

North Carolina Department of Labor
Occupational Safety and Health Division
Bureau of Compliance

Field Operations Manual
Chapter XVII - Ergonomics Inspection Procedures



Table of Contents

- A. [Purpose](#)
- B. [Phase One](#)
- C. [Phase Two](#)
- D. [Phase Three](#)
- E. [Case Resolution](#)
- F. [OSHA-1 Optional Information Codes](#)

[Appendix XVII-A: Calculations](#)

[Appendix XVII-B: Ergonomics Records Review Checklist](#)

[Appendix XVII-C: Sample “Good Written Program / Good Controls” Letter](#)

[Appendix XVII-D: Sample “Good Controls / Could Improve Written Program” Letter](#)

[Appendix XVII-E: Sample “Good Written Program / Could Improve Controls” Letter](#)

[Appendix XVII-F: Sample “Could Improve Written Program and Controls” Letter](#)

[Appendix XVII-G: Sample Employee Interview Form](#)

Chapter XVII

Ergonomics Inspection Procedures

A. **Purpose.**

This document provides guidance for OSHNC Field Staff (CSHOs and Consultants) to use in conducting inspections/ surveys of workplaces where ergonomic (ergo) hazards may exist and in determining the appropriate responses to those hazards. The three-phase method is intended to identify case outcomes as early as possible in the process, allowing efficient use of CSHO/ Consultant time. Phase One activities are intended to screen out cases where the employer is responding appropriately to any ergo hazard that exists. Phase Two involves the identification of specific ergo hazards and deficiencies in the employer's response to those hazards. Phase Three stipulates the requirements for issuance of a citation under the general duty clause of the OSH Act (for CSHOs only).

B. **Phase One** - Determine the presence of unaddressed hazards.

The purpose of Phase One is to identify cases requiring intensive scrutiny while limiting OSHNC activity at worksites where ergo risk factors are not an issue or are being adequately addressed.

1. Open inspection/consultative visit per guidelines. (i.e., FOM Chapter 3 or OPN)
2. Obtain documents related to ergonomics such as OSHA 300 logs, NC-19s or OSHA 301s, first aid/ physical therapy logs, incident reports, ergo training program and attendance logs, etc. *for the prior five years.* (See checklist in appendix B.)
3. Evaluate OSHA 300 logs - identify possible ergo-related cases, primarily those with musculoskeletal disorders (MSDs). If the employer has no logs or records of injuries/illnesses, look for stressors during walkthrough. (Contact Supervisor if ergo related MSDs or stressors are identified on non-GS inspection in order to receive permission to expand scope of inspection.)
4. Obtain NC-19's (or 301s) for cases identified in step #3. Evaluate the NC-19's to determine true ergo related cases. (Note: At the onset of an effective ergo program there will be increased reporting of ergo related problems. The number of MSDs will decrease as corrective measures are implemented.)
5. Identify the ergo cases by departments/ jobs and identify # employees in each category.
6. Calculate the DART and severity rates for the various departments to determine areas of highest priority. This data may later be used to establish relationships between tasks and injuries. The difference in rates between jobs links injuries with the task performed and minimizes the influence of non-work factors.

DART = Days Away, Restricted, or Transferred rate. Calculated using OSHA-300 data and employee hours worked. (See calculations in appendix A.)

7. Evaluate the worksite. Look for ergo stressors or indicators of ergo problems (i.e., back belts, wrist splints, etc.). Look for “home made” work station modifications. Since the CSHO/ consultant cannot observe every task, interview employees about awkward postures as well as observed risk factors. Ask whether or not employees have made modifications to their own workstations.
8. Determine action taken by the company regarding stressors identified in the workplace.
 - a. Is there a plan to address ergo hazards? (Get copy if written.)
 - b. Does the employer use the injury/ illness records to identify ergo hazards?
 - c. Has the employer conducted a workplace analysis (job safety analysis, etc.)?
 - d. What corrective actions has the employer taken?
 - e. Is there a schedule for implementing additional corrections?
 - f. Are employees trained on ergo issues?
 - g. Are employees involved in the correction of ergo hazards?
 - h. Do the employees receive proper medical attention?
9. Review data with OSH District Supervisor.
 - a. Where the DART and severity rates are improving over time (use at least 3 years of data) and the company has implemented an effective ergo program, the ergo inspection will be terminated. Send the employer a letter acknowledging their efforts. (See suggested letter in appendix C.)
 - b. Where the DART and severity rates are improving but the company has deficiencies in the ergo program, the ergo inspection will be terminated. Send the employer a letter acknowledging their efforts and include suggestions for program improvements. (See suggested letter in appendix D.)
 - c. Where either the DART or severity rates are not improving but the company has an effective ergo program, the ergo inspection will be terminated. Send the employer a letter acknowledging their efforts and include suggestions for program improvements and additional available resources. (See suggested letter in appendix E.)
 - d. Where 1) either the DART or severity rates are not improving, and 2) the company has deficiencies in the ergo program, consider continuing with Phase Two of the ergo inspection.
 - e. At establishments where there may be relatively low DART and/or severity rates, clusters of ergo injuries may exist in one or more specific tasks. If there are significant deficiencies in the company’s ergo program, consider continuing with Phase Two of the ergo inspection.

C. **Phase Two** - Assessing the extent of unaddressed hazards.

The purpose of Phase Two is to identify and focus on high-risk jobs, to assess whether and to what extent those jobs involve ergo hazards, and to make a preliminary determination whether the elements of a general duty clause violation are present.

1. Evaluate the jobs that were identified in Phase One as causing or likely to cause MSDs to determine the ergo risk factors. The factors include:
 - a. Repetitive performance of the same motion or motion pattern;
 - b. Awkward work postures;
 - c. Using forceful exertions;
 - d. Frequent or forceful lifting, pushing or other manual handling; or
 - e. Using vibrating tools or equipment.
2. Interview employees in the jobs identified in B.1. (See sample interview sheet in appendix G.) Obtain medical release paperwork (Use HIPAA release form in FIS).
3. Videotape employees in their jobs.
4. Evaluate the documentation (obtained in Phase One). Determine a possible cause and effect relationship between identified stressors and MSDs identified in record review. Identify possible abatement methods.
5. If an ergo hazard is found to exist, evaluate the elements of the general duty clause to see if there is sufficient evidence to carry the inspection further. These elements include:
 - a. A hazard is present;
 - b. The hazard is recognized by the employer and by the industry;
 - c. The hazard is causing or likely to cause serious physical harm to employees;
(For this there should be medical evidence that demonstrates an association between employees' injuries and their work.)
 - d. There is a feasible method of abatement that will reduce or eliminate employee exposure to the hazard.

Note: The employer may be addressing the hazards incrementally. Determine how much had been done prior to the start of the inspection. A general duty violation will likely not be recommended if the employer is making a good faith effort to eliminate ergonomic hazards,
6. Review this material with the Supervisor and Bureau Chief.
 - a. If it is determined that there is insufficient evidence to issue citations, hold the closing conference. Send the employer a letter describing specific deficiencies, possible abatements, and available assistance. (See suggested letter in appendix F.)
 - b. If there is sufficient evidence to issue citations, proceed with Phase Three.

D. **Phase Three** - Documenting significant hazards for citation.

The purpose of Phase Three is to develop cases that NC DOL and the AG's Office agree are appropriate candidates for citation and possible litigation. A decision will have to be made by NC DOL and the AG's Office regarding additional resource needs.

1. Solid development and documentation of each of the four elements are essential to establish a general duty case. Only those tasks that contain clearly recognized hazards for which there are known abatement techniques can be cited.
 - a. Proof that a hazard exists - There should be a disproportionate number of employees in a particular job title, job description or department that have diagnosed MSDs that can be associated with the documented risk factors. The DART rate should be in excess of other populations, including general industry. The injuries/ illnesses must correlate to the job or task elements with the ergo stressors (i.e., repetitions, force, awkward posture, manual handling and/or vibrating tools.)
 - b. Proof of employer or industry recognition - Extensive injuries/ illnesses, surgeries, or high DART and severity rates for particular job title, job description or department can assist in showing employer recognition. Reports from physicians, insurance companies, or other outside sources may be available. These should be obtained, along with management's admission that they read the reports. Evidence of industry recognition may also be available (internet, Federal Ergonomics Response Team, industry association publications or web sites, etc.)
 - c. Proof of serious harm to employees - Interviews of affected employees, medical records, severity rates, worker compensation claims, and surgeries for MSDs all document the serious nature of the hazards and employees' exposure to those hazards.
 - d. Proof of feasible abatement - Feasible abatements for each task must be established. Show that the abatements, when implemented, will eliminate or substantially reduce the hazard. Demonstrate that the suggested abatement methods will not have a negative effect on the employer's product or process.
2. Prior to the closing conference the Supervisor, Bureau Chief, Director's Office and AG's Office must review the materials developed. For these types of citations the Citation Authorization Form must be completed. Medical experts may also be contacted prior to citation development.
3. Once the final decision to issue citations or to send an advisory letter (see appendix F) is made, the closing conference can be held. The inspection file is completed and citations or letters are issued at this time.

E. **Case Resolution.**

1. If an informal conference is requested, the Bureau Chief, Director's Office and AG's Office must be informed of any proposed Informal Settlement Agreement.
2. If citations are contested, the CSHO must advise NC DOL management and the AG's Office as soon as possible for the best possible litigation preparation.

F. **OSHA-1 Optional Information Codes.**

The following Optional Information Codes (Block 42) should be used when appropriate.

S 16 – General Duty Ergonomic Citation Issued

S 17 – Ergonomic Hazard Alert Letter Issued

No Optional Information Code is necessary if an Appendix C - “Good Written Programs/Good Controls” letter is sent to the employer.

FOM Chapter XVII cont'd.

Appendix XVII-A: Calculations

Calculation of incident rates (IR) uses the NUMBER OF CASES:

Days Away, Restricted and Transferred (DART) uses totals from columns H and I from OSHA-300 logs.

$$\text{DART} = [(\text{lost workday cases} + \text{restricted work cases}) \div \text{Hours worked}] \times 200,000$$

Calculation of the severity rate (SR) uses the TOTAL NUMBER OF DAYS FOR EACH CASE:

For OSHA-300 use totals from columns K and L.

$$\text{Severity rate} = [(\text{Days away from work} + \text{Days restricted}) \div \text{Hours worked}] \times 200,000$$

If necessary, estimate number of "hours worked", but if at all possible get accurate payroll hours. Count **ALL EMPLOYEES ON SITE**, including management, temporary and/or part-time:

$$\text{Hours worked} = \# \text{ of employees} \times 40 \text{ hours/week} \times 50 \text{ weeks/year}$$

To evaluate the progress in correcting ergonomic problems, the Ergo IR and SR can be calculated. By comparing data from at least 3 years, trends specific to ergonomics can be assessed.

Ergonomic Incident Rate (Ergo IR) uses only those lost workday and restricted work cases that are related to ergonomic stressors. It is divided by the number of hours worked by employees in the high ergo risk jobs and then multiplied by 200,000.

Ergonomic Severity Rate (Ergo SR) uses the number of days lost or restricted due to ergonomic stressors. It is divided by the number of hours worked by the employees in the high risk ergo jobs and then multiplied by 200,000.

Appendix XVII-B: Ergonomics Record Review Checklist

Information Received?		DESCRIPTION OF RECORD/PROGRAM
YES <input type="checkbox"/>	NO <input type="checkbox"/>	
		OSHA 300 Logs
		Industrial Commission Forms (NC IC-19)
		Ergonomics Program
		Ergonomic Surveys
		Ergonomic Improvements
		Industrial Engineer Reports
		Production Studies (handling records, size, weight, etc)
		Consultant Reports
		National Studies
		Medical Records/Company Physician Reports
		Treatment Plan/Wellness Program
		Job Change/Restriction
		Safety Committee (reports/minutes)
		Labor Agreements (union involvement)
		Work Hours (audit reports)
		Pay System (wages, hours of work, standards, breaks)
		Floor Plan
		Employee Turnover Rate
		Number of employees on each job, w/job description
		Departments (breakdown w/# of employees, etc.)

Appendix XVII-C: Sample "Good Written Program / Good Controls" Letter

Date

Name

Title

Address 1

Address 2

City, State Zip

Dear (Name):

A Compliance Officer (CSHO) from the Bureau of Compliance of the North Carolina Division of Occupational Safety and Health conducted an inspection of your facility in (city,) North Carolina on (date). The CSHO reviewed the various aspects of your ergonomics program and concluded that it is an effective program as demonstrated by the reduction in ergonomic related injury rates. The CSHO also conducted a workplace analysis for ergonomic stressors and did not identify any ergonomic hazards of which the company was not aware.

It is recommended that (Company) continue in its efforts to manage ergonomic stressors in the workplace. We encourage you to continue to:

1. Evaluate the workplace regularly (e.g., job safety analyses);
2. Promote early reporting and medical management of any injuries and illnesses;
3. Provide annual retraining of your employees; and
4. Maintain the safety committees at all levels (i.e., production and management).

In - Compliance Option: (This option will be used ONLY if no hazards were observed during the inspection and no citations will be issued AT ALL. If the inspection resulted in ANY alleged violations and proposed citations, use the "Citations Enclosed Option" shown below.)

During the inspection, the CSHO did not identify any apparent violations of North Carolina occupational safety or health standards or regulations, including the general duty clause. We commend you on maintaining your workplace in this manner and we appreciate your commitment to protecting the health and safety of your employees.

Citations Enclosed Option:

During the inspection, the CSHO did observe violation of North Carolina occupational safety or health standards or regulations. Citations for those items are enclosed.

Please contact CSHO (name) or myself if you have any questions or comments about our program or your inspection or if you need additional assistance.

Sincerely,

District Supervisor

Appendix XVII-D: Sample "Good Controls / Could Improve Written Program" Letter

Date

Name

Title

Address 1

Address 2

City, State Zip

Dear (Name):

A Compliance Officer (CSHO) from the Bureau of Compliance of the North Carolina Division of Occupational Safety and Health conducted an inspection of your facility in (city,) North Carolina on (date). The CSHO reviewed the various aspects of your ergonomics program and concluded that it is an evolving program as demonstrated by some reduction in ergonomic related injury rates. The CSHO also conducted a workplace analysis for ergonomic stressors.

It is recommended that (Company) continue in its efforts to manage ergonomic stressors in the workplace. We encourage you to:

1. Evaluate the workplace regularly (e.g., job safety analyses);
2. Promote early reporting and medical management of any injuries and illnesses;
3. Provide annual retraining of your employees; and
4. Maintain the safety committees at all levels (i.e., production and management).

Option: It is also strongly recommended that (Company) formalize its ergonomics program in a written format that includes details of the above-mentioned aspects of its program. The most important aspects of the program are management commitment and employee participation.

Option: The CSHO determined that the use of the following controls might have a positive effect toward minimizing the risks of musculoskeletal disorders. In addition, you may find other approaches to relieving ergonomic stressors as you continue to improve your ergonomics program:

(List suggestions)

In - Compliance Option: (This option will be used ONLY if no hazards were observed during the inspection and no citations will be issued AT ALL. If the inspection resulted in ANY alleged violations and proposed citations, use the "Citations Enclosed Option" shown below.)

During the inspection, the CSHO did not identify any apparent violations of North Carolina occupational safety or health standards or regulations, including the general duty clause. We commend you on maintaining your workplace in this manner, and we appreciate your commitment to protecting the health and safety of your employees.

Citations Enclosed Option: During the inspection, the CSHO did observe violation of North Carolina occupational safety or health standards or regulations. Citations for those items are enclosed.

Please contact CSHO (name) or myself if you have any questions or comments about our program or about your inspection or if you need additional assistance.

Sincerely,
District Supervisor

Appendix XVII-E: Sample "Good Written Program / Could Improve Controls" Letter

Date

Name

Title

Address 1

Address 2

City, State Zip

Dear (Name):

A Compliance Officer (CSHO) from the Bureau of Compliance of the North Carolina Division of Occupational Safety and Health conducted an inspection of your facility in (city,) North Carolina on (date). The CSHO reviewed the various aspects of your ergonomics program and concluded that it is comprehensive. The CSHO also conducted a workplace analysis for ergonomic stressors and determined that the use of the following controls may have a positive effect toward minimizing the risks of musculoskeletal disorders. In addition, you may find other approaches to relieving ergonomic stressors as you continue to improve your ergonomics program:

(List suggestions)

It is recommended that (Company) continue in its efforts to manage ergonomic stressors in the workplace. We encourage you to continue to:

1. Evaluate the workplace regularly (e.g., job safety analyses);
2. Promote early reporting and medical management of any injuries and illnesses;
3. Provide annual retraining of your employees; and
4. Maintain the safety committees at all levels (i.e., production and management).

In-Compliance Option: (This option will be used ONLY if no hazards were observed during the inspection and no citations will be issued AT ALL. If the inspection resulted in ANY alleged violations and proposed citations, use the "Citations Enclosed Option" shown below.)

During the inspection, the CSHO did not identify any apparent violations of North Carolina occupational safety or health standards or regulations, including the general duty clause. We commend you on maintaining your workplace in this manner, and we appreciate your commitment to protecting the health and safety of your employees.

Citations Enclosed Option: During the inspection, the CSHO did observe violation of North Carolina occupational safety or health standards or regulations. Citations for those items are enclosed.

Please contact CSHO (name) or myself if you have any questions or comments about our program or about your inspection or if you need additional assistance.

Sincerely,

District Supervisor

Appendix XVII-F: Sample "Could Improve Written Program and Controls" Letter

Date

Name

Title

Address 1

Address 2

City, State Zip

Dear (Name):

A Compliance Officer (CSHO) from the Bureau of Compliance of the North Carolina Division of Occupational Safety and Health conducted an inspection of your facility in (city,) North Carolina on (date).

In-Compliance Option: (This option will be used ONLY if no hazards were observed during the inspection and no citations will be issued AT ALL. If the inspection resulted in ANY alleged violations and proposed citations, use the "Citations Enclosed Option" shown below.)

During the inspection, the CSHO did not identify any apparent violations of North Carolina occupational safety or health standards or regulations, including the general duty clause. We commend you on maintaining your workplace in this manner, and we appreciate your commitment to protecting the health and safety of your employees.

Citations Enclosed Option: During the inspection, the CSHO did observe violation of North Carolina occupational safety or health standards or regulations. Citations for those items are enclosed.

Also during the inspection, ergonomic hazards were evaluated. CSHO (name) interviewed employees and evaluated workplace stressors associated with their duties that include, but are not limited to:
(List hazards)

At this time, the North Carolina Department of Labor has decided not to issue citations against (company) with regard to ergonomic concerns. As was discussed in the closing conference, it is strongly recommended that (company) develop an effective written ergonomics program.

An ergonomics program should be fully endorsed by management and be effectively communicated to the employees. The program should consist of at least the following elements:

- Worksite Analysis
- Hazard Prevention and Control
- Training and Education
- Medical Management

Worksite Analysis

The worksite analysis should include review of the injury and illness data (OSHA 300 logs, NC-19 forms), employee interviews and on site analysis of the jobs conducted by employees. The worksite analysis will help pinpoint the areas on which you may need to focus first.

Hazard Prevention and Controls

The prevention and control of ergonomic hazards in the workplace can be accomplished by the use of engineering controls, work practice controls or administrative controls. The following recommendations are specific to your facility:

Engineering Controls

(Add information)

Work Practice Controls

(Add information)

Administrative Controls

Administrative controls can be used to eliminate or reduce the employees' exposure to the particular ergonomic stress in the environment. We recommend that, where possible, employees be rotated through jobs that will alternately work and rest the muscle groups involved.

Training and Education

Educating the employees properly on ergonomic hazards and the timely reporting of pain can help inform management of problems before they get out of control. The employees and management officials should be trained in the proper techniques and work habits that help reduce ergonomic stress on the body.

Medical Management

Protocol should be established to provide consistent medical treatment for the employees that experience cumulative trauma disorders (CTDs). An active CTD surveillance program should be implemented to detect the magnitude and location of the problems within the workplace. A conservative and medically-acceptable approach for the treatment of CTDs should be developed. Following proper treatment, a "return to work regimen" including light duty jobs and work hardening, should be implemented.

The implementation of an ergonomics program in the workplace is essential in preventing the occurrence of CTDs. The recommendations outlined in this letter are basic approaches to preventing and managing CTDs in the workplace. You may find additional approaches to solving the ergonomic problems while implementing your program. The most important aspect of the program is management commitment and participation. The ergonomics program cannot succeed without management support.

We appreciate your cooperation. Please contact CSHO (name) or myself if you have any questions regarding the inspection or if you need additional information.

Sincerely,

District Supervisor

Appendix XVII-G: North Carolina Department of Labor Ergonomic Assessment Form

Date: _____ File # _____

Name: _____ Phone: _____

Address: _____

Gender: M F Age: _____ yrs.

Job Title: _____ Job Tenure: _____

Dept. _____ Shift: _____

Previous Job: _____ How long? _____

Previous Job: _____ How long? _____

If answer is Yes, proceed with remaining questions. If answer is No, proceed to page 3.

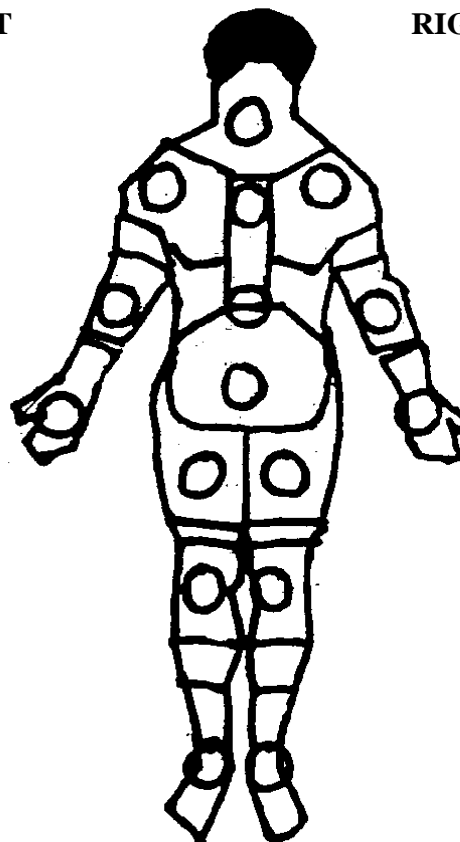
{Discomfort scale: 1=slight; 2=mild;
3=moderate; 4=prominently uncomfortable;
5=very uncomfortable}

LEFT:	Rate:
(1) Hand, fingers	1 2 3 4 5
(2) Wrist	1 2 3 4 5
(3) Arm	1 2 3 4 5
(4) Elbow	1 2 3 4 5
(5) Shoulder	1 2 3 4 5

RIGHT:	Rate:
(6) Hand, fingers	1 2 3 4 5
(7) Wrist	1 2 3 4 5
(8) Arm	1 2 3 4 5
(9) Elbow	1 2 3 4 5
(10) Shoulder	1 2 3 4 5
(11) Neck	1 2 3 4 5
(12) Back	1 2 3 4 5
(13) Legs	1 2 3 4 5
(14) Other (specify)	1 2 3 4 5

LEFT

RIGHT



(BACK VIEW)

Are you free to report symptoms? Yes No

Were you treated for an MSD? Yes No

Where were you treated? On site Off site

FOM Chapter XVII cont'd.

Who treated you?	Company Physician <input type="checkbox"/> Company Nurse <input type="checkbox"/> Personal Physician (w/ company knowledge) <input type="checkbox"/> Personal Physician (w/o company knowledge) <input type="checkbox"/>
What type of treatment did you receive? (Check all that apply)	Medication <input type="checkbox"/> Surgery <input type="checkbox"/> Physical Therapy <input type="checkbox"/> Counseling <input type="checkbox"/> Other (braces, hot/cold, etc.) _____
Name of treating physician? _____	
Was treatment effective?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Did anyone follow up with you to see your status?	Yes <input type="checkbox"/> No <input type="checkbox"/>
On light duty from MSD?	Yes <input type="checkbox"/> No <input type="checkbox"/>
If yes, when and for how long ? For what job?	_____
Do you rotate to a different job two or more times every shift?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Have you had a MSD before working for the present employer?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Did you receive treatment for MSD?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Treatment by previous employer effective?	Yes <input type="checkbox"/> No <input type="checkbox"/>
How often do you experience this discomfort?	Always <input type="checkbox"/> Occasionally <input type="checkbox"/> Only at rest <input type="checkbox"/> Only when active <input type="checkbox"/>
How long ago did you start to feel discomfort?	Days <input type="checkbox"/> Weeks <input type="checkbox"/> Months <input type="checkbox"/> Years <input type="checkbox"/>
When first hired, was your work load increased slowly, and then increased over time?	Yes <input type="checkbox"/> No <input type="checkbox"/>
How did the symptoms start?	Gradually, over time <input type="checkbox"/> Suddenly <input type="checkbox"/> Injury/Accident <input type="checkbox"/>
What increases your comfort?	Nothing <input type="checkbox"/> Home/Not doing job <input type="checkbox"/> Medication <input type="checkbox"/> Hot/Cold Treatment <input type="checkbox"/> Aids (i.e., splint) <input type="checkbox"/> Sports <input type="checkbox"/> Other _____
What decreases your comfort?	Doing same job <input type="checkbox"/> Overtime <input type="checkbox"/> Other _____
Outside of work activities/hobbies?	Nothing <input type="checkbox"/> Knitting <input type="checkbox"/> Gardening <input type="checkbox"/> Playing musical instruments <input type="checkbox"/> Other _____
Other Health concerns? (Such as Diabetes, Rheumatoid Arthritis, etc.) _____	

TOOLS:

Type(s) of tools used:

Concerns with tools used:

Additional Comments:

Signature of Interviewee: _____

Date: _____

Signature of Interviewer: _____