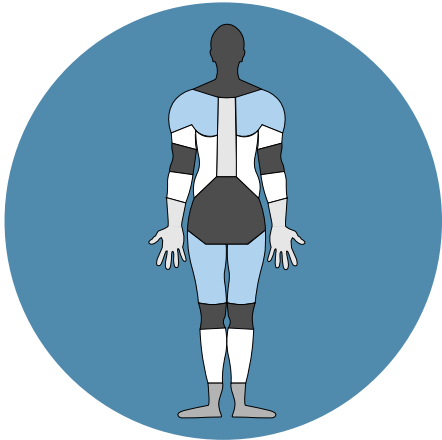
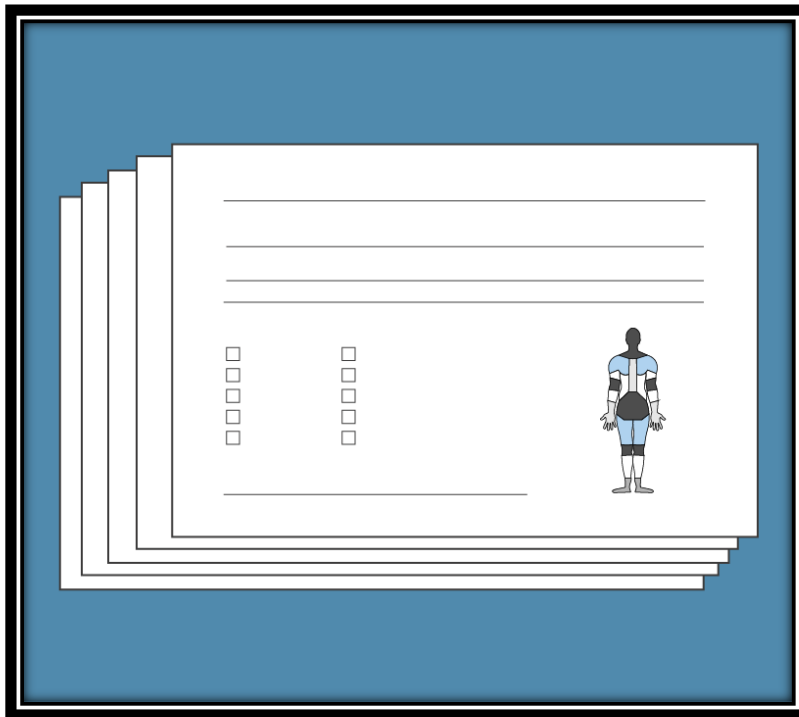


# Ergo2.0Mine

## Forms



# 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<sup>1</sup> (<https://www.cdc.gov/niosh/mining/works/cover sheet597.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** – To evaluate and compare design features of hand tools. (IV. Implementation Tools; Tool E: Hand Tool Checklist; Page 30)
2. **Musculoskeletal Discomfort Form** – To identify the presence of discomfort by body part experienced by workers. (IV. Implementation Tools; Tool B: Musculoskeletal Discomfort Form; Page 9)
3. **Risk Factor Reporting Card** – 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. (IV. Implementation Tools; Tool A: Risk Factor Report Card; Page 4)
4. **Manual Task Assessment** – To conduct a risk assessment of risk factor exposures associated with manual tasks. (IV. Implementation Tools; Tool F: Manual Task Risk Assessment; Page 33)
5. **Ergonomic Task Improvement Form** – To provide an effective method to highlight interventions implemented to reduce or eliminate ergonomic risk factor exposures. (IV. Implementation Tools; Tool G: Ergonomic Task Improvement Form; Page 38)

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<sup>1</sup> 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).

# ErgoMine 2.0 Forms

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

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

<b>Tool 1</b>	<b>Tool 2</b>

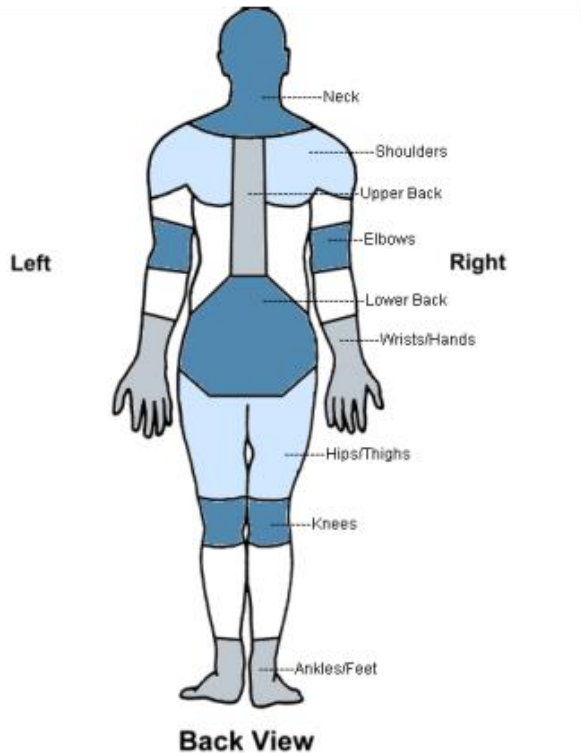
# Musculoskeletal Discomfort Form

Employee ID: \_\_\_\_\_ Job/Position: \_\_\_\_\_ Gender: 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).



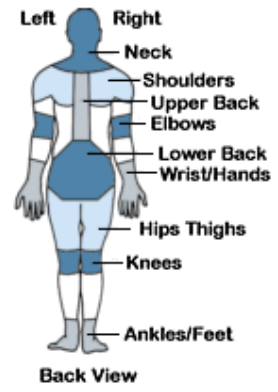
**Table:** Please answer by putting an "X" in the appropriate box - one "X" for each question. You may be in doubt as to how to answer, but please do your best anyway. Note that column 1 of the questionnaire is to be answered even if you have never had trouble in any part of your body; columns 2 and 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?
<b>Neck</b> <input type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> Yes
<b>Shoulders</b> <input type="checkbox"/> No <input type="checkbox"/> Yes, right shoulder <input type="checkbox"/> Yes, left shoulder <input type="checkbox"/> Yes, both shoulders	<input type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> Yes
<b>Elbows</b> <input type="checkbox"/> No <input type="checkbox"/> Yes, right elbow <input type="checkbox"/> Yes, left elbow <input type="checkbox"/> Yes, both elbows	<input type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> Yes
<b>Wrist/Hands</b> <input type="checkbox"/> No <input type="checkbox"/> Yes, right wrist/hand <input type="checkbox"/> Yes, left wrist/hand <input type="checkbox"/> Yes, both wrists/hands	<input type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> Yes
<b>Upper Back</b> <input type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> Yes
<b>Lower Back (small of back)</b> <input type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> Yes
<b>One or Both Hips/Thighs</b> <input type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> Yes
<b>One or Both Knees</b> <input type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> Yes
<b>One or Both Ankles/Feet</b> <input type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> Yes

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

# Risk Factor Reporting Card

<b>RISK FACTOR REPORT CARD</b>	Name: _____
<b>1. Work Area/Job Title:</b> _____	
<b>2. Describe task:</b> _____ _____	
<b>3. Check all risk factors that apply</b>	<b>4. Place X on affected area</b>
<input type="checkbox"/> Poor Posture	<input type="checkbox"/> Forceful Gripping
<input type="checkbox"/> Repetitive Work	<input type="checkbox"/> Heavy Lifting/Carrying
<input type="checkbox"/> Vibrating Tools	<input type="checkbox"/> Bouncing/Jarring
<input type="checkbox"/> Static Posture	<input type="checkbox"/> Heavy Shoveling
<input type="checkbox"/> WB Vibration	<input type="checkbox"/> Forceful Push/Pull
Other risk factors: _____	
<b>5. Comments / Suggestions:</b> _____ _____ _____	
<b>6. Plant / Mine Name:</b> _____	



Note: The Risk Factor Report Card can be printed on 3 x 5 or 4 x 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
<b>Exertion</b>	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
<b>Duration</b>	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
<b>Repetition</b>	Dynamic and varied patterns of movement	Little or no movement, or repeated similar movements	Repeated identical movements	<input type="checkbox"/> Hot or Cold Environment <input type="checkbox"/> High Stress Environment <input type="checkbox"/> High Time Pressure <input type="checkbox"/> Lack of Control Over Work <input type="checkbox"/> Cognitive Over/Under Load <input type="checkbox"/> Lack of Opportunities for Social Interaction
<b>Posture</b>	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	
<b>Vibration</b>	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	

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: \_\_\_\_\_



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: \_\_\_\_\_

B E F O R E	Body Region	Exertion*	Duration*	Repetition*	Posture*	Vibration*	Total Risk Score <sup>#</sup>
	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: \_\_\_\_\_



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 <sup>#</sup>
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
<b>Exertion</b>	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
<b>Duration</b>	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
<b>Repetition</b>	Dynamic and varied patterns of movement	Little or no movement, or repeated similar movements	Repeated identical movements	
<b>Posture</b>	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	
<b>Vibration</b>	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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