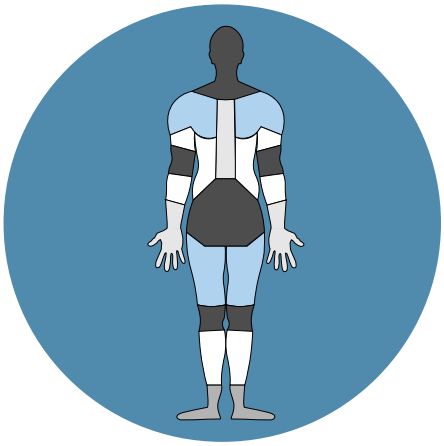
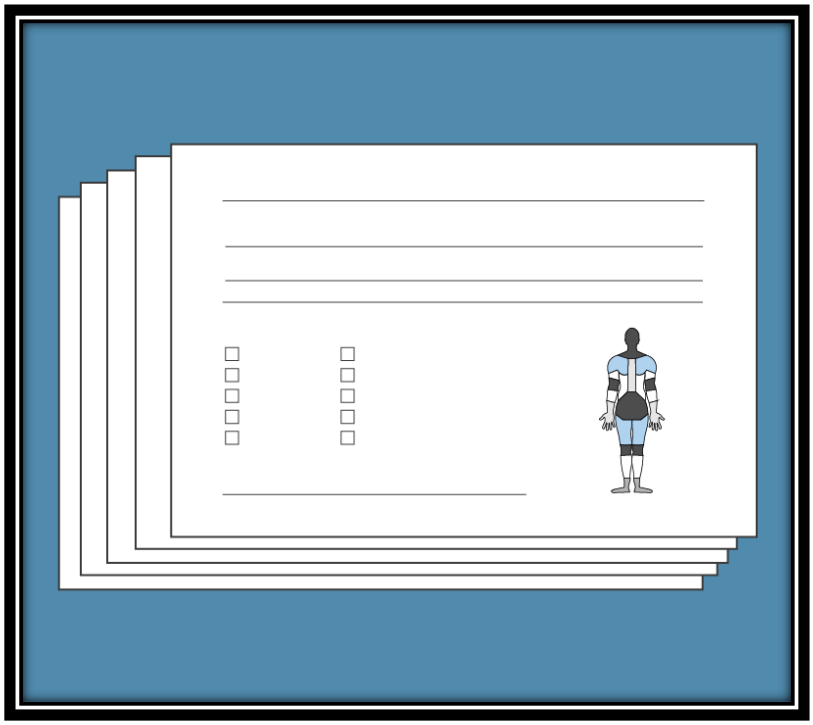
ErgoMine 2.0

Forms



Centers for Disease Control and Prevention
National Institute for Occupational Safety and Health

ErgoMine 2.0 Forms



This document contains five forms to assess hand tools, manual tasks, task risk factors, task improvements, and musculoskeletal symptoms. The forms are based on risk factors for musculoskeletal disorders. The forms have been adapted from a previous NIOSH publication.

Overview

The five forms contained in this document are adapted from NIOSH IC 9509 Ergonomics Processes: Implementation Guide and Tools for the Mining Industry[1] (https://www.cdc.gov/niosh/mining/works/coversheet597.html). The purpose of these forms from NIOSH IC 9509 along with a reference to the original document (NIOSH IC 9509) are provided below. Please refer to the original document (NIOSH IC 9509) for detailed instructions on when and how to use the forms.

1. **Hand Tool Checklist**[1a] – To evaluate and compare design features of hand tools.
2. **Musculoskeletal Discomfort Form**[1b] – To identify the presence of discomfort by body part experienced by workers.
3. **Risk Factor Reporting Card**[1c] – To encourage employee participation in the ergonomics process by providing a reporting mechanism for potential risk factor exposures and any body discomfort that may be related to the exposure.
4. **Manual Task Assessment**[1d] – To conduct a risk assessment of risk factor exposures associated with manual tasks.
5. **Ergonomic Task Improvement Form**[1e] – To provide an effective method to highlight interventions implemented to reduce or eliminate ergonomic risk factor exposures.

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[1] NIOSH [2009]. Ergonomics processes: implementation guide and tools for the mining industry. By Torma-Krajewski J, Steiner LJ, Burgess-Limerick R. Pittsburgh, PA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 2009-107 (IC 9509).

a Section IV. Implementation Tools; Tool E: Hand Tool Checklist; Page 30

b Section IV. Implementation Tools; Tool B: Musculoskeletal Discomfort Form; Page 9

c Section IV. Implementation Tools; Tool A: Risk Factor Report Card; Page 4

d Section IV. Implementation Tools; Tool F: Manual Task Risk Assessment; Page 33

e Section IV. Implementation Tools; Tool G: Ergonomic Task Improvement Form; Page 38

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Hand Tool Checklist

Evaluation Completed By_____ **Date**_____

Task_____

Tool 1 (Describe)_____ **Manufacturer**_____ **Model**_____

Tool 2 (Describe)_____ **Manufacturer**_____ **Model**_____

Questions	Tool 1	Tool 2
Does the tool:		
Reduce exposure to localized vibration?	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA
Reduce hand forces?	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA
Reduce/eliminate bending or awkward postures of the wrist?	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA
Avoid pinch grips?	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA
Is tool evenly balanced?	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA
Does tool grip/handle prevent slipping during use?	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA
Is tool equipped with handle that:		
Does not end in palm?	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA
Is made of textured, nonconductive material?	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA
Has a grip diameter suitable for most workers (or different size handles available)?	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA
Is made of padded or semipliable material?	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA
Is free of ridges, flutes or sharp edges?	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA
Can tool be used safely with gloves?	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA
Can tool be used by either hand?	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA
Can trigger be operated by more than one finger to avoid fatigue?	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA
Does tool minimize twist or shock to hand? (in particular, observe reaction of power tools due to torque)	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA
Total the number of Yes, No and NA responses	**__Yes __No __NA**	**__Yes __No __NA**

Are there any other positive features for each tool not listed above?	
Tool 1	**Tool 2**

Musculoskeletal Discomfort Form

Employee ID:_____ Job/Position: _____ Sex: M F Age: _____ Height: _____ ft._____ in. Weight: _____ lbs.

How long have you been doing this job? _____years _____ months How many hours do you work each week? _____

How to answer the questionnaire:

Picture: In this picture you can see the approximate position of the parts of the body referred to in the table. Limits are not sharply defined, and certain parts overlap. You should decide for yourself in which part you have or have had your trouble (if any).

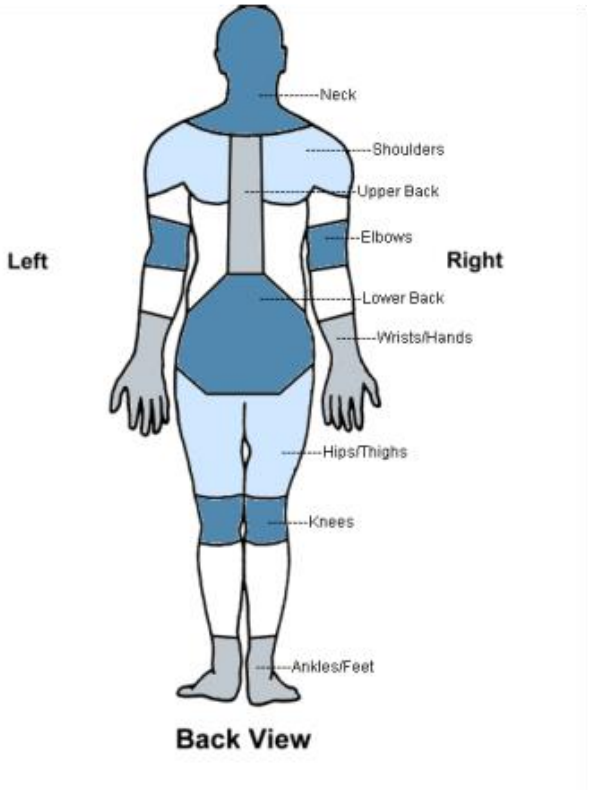

Table: Please answer by putting an "X" in the appropriate box - one "X" for each question. You may be in doubt as to how to answer, but please do your best anyway. Note that column 1 of the questionnaire is to be answered even if you have never had trouble in any part of your body; columns 2 and 3 are to be answered if you answered yes in column 1.

To be answered by everyone	**To be answered by those who have trouble**	
Have you at any time during **the last 12 months** had trouble (ache, pain, discomfort, numbness) in:	Have you at any time during the **last 12 months been prevented from doing your normal work** (at home or away from home) because of the trouble?	Have you had trouble at any time during **the last 7 days**?
Neck ☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes
Shoulders ☐ No ☐ Yes, right shoulder ☐ Yes, left shoulder ☐ Yes, both shoulders	☐ No ☐ Yes	☐ No ☐ Yes
Elbows ☐ No ☐ Yes, right elbow ☐ Yes, left elbow ☐ Yes, both elbows	☐ No ☐ Yes	☐ No ☐ Yes
Wrist/Hands ☐ No ☐ Yes, right wrist/hand ☐ Yes, left wrist/hand ☐ Yes, both wrists/hands	☐ No ☐ Yes	☐ No ☐ Yes
Upper Back ☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes
Lower Back (small of back) ☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes
One or Both Hips/Thighs ☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes
One or Both Knees ☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes
One or Both Ankles/Feet ☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes

(Based on the Nordic Questionnaire (Kourinka et al. 1987))

Risk Factor Reporting Card

RISK FACTOR REPORT CARD **Name:** _____

1. **Work Area/Job Title:** _____
2. **Describe task:** _____

_____

3. **Check all risk factors that apply**

□ Poor Posture	□ Forceful Gripping
□ Repetitive Work	□ Heavy Lifting/Carrying
□ Vibrating Tools	□ Bouncing/Jarring
□ Static Posture	□ Heavy Shoveling
□ WB Vibration	□ Forceful Push/Pull

Other risk factors: _____

4. **Place X on affected area**

5. **Comments / Suggestions:** _____

_____

_____

6. **Plant / Mine Name:** _____

Note: The Risk Factor Report Card can be printed on 3 × 5 or 4 × 6 index cards.

Manual Task Assessment

TASK: **LOCATION:** **DATE:**

ASSESSED BY:

IN CONSULTATION WITH:

COMMENTS

(Reason Assessed; Tools, Equipment, Materials, Processes involved, etc.)

Manual task: any activity requiring the worker to grasp, manipulate, strike, throw, carry, move, hold or restrain an object, load or body part.

Assess the degree of exposure to each primary risk factor for each body region using the table. Determine whether any of the additional risk factors listed are present. For the purposes of priority setting, a risk ranking may be determined using the numeric ratings in the table.

	Green Score: 1	Yellow Score: 2	Orange Score: 4	Red Score: 8
Exertion	Low force and speed	Moderate forces or speed, but well within capability	High force or speed, but not close to maximal	Forces or speeds close to the person's maximum
Duration	Performed infrequently for short periods	Performed regularly, but with many breaks or changes of task	Performed frequently, without many breaks or changes of task	Performed continuously for majority of shift
Repetition	Dynamic and varied patterns of movement	Little or no movement, or repeated similar movements	Repeated identical movements	
Posture	Comfortable postures, within a normal range about neutral	Uncomfortable postures, but not involving postures at the extreme of the range of motion	Postures at the extreme of the range of motion	
Vibration	No hand-arm or whole-body vibration	Moderate amplitude hand-arm vibration or whole-body vibration	High amplitude hand-arm vibration or whole-body vibration	

- □ Hot or Cold Environment
- □ High Stress Environment
- □ High Time Pressure
- □ Lack of Control Over Work
- □ Cognitive Over/Under Load
- □ Lack of Opportunities for Social Interaction

Determine the body region(s) that may be at risk of injury. (Alternately, assess the task for each of the following regions: lower limbs; lower back; neck/shoulders and upper back; elbows, wrists and hands).

Body Region	Exertion	Duration	Repetition	Posture	Vibration	Total Risk Score*
Neck, Shoulders and Upper Back						
Elbows, Wrists and Hands						
Low Back						
Legs, Knees and Feet						

*: Total Risk Score = Exertion Score + Duration Score + Repetition Score + Posture Score + Vibration Score

*: 5 - 10 = Low Risk 11 - 15 = Medium Risk 16 - 24 = High Risk

Engineering Controls	Administrative Controls	Personal Protective Equipment

Ergonomic Task Improvement Form

Task: _____

MINE: _____ **DEPARTMENT:** _____

<Insert Task Image>

TASK DESCRIPTION and RISK FACTOR EXPOSURES: _____

_____

EQUIPMENT/TOOLS USED IN TASK: _____

FREQUENCY OF TASK: _____ **NUMBER OF WORKERS AFFECTED:** _____

ROOT CAUSES OF RISK FACTORS: _____

EMPLOYEE CONCERNS: _____

BEFORE

Body Region	Exertion*	Duration*	Repetition*	Posture*	Vibration*	Total Risk Score#
Upper Body **Neck, Shoulders and Upper Back**						
Upper Limbs **Elbows, Wrists and Hands**						
Low Back						
Lower Limbs **Legs, Knees and Feet**						

OBJECTIVE OF CONTROL MEASURE: _____

<Insert Task Image>

TASK DESCRIPTION and RISK FACTOR EXPOSURES: _____

_____

EQUIPMENT/TOOLS USED IN TASK: _____

FREQUENCY OF TASK: _____ **NUMBER OF WORKERS AFFECTED:** _____

ROOT CAUSES OF RISK FACTORS: _____

EMPLOYEE CONCERNS: _____

Body Region	Exertion*	Duration*	Repetition*	Posture*	Vibration*	Total Risk Score#
Upper Body **Neck, Shoulders and Upper Back**						
Upper Limbs **Elbows, Wrists and Hands**						
Low Back						
Lower Limbs **Legs, Knees and Feet**						

#:5 - 10 = Low Risk 11 - 15 = Medium Risk 16 - 24 = High Risk

OBJECTIVE OF CONTROL MEASURE: _____

*: Determine numeric rating based on table on following page or table shown in the Manual Task Assessment

Assess the degree of exposure to each primary risk factor for each body region using the following table. For the purposes of priority setting, a risk ranking may be determined using the numeric ratings in the table.

	Green Score: 1	Yellow Score: 2	Orange Score: 4	Red Score: 8
Exertion	Low force and speed	Moderate forces or speed, but well within capability	High force or speed, but not close to maximal	Forces or speeds close to the person's maximum
Duration	Performed infrequently for short periods	Performed regularly, but with many breaks or changes of task	Performed frequently, without many breaks or changes of task	Performed continuously for majority of shift
Repetition	Dynamic and varied patterns of movement	Little or no movement, or repeated similar movements	Repeated identical movements	
Posture	Comfortable postures, within a normal range about neutral	Uncomfortable postures, but not involving postures at the extreme of the range of motion	Postures at the extreme of the range of motion	
Vibration	No hand-arm or whole-body vibration	Moderate amplitude hand-arm vibration or whole-body vibration	High amplitude hand-arm vibration or whole-body vibration	

Total Risk Score = Exertion Score + Duration Score + Repetition Score + Posture Score + Vibration Score

References

Kuorinka I, Jonsson B, Kilbom A, Vinterberg H, Biering-Sørensen, F, Andersson, G, Jørgensen, K [1987]. Standardised Nordic questionnaires for the analysis of musculoskeletal symptoms. Applied Ergonomics, *18*(3), 233–237.

NIOSH [2009]. Ergonomics processes: implementation guide and tools for the mining industry. By Torma-Krajewski J, Steiner LJ, Burgess-Limerick R. Pittsburgh, PA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 2009-107 (IC 9509).

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