

SUBJECT: Ergonomic Inspections

Purpose: To provide guidelines for conducting ergonomic inspections.

Scope: This instruction applies to inspections conducted in industries with ergonomic hazards.

References:

1. "Elements of Ergonomics Programs", CDC/NIOSH, March 1997.
2. "Ergonomics Program Management Guidelines for Meatpacking Plants," OSHA Publication 3123, 1993.
3. NIOSH Ergonomic Web Page, www.cdc.gov/niosh/topics/ergonomics/.
4. Minn. Stat. §182.6551-.6554, Safe Patient Handling Act.
5. "Threshold Limit Values for Physical Agents", ACGIH TLVs and BEIs, 2010.
6. National Institute for Occupational Safety and Health (NIOSH) - Summary NIOSH Back Belts Studies <http://www.cdc.gov/niosh/beltsumm.html>
7. MNOSHA Instruction ADM 2.1, "Scheduling Plan for Programmed Inspections."
8. OSHA Recordkeeping Standard 1904.
9. MNOSHA Instruction STD 5-0.4, "Safe Patient Handling Act".
10. MNOSHA Instruction CPL 2-0.135 "Recordkeeping".

Cancellation: This change supersedes CPL 2.78, dated January 13, 2012.

Background:

Ergonomics is the study of humans at work. The objective of ergonomics is to adapt a job and workplace to the worker by designing tasks, work stations, tools and equipment within the worker's capabilities and limitations. This helps to reduce ergonomic stress and to eliminate potential injuries or illnesses such as musculoskeletal disorders and back injuries for workers. Ergonomic hazards may be present when there are risk factors/stressors or conditions in the workplace that may cause harm to an employee. Common injuries and illnesses are often the result of repetitive movement, awkward postures, excessive force, and/or the handling of heavy objects. Generally, if a condition is caused by an acute trauma or event, it is considered an injury. If a condition is caused by chronic or repetitive actions, it is considered an illness.

A note on back belts from NIOSH: "In two 1994 NIOSH publications, Workplace Use of Back Belts - Review and Recommendations (Pub. No. 94-122) and Back Belts - Do They Prevent Injury (Pub. No. 94-127), NIOSH concluded that there was insufficient evidence to recommend the use of back belts as a back injury prevention measure. Since then, NIOSH conducted a large epidemiologic study and two laboratory evaluations to determine more conclusively the effects of back belt use. They do not provide evidence to change NIOSH's earlier conclusions."

Action:

A. Assignment for Inspection.

OSHIs may conduct an ergonomic inspection if data and/or walkaround inspection observation warrants a further investigation. Complaints and referrals alleging ergonomic hazards will be given to a supervisor for assignment to an OSHI.

For hazards that involve heavy objects, determine whether or not a crushing hazard exists and discuss with the assigning supervisor. If a crushing hazard exists, address it as such and only continue with an ergonomic inspection if deemed necessary.

For hazards involving patient handling in facilities covered by the Safe Patient Handling Act (Minn. Stat. §182.6551-.6554), refer to STD 5-0.4, Safe Patient Handling Act for further guidance.

B. Requested Information.

Information to be requested from the employer at the time of the opening conference in addition to those items covered on the MNOSHA Investigation Checklist:

1. The employer shall be informed during the opening conference of the anticipated scope of the investigation and of the nature of the hazards being examined. The OSHI shall ascertain the employer's recognition of ergonomic hazards in both their industry and own workplace and determine any sources of information indicating the extent of this recognition (e.g., receipt of a publication on the topic, industry or trade association publications, plant memoranda, records of safety meetings, etc.). This information shall be documented in the case file.
2. Copies of OSHA 300 logs, current year and three previous years. Copies are needed for identifying and highlighting musculoskeletal disorders and back injury cases. (Use Form A to record musculoskeletal disorders and back injuries.) The copies of the 300 logs need to be retained in the case file.

Note: Approval must be obtained from the Supervisor/Director prior to obtaining copies of employee personal medical information for the case file.

3. Employee roster. This is used to track the number of employees interviewed and departments covered. The roster can also be used to contact employees not at work because of injuries, vacations, etc.
4. Total number of hours worked for the facility and each department for the current year and three previous years.
5. List of jobs designated as "light duty."
6. First Reports of Injury.
7. First aid or nurse's logs for the appropriate years.
8. Copies of any written training programs, guidelines, or procedures (i.e. Ergonomic or Medical Management programs).

C. Incidence and Days Away or Restricted Case Rates

OSHA 300 logs are used to calculate incidence and days away or restricted case rates for the plant and for individual departments. Generally, an incidence rate of 10 or higher indicates a need for further evaluation, but in unusual circumstances, percentages of injuries/illnesses lower than that may require further evaluation.

Incidence rates are calculated by:

$$\frac{\text{\# of total ergo cases} \times 200,000}{(\text{hrs worked}) \text{ or } (2,000 \text{ hrs. for each FT employee})}$$

Severity comparisons may be used between individual departments to identify the areas which need the most attention in a facility. One measure of the severity of the hazard can be calculated from the formula below. Care should be taken with interpreting the lost workday case statistic, as one injury resulting in a large number of days off may give a high rate for the facility

Days Away or Restricted case rates are calculated by:

$$\frac{\text{\# of lost work day/restricted cases} \times 200,000}{(\text{hrs worked}) \text{ or } (2,000 \text{ hrs. for each FT employee})}$$

The analysis of trends with these statistics should be done so that a decision is based upon the trends of both incidence and severity, rather than either individually. A hazard may exist where there are increased incidences of similar injuries between the employees in question and a control group, usually an unexposed group of workers at the same facility. However, if the severity of the injuries is decreasing, an increase in incidence may represent an early intervention policy.

D. Selection of Positions/Workstations/Job Tasks for Investigation.

The positions/workstations/job tasks to be investigated shall be determined from the following sources:

1. Positions identified by incident rates from the OSHA 300 logs.
- *2. First reports of injury.
- *3. First aid or medical department sign-in if the employee's name, position, workstation or job task appears two or more times for the same musculoskeletal disorder complaint.
- *4. Employee interviews, if employees express complaints of pain or have had medical treatment for musculoskeletal disorders. (Use Form B to conduct interview/survey.)
5. Observation by OSHI during walkaround inspection when risk factors such as high repetition, high force **and** awkward positions are noted.

*NOTE: The OSHA 300 log should be examined to determine if these injuries have been recorded properly. (Use Form C to tabulate deficiencies.)

E. Recordkeeping.

Injuries or illnesses classified as musculoskeletal disorders are to be recorded using the same criteria used for any other injury or illness case.

1. The injury or illness must be work-related. It is presumed to be work-related unless the condition was caused solely by a non-work-related event or exposure off the premises. A company may claim injuries or illnesses are not work-related and not record those injuries or illnesses on the logs. But if the company has tasks that put the employee at risk (such as lifting or repetitive motion), then the company cannot deny the employee was exposed on the job. If a company exposes an employee to ergonomic risk factors consistent with the injury or illness, the OSHI should then consider the injury or illness as a work-related injury or illness.

2. A musculoskeletal disorder must exist. Examples of MSD's include Carpal tunnel syndrome, DeQuevain's disease, Trigger finger, Tarsal tunnel syndrome, Sciatica, Epicondylitis, Tendinitis, Raynaud's phenomenon, Carpet layers knee, Herniated spinal disc and low back pain. MSD's are most often identified vaguely on the OSHA 300 log as "pain." Repetitive or treated pain may be considered a MSD. The OSHI should look for "wrist pain" or "shoulder pain" or "back pain" to find MSDs as they are rarely formally diagnosed.
3. One of the following must occur:
 - a. Medical treatment including:
 - Non-prescription drugs at prescription strength
 - Physical therapy or chiropractic treatment
 - Rigid support designed to immobilize parts of the body
 - Note: OSHA considers treatment beyond first aid to be medical treatment even when it is provided by someone other than a physician or other licensed health care professional
 - b. lost workdays (includes restricted work activity); **or**
 - c. transfer/rotation to another job.
4. If the employee previously experienced a recorded injury or illness of the same type that affected the same part of the body but had recovered completely (all signs and symptoms had disappeared) from the previous injury or illness and an event or exposure in the work environment caused the signs or symptoms to reappear it is recorded as a new case.

F. Positions/Workstation/Job Task Evaluation.

Each position or workstation identified as likely to present serious ergonomic hazards shall be thoroughly evaluated.

1. A workstation job hazard analysis is to be conducted to determine job requirements, including force, posture and repetition. (Use Form D to record data that may not be apparent from digital video recording or digital photos.)
2. Digital video recording of the position/workstation during work operations should be conducted. Ten to 15 cycles should be recorded and should include views of work stands or platforms being used, floor conditions (wet, slippery, etc.), tools, counterweights, and other factors that may contribute to musculoskeletal disorder risk.
 - a. For documentation purposes, the date and time feature of the digital video camera should be used and set before recording begins.
 - b. All original digital media shall be burned to disc and labeled as a Video CD and/or Photo CD with the name of the company, Inspection number, Optional inspection number, OSHI ID and date of the inspection. CDs will be filed in the St. Paul Office.
 - c. Video recordings shall receive the same treatment with regard to confidentiality as other MNOSHA records.

NOTE: If an employer refuses to allow digital video recording during an inspection, the OSHI shall proceed in accordance with the procedures outlined in FCM Chapter III.

3. Ergonomic analysis tools may be used during an investigation. Federal OSHA provides links to several tools at <https://www.osha.gov/SLTC/ergonomics/identifyprobs.html>. OSHIs may also consider using NIOSH TLVs for Ergonomics which include Hand Activity Level, NIOSH Revised Lifting Equation, Hand-Arm Vibration and Whole Body Vibration.

G. Medical Management.

Management procedures for the detection and treatment of affected employees should be documented and the following factors examined and their adequacy evaluated.

1. What procedures are used for employees to report signs and symptoms of musculoskeletal disorders?
2. What have supervisors been instructed to do when employees complain of pain?
3. What is management and employee knowledge of early symptoms, prevention, and treatment of musculoskeletal disorders?
4. Are medical personnel knowledgeable in the prevention, early recognition, evaluation, treatment, and rehabilitation of musculoskeletal disorders?
5. Are medical restrictions being followed and are light duty jobs appropriate so as not to further injure the employee?

H. Citations.

Ergonomic citations can be written for serious violations, following the instructions in FCM Chapter VI for determining the severity and probability of injury that would be expected to result from employee exposure to the ergonomic hazards. Multi-step abatement periods will usually be assigned to allow the employer time to implement engineering controls.

1. General Duty Citations: Occupational exposure to tasks resulting in musculoskeletal injuries may constitute a recognized hazard under the General Duty clause. Minn. Stat. § 182.653, subd. 2, documenting all the required elements for general duty as outlined in the FCM Chapter IV. Abatement guidelines must also be provided in the text of the AVD.

It is the hazard, not the absence of a particular means of abatement, that is the basis for a general duty clause citation. A general duty clause citation must identify conditions or practices over which the employer can reasonably be expected to exercise control. The extent of control the employer has exercised over the hazard may be a deciding factor as to whether feasible abatement has already been implemented.

2. Recordkeeping Citations: If the OSHI discovers that employees have work-related injuries and the employer has failed to document those work-related injuries, a recordkeeping violation will be issued in accordance with CPL 2-0.135 "Recordkeeping."
3. Hazard Recommendation Letter: Where minor hazards exist, but citations will not be issued for reasons documented in the Inspection Narrative, deficiencies in the employer's safety and health program may be addressed by issuing a "Hazards Not Covered By a Standard" letter, as outlined in FCM IV Reporting Hazards Not Covered By a Standard.

Ergonomic Decision Matrix: The following matrix summarizes ergonomic citation decisions:

IF	AND	THEN
Incidence and lost workday case rates indicate no problems;	Recordkeeping and AWAIR are OK;	No citation will be issued.
Incidence and lost workday case rates are improving or there has not been enough time for the safety and health program to take effect;	Good program with only minor deficiencies,;	Send recommendation letter to employer for hazards not covered by a standard.
Incidence and lost workday case rates are moderate to high, and are not improving;	Facility has a program with major deficiencies, or has no program;	Document hazardous conditions or practices over which the employer can reasonably be expected to exercise control, and cite for a General Duty violation.

I. Abatement Assurance.

Verification of abatement will be accomplished through the submission of detailed progress reports which will be reviewed by the investigator for sufficiency. Followup inspections should be scheduled in accordance with FCM Chapter II.

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For the MNOSHA Management Team

Distribution: OSHA Compliance and WSC Director

Attachments: Form A - Log of CTD and Back Injury Cases
Form B - Employee Interview/Survey Body Map
Form C - Gross Difference Sheet
Form D - Workstation Analysis Worksheet

NOTICE: Minnesota OSHA Directives are used exclusively by MNOSHA personnel to assist in the administration of the OSHA program and in the proper interpretation and application of occupational safety and health statutes, regulations, and standards. They are not legally binding declarations and they are subject to revision or deletion at any time without notice.

Form B - Employee Interview/Survey Body Map

Date __/__/__

Company: _____

1. ID# _____ Department: _____
Job Title: _____ Time on job _____
Job Description _____

2. Other jobs with company _____

3. Hours worked per week:
a. __20hrs b. __40hrs c. __45hrs d. __50hrs e. __55hrs

4. Are you Right or Left Handed? Which is used most on the job: R L

5. Have you experienced any of the following symptoms: numbness, tingling, swelling, pain, burning?
a. __yes b. __no (If no go to # 25)

If yes, refer to the body map on last page. Have employee indicate the most severe symptoms and rate according to the scale.

6. When do your symptom(s) occur?
a. Mornings 1. __no 2. __yes, workdays only 3. __yes, every day
b. Afternoons 1. __no 2. __yes, workdays only 3. __yes, every day
c. Evenings 1. __no 2. __yes, workdays only 3. __yes, every day
d. Nights 1. __no 2. __yes, workdays only 3. __yes, every day

7. Do your symptoms cause you to be awakened while sleeping? a. __yes b. __no

8. Do your symptoms interfere with daily activities? (e.g. eating, writing, brushing teeth or hair, recreational sports or hobbies)
a. __yes b. __no

9. How long does each episode of your symptoms last?
a. __less than a day b. __ 1-6 days c. __1-4 weeks d. __1-6 months
e. __over 6 months

10. Who was notified of your symptoms? _____

11. Was corrective action taken? Y N Explain _____

12. How many separate episodes have you had in the last year?

a. __1 b. __2-5 c. __6-10 d. __11-15 e. __16-20 f. __over 20

13. Has a medical doctor diagnosed a medical condition related to your symptoms?
a. ___yes b. ___no Diagnoses _____

14. Have you received medical treatment for your symptoms?
a. ___yes b. ___no (If no, go to question # 18)

15. If you answered "yes" to the above question, please indicate type of medical treatment:
a. __activity restriction b. __rest c. __medication d. __splint e. __surgery
f. __physical therapy g. __other/explain _____

16. Did the medical treatment help? a. ___yes b. ___no

17. If you answered "yes" to the above question, please indicate which treatment(s) were helpful:
a. __activity restriction b. __rest c. __medication d. __splint e. __surgery
f. __physical therapy g. __other/explain _____

18. Have you ever missed work because of your symptoms?
a. ___yes b. ___no

Number of days lost time: _____ Date---/---/---to---/---/---

19. Has a medical doctor placed you on restricted activity or light duty work because of your symptoms?
a. ___yes b. ___no (If no, go to question # 25)

Number of days restricted: _____ Date---/---/---to---/---/---

20. Were the restrictions followed? Y N If no explain: _____

21. Were the restrictions helpful? Y N If no explain: _____

22. Have you had to change jobs because of your symptoms?
a. ___yes b. ___no

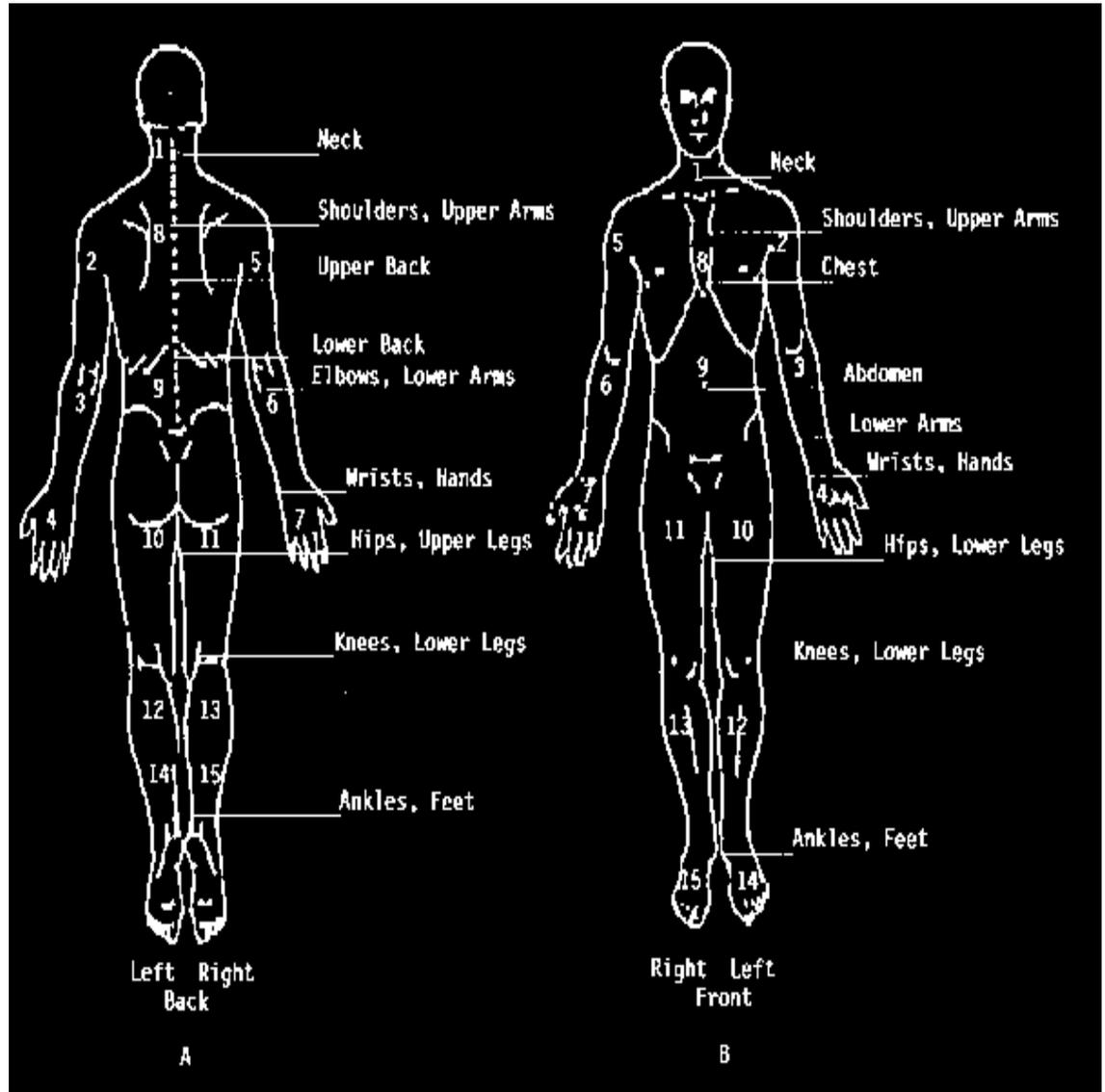
23. Please briefly describe activities/tasks that aggravate your symptoms:

24. Please briefly describe factors that may improve your condition and minimize your symptoms:

25. List the two or three activities that you spend most of your time doing at work.

26. Any other safety or health concerns or comments?

**ERGO SURVEY
BODY MAP**



Please rate symptom severity according to the following scale.

1	2	3	4	5	6	7	8	9	10
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Least Severe

Most Severe

Body Part (#)	Symptom	Severity

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Form C - Gross Difference Sheet

Employee Name	Case # 1	Injury or Illness 2	Deaths 3			Lost Workday Cases 4			Days Away From Work 5			Days of Restricted Work Activity 6			Non-LWDI Cases 7		
			Log	Audit	Diff	Log	Audit	Diff	Log	Audit	Diff	Log	Audit	Diff	Log	Audit	Diff
Total																	

FORM D - Workstation Analysis Worksheet

Company Name _____

Department _____ Job Name _____

Task Description _____

Line Speed _____ (ft/min) Job Cycle _____ (min or sec)

Worker Stop or Control Speed _____

WORKSTATION

Height of Work _____ Standing? Y / N
Sitting Adjustable? Y / N Chair / Stool
Working hand height _____ Shoulder _____ Elbow _____
Temperature/Ambient _____ °F Product _____
Floor: Slippery/Wet _____ Grate / Mat / Concrete / Other _____

TOOLS

Name of Tool _____
Power or Manual ? Torque Reciprocation Vibration _____
Source of Power: Air / Electric / Other _____

Tool Counterbalanced? Y / N Tool Holder _____

Weight of Tool _____ (lbs) Handle: Pistol / Barrel

Size of Handle: Span _____ (inches) Length _____ (inches)

Material _____

MISCELLANEOUS

Other Objects Handled _____
Weight _____ (lbs) Size _____ (inches)

Personal Protective Equipment _____

Opportunities for Micro Rest Pauses _____

Does Crowding Occur? Y / N _____

Comments/Notes -