMI injuries occur, **employers must implement a program that includes a work-site evaluation**. The work-site evaluation is of "each job, process, or operation of identical work activity covered by this section or a representative number of such jobs, processes, or operations of identical work activities" and "shall be evaluated for exposures which have caused RMIs" (Status of California's "Ergonomics" Regulation California Code of Regulations, Title 8-Section 5110, Repetitive Motion Injuries (RMI's), 1997).

Company Q has several large facilities in the state of California and has had RMI injuries, which triggered the need to establish ergonomic programs. The company also has a number of employees telecommuting within the state. The question must be asked - do RMI's in the telecommuting setting count? And if they do, wouldn't the California ergonomics law require that the employer perform a work-site evaluation, even if the work-site is in the home (Status of California's "Ergonomics" Regulation California Code of Regulations, Title 8-Section 5110, Repetitive Motion Injuries (RMI's), 1997)?

No matter where telecommuters fit into the Cal OSHA ergonomic regulations or those currently being proposed by Federal OSHA, companies with tele-workers will still have to deal with the potential for injuries as a result of risk factors found in the home

office "work-site". These injuries must be reported and must be paid for not just in lost profit dollars, but also human suffering.

As is the procedure in the standard making process, a call for comments on the proposed OSHA ergonomic standard followed the issuance of the standard and had an original cut-off date of February 1, 2000. Due to the large numbers of comments and requests from industry and other interested parties, the comment period was extended to March 2, 2000.

On November 15, OSHA issued an advisory letter to a company in Texas essentially stating that “employer’s legal health and safety responsibilities also apply to employees working at home” (Clifton, 2000). OSHA said that even when the workplace is a “designated area in the employee’s home,” the employer must “ensure that employees are not exposed to reasonably foreseeable hazards created by their at home employment.”

After a flurry of public outcry from industry, ergonomic professional organizations and other interested parties, OSHA retracted the advisory within days of its issuance. (November 17, 1999). On February 25, 2000, in connection with the advisory retractment, OSHA issued Directive CPL2-0.125 – Home-Based Worksites. The intention of the directive was to provide guidance to the regulating community in dealing with home based employment inspection policies and procedures. Essentially the directive states that OSHA would not inspect **home offices**, but that **home based work-sites** could be reviewed, if there was an employee initiated complaint of a serious nature (*CPL 2-0.125 – Home Based Worksites, 1999).*

OSHA Public hearings on the proposed ergonomics standard were scheduled for March 13 and April 11 and have proceeded.

In summary, literature and documents were reviewed to identify risk exposures found specific to the telecommuting workforce, with an emphasis on ergonomic risk factors. Further information was gathered on the strategies Company Q and other select companies use to control general risk exposures and those presented by ergonomic exposures. Finally, the review included, information collected on recent regulatory efforts OSHA has pursued to reduce the potential for injury and illness in the telecommuting work force.

# CHAPTER III

## Method of Analysis

### General Data Gathering

Literature collection and review was the primary method of data gathering used to describe areas of risk associated specifically with the US corporate telecommuting workforce and of identifying exposure control techniques in the first objective of the study. The same method was used to define current ergonomic strategies used by corporations and OSHA to control telecommuting ergonomic risks that have the potential to cause losses in connection with employee CTD's included in objective 2. Information on corporate strategies was expressed in a descriptive paragraph format. Presentation of data related to OSHA strategies was presented in a time line format with descriptive summary information included.

An additional goal of this study was to review the United States portion of a computer services and solutions corporation - Company Q. Initial data gathering was performed through document collection and review of Company Q's specific telecommuting program information and basic risk control strategies.

### Interview Data Collection Process

Five Q competitors were selected for comparison of their current risk management strategies used to control risks specific to the telecommuting work force, with a concentration on ergonomics. Particular strategies evaluated were the provision of in-home workstation evaluations, and furniture and/or other related ergonomic workstation products. These competitors were previously identified by Company Q's

corporate top management and used in recent benchmarking studies for a variety of purposes including employment practices, benefits, management systems, accounting techniques and industry technological positioning. The competitors included Company I, Company H, Company C, Company E, and Company L.

An attempt was made to contact the risk manager or environmental safety and health coordinator for each company to discuss the strategies used to control potential telecommuting employee WMSD's. The initial contact was made by phone, and then data collection proceeded through additional phone and e-mail exchanges. As this study involved a small number of companies, (6 – Company Q and its five competitors) in various locations across the country, an informal phone/e-mail interview instrument was used to obtain the research data. A set of questions was developed to gather information related to telecommuting ergonomic interventions used by the companies, and services provided to their tele-workers (Appendix). A strict survey process was not selected, as it was necessary to provide a measure of background information to each participant/respondent.

**Data Collection Obstacles and Considerations**

An expected difficulty in the interview data collection process was identifying and reaching the most appropriate responder from each corporation. It could not be ensured that a single contact at each of Company Q's competitors would be able to provide current telecommuter ergonomic practices for the tele-worker company wide. In that situation, a facility or site location was listed in the data in connection with the

corporate information provided by the responder. The data comparing ergonomic strategies for Company Q and its five competitors was presented in a table format.

# CHAPTER IV

## Results and Discussion

### Corporate Risk Control Strategies in Telecommuting

Literature collection and document review was used as the primary method for the collection of source information on strategies used to control the variety of risk exposures associated with home telecommuting.

There were numerous common risk strategies found in the literature that are being implemented in companies that have home based telecommuting employees. The following is a summary of the strategies employed by these companies to reduce the variety of risks that arise in the course of sending a worker home to work.

- Communicate information to the telecommuting employee on the variety of safety and health issues that they may face in the home work environment, as a way to engage the employee in helping prevent the development of these risk factors. Communication avenues/tools were found to take different forms, for example web-based guides, made available to the telecommuting employee and customers, provided information on establishing a safe home work environment and explained how to use company products and equipment safely in the telecommuting/home office environment.
- Provide training to home-based employees on applicable OSHA subjects such as chemical hazard awareness, fire extinguisher use, and electrical safe work-practices. Teach them to identify safety and health risks present or potential in the home telecommuting environment.

- Develop Ergonomic programs which include training employees to recognize and avoid ergonomic risk factors such as awkward postures, repetition and the extended use of computer keyboards and related components to help prevent the potential for CTD's in the home work situation. Components of an ergonomic program have been proposed by OSHA and should include (a) Review of Job Hazards, (b) Training employees at all organizational levels, (c) Mmanage CTD's in an effective manner should they arise in an employee, (d) Evaluate the effectiveness of the ergonomic program periodically, and (e) maintain appropriate records to document the various activities of the program.
- Use ergonomic interventions, such as evaluating the home office work space and providing adjustable furniture and ergonomic accessories to telecommuters at home, to ensure they can achieve neutral, comfortable working postures while performing computer intensive tasks.
- Develop and implement policies and standards to determine the best candidates for telecommuting and to control areas of risk related to safety and potential injury in the telecommuting situation. These policies might define the job positions where telecommuting is allowed, requirements of a home workspace, work hours, customer contact in the home office, emergency response equipment, protection of sensitive data, and proper installation and use of company provided equipment.
- Evaluate levels of insurance protecting the home-based worker and the company to ensure appropriate risk financing is available to cover potential personal injury and property based losses should they arise.

- Establish employee-company telecommuting agreements that could include provisions for home worksite evaluations, criteria for covering work related injuries that occur in the home, investigation of injury and property related incidences/losses, and the installation, proper use and return of company supplied equipment.
- Develop a procedure for the proper disposal of hazardous and solid waste generated in the home office environment to maintain regulatory compliance with local, State and Federal environmental regulations. Convey information on proper waste management systems to employees.
- Do extensive planning and preparation prior to sending the tele-worker home, gathering input and include employees from various parts of the organization (Human Resources, Financial, Management, Supervisor, Facilities, and Employees) in the planning process.

**Strategies used by Company Q and Select Corporations to Control Ergonomic Risks faced by the Home Office Telecommuting Workforce**

Risk management professionals were contacted by phone and through e-mail exchanges at Company Q and five competitor companies. Risk professionals were interviewed using the framework of survey questions found in the Appendix. Information provided over the phone was recorded. Respondents, through e-mail exchanges provided additional data. Table 1 represents the information collected from the respondents to allow for a comparison of ergonomic risk strategies used by the six companies in the telecommuting environment.

Table 1

Comparison of Ergonomic Risk Control Strategies used in the Telecommuting Workforce

| | COMPANY Q | COMPANY C | COMPANY E | COMPANY H | COMPANY I | COMPANY L |
|---|---|---|---|---|---|---|
| Location(s) where ergonomic information is applicable | United States | United States | United States | United States - Company H has a company-wide telecommuting policy, however, the provides flexibility at individual sites, thus creating some differences in site programs. | United States | MN |
| Employees Telecommuting in the US? | Yes | Yes | Yes | Yes | Yes, we have over 145,000 employees that are assigned to 547 US Sites. Many of these employees are mobile and only assigned to a site for record keeping purposes (OSHA 200). | Not currently, but expect one telecommuter in June, 2000. |

| | COMPANY Q | COMPANY C | COMPANY E | COMPANY H | COMPANY I | COMPANY L |
|---|---|---|---|---|---|---|
| Percent of workforce? | >10% | > 10% | 6-10% | >10%, it ranges from <5% at some sites to more than 30% at others. | > 10% | <1% |
| Company performs in home workspace evaluations? | Yes, in limited situations, generally where an employee is experiencing symptoms or has a preexisting injury. | No | No | Yes, in some locations based on local site decision. Standard practice is for employees to do a self-assessment using web-based office ergonomics self-assessment tool. Some locations provide additional services such as on-site assessments for individuals with signs/symptom of ergonomic disorders or a history of medical issues. | No | Yes, performed in-home inspection in preparation of telecommuter situation in June. |

| | COMPANY Q | COMPANY C | COMPANY E | COMPANY H | COMPANY I | COMPANY L |
|---|---|---|---|---|---|---|
| | | | | Other sites ask the employee to take photo(s) of work area and bring those in so an ergonomic specialist can evaluate the workstation. | | |
| Provides home office furniture? How? | Yes, in limited situations as noted above. The company's Facility organization is contacted to provide furniture options with input from health and safety site service providers. | Yes, the Company provides adjustable ergonomic chairs to each telecommuter. | No | Yes/No. The company guideline states that it is up to the individual site or business unit to make that determination. As a result, some sites provide furniture (usually a chair, or chair and desk) or provide a furniture "allowance" so that the employee can select and | Yes, in some cases. It depends on the division and the manager the telecommuter works for. At this time there is not a corporate wide program for providing seating or other furniture to work-at-home employees | No |

| | COMPANY Q | COMPANY C | COMPANY E | COMPANY H | COMPANY I | COMPANY L |
|---|---|---|---|---|---|---|
| | | | | purchase his/her own furniture. Company H has an agreement with Herman-Miller to purchase home office furniture at a significant discount. However, at many sites, if the self-assessment identifies a risk related to the employee's home office furniture, it is the employee's responsibility to correct the problem. | | |
| Provides other ergonomic products? Type? | Yes, the company provides ergonomic accessories, for example wristrests, | Yes, the company provides ergonomic accessories such as wristrests, copy | Yes, ergonomic accessory items such as keyboard wristrests, and monitor blocks are widely | Yes, depending on the site, other supplies and equipment such as keyboard trays, palm rests, | Yes, if alternative items are needed (mouse, wristrest, headset) they can be procured | No, not yet. |

| | COMPANY Q | COMPANY C | COMPANY E | COMPANY H | COMPANY I | COMPANY L |
|---|---|---|---|---|---|---|
| | monitor blocks, footrests, document holders etc. to telecommuting employees through their corporate-wide office supply vendor and its associated order and delivery system. | clips. | available to employees through the company' normal office supply procurement system. If items are needed, they are ordered by employees and taken to the home workstation. | alternative input devices, document holders etc. may be provided for employees. In fact, even at sites that do not provide furniture, these accessories may be offered. | through the company internal procurement system. | |
| Other Comments? | None | A telecommuting agreement is signed by employees. Employee defines work hours. Company established intranet and internet sites focused on the tele-worksite and developed an on-line safety and | None | Company H's telecommuting workforce increases every year. The need for more consistent program implementation is recognized. Although not a high priority for the current fiscal year, the expectation is that changes to the company- | The mobile employee is the fastest growing segment in the U.S. | Our program is in its infancy so at this time I do not have a whole lot of data to share. We have one employee that will be going part time in June and 15 of the 20 hours worked will be from home. A home visit was conducted to evaluate |

| | COMPANY Q | COMPANY C | COMPANY E | COMPANY H | COMPANY I | COMPANY L |
|---|---|---|---|---|---|---|
| | | comfort guide for customers and internal telecommuter. | | wide program will occur next year. | | ergonomic issues as well as minor safety issues. |

**OSHA Strategies**

Based on the premise that risk factors and the potential for CTD injuries found in traditional office settings with computer intensive work will also be found in the telecommuter's office environment, we can assume that strategies OSHA is pursuing can apply in the home office situation. OSHA intends to pass an ergonomic standard that will reduce potential risk of injury and accident in the traditional office and similarly the telecommuting home workforce. The following is a brief timeline with comments indicating the progress of the standard, and the proposed elements of the program.

Also listed in the timeline is information regarding an OSHA advisory letter on an employers responsibility for safety in the homework site, a retraction to the advisory, and the subsequent publication of an OSHA compliance directive issued to guide regulators on home work-site/office compliance.

November 15, 1999 – OSHA issues advisory letter to a Texas company stating that an employer's legal health and safety responsibilities also apply to employees working at home and that the employer must prevent employee exposure to foreseeable hazards created in the homework site.

November 17, 1999 – OSHA publicly retracts advisory to Texas company on homework site employer health and safety responsibilities.

November 22, 1999 – Following 10 years of study, consultation and analysis, OSHA announces a proposed ergonomic standard.

February 1, 2000 – Original end to the proposed standard comment period.

February 15, 2000 – OSHA issues Directive CPL2-0.125 – Home Based Worksites to provide guidance to the regulating community in dealing with home based employment inspection policies and procedures.

March 2, 2000 – Due to a large number of comments from industry and other parties, the comment period was extended.

March 13 and April 13 – Public Hearings are scheduled on the Proposed Ergonomics Standard.

Elements of the OSHA proposed ergonomic standard:

a. Job hazard analysis and control;

b. Training of employees, supervisors, and staff on jobs with covered WMSD's;

c. WMSD management for workers who have WMSD's;

d. Program evaluation, and;

e. Record keeping.

The corporate telecommuting risk control findings indicate that a variety of strategies exist and are being utilized by corporations with telecommuting workers to control areas of risk found in the home work-site and its associated computer intensive activities. These strategies include - communication of safety and health information, training on applicable OSHA regulations, development of an ergonomic program and the implementation of ergonomic interventions, establishment of telecommuting policies and employee telecommuting agreements, evaluation of insurance protecting home based workers, disposal of wastes and using a multi-discipline planning process to implement a successful safe telecommuting program.

Ultimately, if passed, the combination of the OSHA ergonomic standard and how OSHA regulates the scope of home-based work activities (office related or not) will be the foundation of its strategy to protect the worker from injury in the telecommuting situation. Collectively, the efforts of employers and regulators could result in a more productive and safe telecommuting work site.

# Chapter V

## Summary, Conclusions, and Recommendations

### Restatement of the Problem

Nearly 8% of the United States workforce will be telecommuting by the year 2001. When companies send their workers home, there are some unique risk exposures faced by the home telecommuter. The potential for corporate losses lie in ergonomic risk factors, general safety issues, and their potential to result in injury to the tele-worker and property damages to company assets.

To stay competitive in today's market place, companies, like Company Q, must implement risk control strategies in the telecommuting work environment to prevent these losses which, effect their profits and the condition of their workforces.

### Methods and Procedures

Literature collection and document review were used as primary methods for data collection to define general risks found in the US corporate telecommuting workforce and strategies used to control risks, particularly ergonomic risk exposures. Risk professionals from Company Q and five of its competitors were contacted by phone and e-mail to provide information on the strategies they employ to control risk exposures found in their telecommuting workforce.

A set of questions was developed as a framework to gather information from the companies. Respondents gave information specific to providing in-home workstation evaluations, furniture and ergonomic accessories to telecommuters and comparisons were made with the practices of Company Q.

Information on the recently proposed OSHA ergonomic standard and the home-based work-site compliance directive were collected through document evaluation. These regulatory actions, depending on their implementation, present the potential for further loss control in the telecommuting workforce.

Major Findings

**Corporate Risk Control Strategies**

Strategies used by companies to control risks, both general and ergonomic in nature, were found to include a variety of practices and forms. Those that were identified consistently in the corporate setting included: developing a formal ergonomic program and implementing ergonomic interventions, communicating risk potentials and hazard information to telecommuting employees, thorough planning and preparation of the telecommuting program and related internal policies, and the establishment of employee telecommuting agreements.

**Company Q and Competitor Strategies**

Accept for Company L, the other four competitors and Company Q had similar percentages of telecommuting employees in the United States portion of their companies.

Company Q's ergonomic risk control strategies (including performing in-home workstation evaluations and the provision of office furniture and related ergonomic accessories) most closely resembled those found employed by Company H. Home work-site evaluations are done in telecommuting situations where employees have identified symptoms or previous CTD related injuries. In those situations, and based on site specific practices at Company H, office furniture is provided to home workers where

necessary. Although Company C does not perform in-home workstation reviews, it does provide an adjustable ergonomic chair to each of its telecommuters.

Aside from Company L, which does not have workers in a telecommuting situation currently, all of the companies in the study provide ergonomic accessories (i.e. wristrests, monitor blocks, and document holders) to tele-workers, which request them.

**OSHA Risk Control Strategies**

OSHA issued a proposed ergonomic standard in November of 1999, and is working it through the regulatory process, taking comments through the early part of the year and now holding public hearings in March and April.

The purpose of the standard is to reduce the potential for WMSD's in today's workforce by preventing and controlling risk factors associated with certain job types. Because we find the same ergonomic risk factors in the telecommuting environment, as we do in the traditional office computer intensive setting, we can expect to have to protect workers from similar ergonomic exposures. How the proposed ergonomic standard will formally apply to the telecommuter is not yet known.

In terms of general safety related risk exposures found in the telecommuting environment, a clear determination has not been made as to which OSHA standards will apply to employers with a workforce at home. One thing is clear, however, OSHA still expects employers to report injuries that occur in the course of business, telecommuting work environments included.

Conclusions

**Risk Control Strategies in the Telecommuting Environment**

Information found in the literature on risk control practices and risk financing strategies used in home work situations, indicate companies are doing a variety of things to reduce potential losses associated with the telecommuter. Clearly, good initial planning prior to implementation of a telecommuting program is essential.

The development of telecommuting agreements between employees working at home and their employer is a strategy used by a number of companies with home work forces.

In terms of chemical use, electrical safety, fire response and other general safety related areas, training employees is necessary in the traditional office in order for a company to achieve compliance with associated OSHA regulations. However, based on the literature reviewed, there is some confusion on which specific regulations would apply in the home-work environment (Maynard, 1994). Of course from a loss control prospective, required or not, training employees to identify and avoid general safety risk exposures in the home makes good business sense.

Proper disposal of chemicals and equipment by the telecommuter that may be considered a hazardous waste is important in protecting the corporation that employs a telecommuter from environmental penalties and liability. Further review of environmental regulations applicable to home-business generated waste is needed. As the literature indicates there may be different disposal methods required by State and local environmental regulatory bodies (Reed, 2000).

**Regulatory Ergonomic Risk Control Strategies**

The development of an ergonomic program that includes evaluating hazardous jobs, implementing changes to control ergonomic risk factors in these and similar jobs,

and ensuring the program is responsive and effective is recommended by private organizations and is being championed by OSHA . Because telecommuters face the same types of ergonomic risk factors as those employed in the traditional office setting, companies need to recognize the need to include the telecommuting workforce in their programs.

California's ergonomic standard similar to the OSHA proposed standard is designed to minimize CTD related injuries, through the evaluation of the work-site, the control of ergonomic risk exposures and the training of employees. However, it is unclear whether the requirement to establish a complete ergonomics program based on the occurrence of CTD's includes injuries of that type that occur in the telecommuting workforce. If the fact that OSHA continues to require employers to record injuries and illnesses to employees no matter where in the course of work they happen, it seems likely that corporations with a California based telecommuting workforce may be drawn into the depth of the California ergonomics standard.

Again, required or not, worker compensation dollars spent on ergonomic risk related injuries is one of the largest growing claims areas in the nation. Companies who want to stay competitive will pursue the implementation of ergonomic programs and training for their entire computer intensive workforce, including the tele-worker, to prevent these losses.

**Corporate Ergonomic Risk Control Practices**

Based on the corporate ergonomic risk strategy findings, it is clear that there is no precedence found among the company respondents when comparing the practice of performing home workstation evaluations and the provision of furniture to the tele-

worker. This is likely based on the fact that in-home evaluations present issues related to worker privacy, logistical issues with completing the evaluation, and installing workstation furniture. The data does indicate that some companies are using these strategies when employees are experiencing CTD related symptoms or have existing CTD related medical conditions/injuries (Table 1).

Other companies also use less complicated methods of evaluating the tele-workers home work-site for ergonomic issues, by relying on the employee to take pictures of the workstation at home, reviewing the pictures and making recommendations. Or, use an on-line ergonomic self-assessment tool or guide, so employees can help themselves achieve more neutral computer intensive working postures (Hewlett Packard, 2000).

The companies evaluated in the study consistently provided ergonomic accessories to their telecommuters. Each of these strategies can help the employee set-up and work in a more comfortable, safe situation, while working at home.

## Recommendations Related to This Study

The following recommendations are intended to assist Company Q in the prevention of injury and/or property damage related to sending the tele-worker home.

1. Develop telecommuting processes, standards, and program elements using employee input from a multiple of corporate disciplines (Facilities, HR other). This collective planning process ensures that the employee has the proper equipment, workstation set-up and other tools to work more productively and safely in the home.
2. Evaluate disposal processes in the current Company Q telecommuting employee agreement and training information. Consider variations in Local, State and Federal

regulatory bodies for proper disposal of home business generated wastes. Identify and communicate proper waste disposal information to tele-workers. Ultimately, appropriate management of the waste generated in Company Q's telecommuting workforce will reduce the potential for environmental related losses.

3. Obtain clarification from OSHA and California OSHA on whether or not RMI's, developed by tele-workers in the home, are included in those that can trigger the current Cal.OSHA ergonomic standard and the standard proposed by Federal OSHA. Company Q must know the extent to which these standards effect their employee base (traditional or telecommuting), to ensure full compliance with the existing California standard and to properly prepare for the current Federal proposed ergonomic standard.
4. Consider development of an online employee self-assessment process for at home workstations review. The assessment could also include the evaluation of safety issues in the home workplace. In combination with training, self-assessments could be a cost-effective way to reach and help the employee recognize not only ergonomic risk factors, but other general safety exposures found in the telecommuting environment.
5. Evaluate the existing Company Q corporate telecommuting policy/standard and determine the consistency of ergonomic and general risk control strategies used across the country.
6. Investigate the legal insurance claim precedence for the coverage of company equipment in the home work-site situation. Further insurance may be needed to

finance potential losses of equipment as well as personal injuries that occur in the home worksite.

7. Revise current Company Q ergonomic programs to include the telecommuting workforce, ensuring that workstation evaluations can occur in an efficient manner, ergonomic hazards can be identified, that a process exists to remedy risk factors related to workstation set-up, and that a response and record keeping mechanism is in place to record injuries that occur in the home work setting.

Further Recommendations

Continuous regulatory review will be necessary on the progress of the OSHA proposed ergonomic standard, and the regulatory boundaries framed by the recent OSHA advisories and directives in terms of employer responsibilities for safety in the home work environment. These regulations will have a bearing on the risk strategies needing to be implemented by companies sending workers home to work. Ultimately, the combination of loss controls efforts put forth by corporations with growing telecommuting workforces, will result in dollars saved and improved employee working conditions.

References

American Industrial Hygiene Association. (2000). "Internet: There's No Place Like Home…for Workplace Safety" [Online]. Available: http://www.aiha.org/pr/home.html. (Accessed 4 May, 2000).

American National Standards Institute. (1998). American National Standard for Human Factors Engineering of Visual Display Terminal Workstations. (ANSI/HFE Standard No. 100-1988). Santa Monica, CA: The Human Factors Society, Inc.

Barker, R. (1999, October). Work a la Modem. Business Week, 3649, 170-176.

BNAC Communicator. (2000, Winter). OSHA Proposes Ergonomics Standard. BNAC Communicator, Vol. 19, No. 1, 1, 10-11.

Brady, Robert L. (1996, August) Limiting Your Liability in Work-at-Home Arrangements. HR Focus, Vol. 73, Issue 8, 20-21.

Brigham, C. (1999, April). Ergonomics: A Science that can Save. Compliance Magazine, 24-25.

Center for Office Technology. (Eds) 1999. Setting Up a Successful Home Office. [Brochure]. VA: Author.

Compaq. "Internet: Comfort Guide" [Online]. Available: http://www.compaq.com/comfort guide.html. (Accessed 28 April, 2000).

Compliance Magazine. (2000, March). News: Jeffress Issues Statement on Home Worker Liability. Compliance Magazine, 2.

California Code of Regulations, Title 8 General Industry Safety Orders, Section 5110.

Repetitive Motion Injuries. (In Litigation). (2000, 28, March). *"Internet: - Status of California's "Ergonomics" Regulation California Code of Regulations, Title 8-Section*

*5110, Repetitive Motion Injuries (RMI's).”* Available: http://www.dir.ca.gov/title8/5110.html. (Accessed 7 April, 2000).

Clifton, Joshua (Ed.). (2000, February). Labor Department to Issue Formal Home-Office Directive. CTD News, Vol. 9, No. 2, 1-5.

DeCarlos, D. (2000, April). Workers' Comp: OSHA's Standards Impact Work-at-Home Employees. Risk & Insurance. 8.

Eilperin, Juliet. (1999, August 9). House Action would Delay Ergonomics Regulations. Minneapolis Star, p.1.

Garvey, Don. "ARMed for Success – The Associate in Risk Management Designation." Unpublished outline, 1999.

Gordon, Gil. (1994, October). *"Internet: American Express Takes Long, Slow, and Successful Road to the Virtual Office?"* Telecommuting Review [Online]. Available:http://www.gilgordon.com/downloads/amex.txt (Accessed 4 November, 1999).

Gordon, Gil. (1998) *"Internet: Work/Life – Office/Home – Day/Night:Compensating the Workplace "Slashes" of the Future."* Gil Gordon. [Online]. Available: http://www.gilgordon.com/downloads/compensating.txt (Accessed 4 November, 1999).

Gordon, Gil. (1999, September). "*Internet*: *What Will Telework Change and What Kind of Future Will it Bring? Today and Tomorrow in the Leading Telework Country*." Proceedings of the Fourth International Telework Workshop. Tokyo, Japan, September 3, 1999 [Online]. Available: http://www.gilgordon.com/downloads/tokyo_speech.html. (Accessed 4 November, 1999).

Hewlett Packard. (1994). "Internet: Working in Comfort" [Online]. Available: http://www.hp.com/ergo. (Accessed 1 May, 2000)

Keller's Industrial Safety Report. (2000, May). Employee Collects Worker's Compensation as Result of Home Office Accident. Keller's Industrial Safety Report, Vol. 10, No. 5, 4.

Laws, J. (2000, March). Working and Buying at Home. Occupational Health & Safety, 4.

Lord, M. (2000, January). Be It Ever So Perilous. U.S. News & World Report, Vol. 128, Issue 2, 44.

Maynard, Roberta. (1994, August). The Legal Aspects of Telecommuting. Nation's Business, Vol. 82, Issue 8, 8-9.

McClay, Corry J. (1998, January). The Development of Work-at-Home Safety Programs. Professional Safety, Vol. 43, Issue 1, 39-43.

Reed, Michael (MichaelReed@Co.Ramsey.MN.US). (2000, May 3). Telecommuting Business Waste Disposal. E-mail to Dawn M. Westin (Dawn.Westin@Unisys.com).

Roberts, P. (1998, May). *"Internet: The Wired Worker." Exec [Online]. November-December, 1999.* Available:http://www.unisys.com/execmag/framesets/search.html (Accessed 4 November, 1999).

Sanger, J. (1999) The Telecommuting Deployment Process. Proceedings of the 1999 Minnesota Safety and Health Conference: Change is the Challenge, 212-218.

Straker, L., Jones, K., Miller, J. (1997). A Comparison of the Postures Assumed When Using Laptop Computers and Desktop Computers. Applied Ergonomics, Vol.28, No. 4, 263-268.

United States. Department of Labor. Office of Public Affairs. Occupational Safety and Health Administration. (1999, 25 February). *"Internet: National News Release CPL 2-0.125 – Home Based Worksites. Home offices will not be inspected OSHA Formalizes Policy on Home-Based Work."* Available: http://www.osha.gov/media/oshnews/feb00/national-20000225.html. (Accessed 23 November, 1999).

United States. Department of Labor. Office of Public Affairs. Occupational Safety and Health Administration. (1999, 22 November). *"Internet: National News Release USDL 99-333. One Size Doesn't Fit All Approach."* Available: http://www.osha.gov (Accessed 23 November, 1999).

United States. Department of Labor. Office of Public Affairs. Occupational Safety and Health Administration. (1999, 22 November). *"Internet: - OSHA Proposed Ergonomic Rule Introduction, 1999)."* Available: http://www.osha-slc.gov/ergonomics-standard/overview.html. (Accessed 23 November, 1999).

Company Q. (1997, 11 July). *"Internet: Flexible Work Solutions: Guide to Setting up a Remote Office."* Flexible Work Solutions. Available: http://iwww.unisys.com/employee/docs/remote.doc. (Accessed 10 November, 1999).

United States. Department of Health and Human Services. Center for Disease Control and Prevention. National Institute for Occupational Safety and Health. By Bernard, B. (Ed). (1997, July). *"Internet: DHHS (NIOSH) Publication No. 97-141. Musculoskeletal Disorders (MSDs) and Workplace Factors."* Available: http://www.cdc.gov/niosh/ergoscil.html. (Accessed 23 November, 1999).

United States. Department of Health and Human Services. Center for Disease Control and Prevention. National Institute for Occupational Safety and Health. (1997, May). *"Internet: NIOSH Fact Sheet Document No. 705005. Work-Related Musculoskeletal Disorders."* Available: http://www.cdc.gov/niosh/muskdsfs.html. (Accessed 23 November, 1999).

# APPENDIX

Telecommuting Workforce Ergonomic Risk Control Survey Framework

1. Based on the following definition of a telecommuter - *an employee that works away from the office and in their home at least 1-3 days per week*, do you have employees working in a telecommuting situation in the US portion of your company?
2. Can you provide information for the US portion of the company or is this information site or location specific? If site specific, what site(s) does the information pertain to?
3. If you have telecommuters in your workforce, can you estimate the percentage of employees that you would consider to be telecommuting on a regular basis as described above? Possible answer ranges <1%, 1-5%, 6-10%, >10%.
4. Does your company perform in-home workstation evaluations of a telecommuter workspace and furniture?
5. If you have a telecommuting workforce, do you provide furniture for in-home telecommuting workstations? How is the provision made?
6. Do you provide any other ergonomic related products to telecommuting employees in the home office? What types of products do you provide?
7. Do you have any further comments?