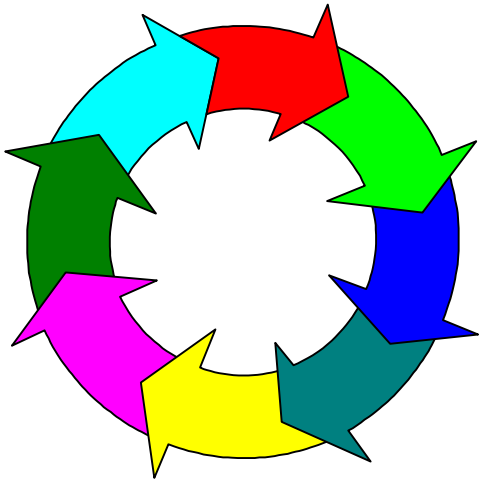
IMIRP

IMPLEMENTATION GUIDE



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Disclaimer

The BC sawmill IMIRP documents were developed by Advanced Ergonomics Inc. (AEI) based on analyses conducted in a number of voluntary, participating sawmills in British Columbia and should be considered applicable only to the B.C. sawmill industry. Modification to these documents may reduce their usefulness and/or lead to hazardous situations. Individuals or committees wishing to make Physical Demands Analyses (PDAs) site-specific, or wishing to implement options from the Work Manuals, are advised to first complete the two-day OHSC and Supervisor Ergonomics Training Session. Modifications to a PDA must be within the scope of competence of those individuals making the changes and must be reported to any rehabilitation professional using the PDA. Neither AEI nor the IMIRP Society accepts any responsibility for the use or misuse of these documents.

Introduction

This guide is part of the Industrial Musculoskeletal Injury Reduction Program (IMIRP), a program designed to help workers in the British Columbia sawmill industry prevent musculoskeletal injuries (MSIs).

The IMIRP Implementation Guide was developed to:

- Provide occupational health and safety committee (OHSC) members with the information they need to prevent MSIs in the sawmill industry
- Create a consistent approach to reduce MSIs throughout the sawmill industry
- Assist sawmills in complying with the Ergonomics (MSI) Requirements of the Occupational Health and Safety Regulation issued by the Workers' Compensation Board (WCB) of B.C.

The IMIRP is based on a six-step problem-solving process:

1. Determine jobs at risk
2. Match job at risk to common industry job (CIJ)
3. Identify risk factors
4. Determine appropriate solutions
5. Implement solutions
6. Evaluate solutions

Resources

The following resources will help you complete the six steps of the IMIRP process:

IMIRP Appendices. Worksheets, forms, and lists for completing each step in the process.

Tool Kit. A manual that provides detailed information about a common industry job (CIJ) in the B.C. sawmill industry. Each tool kit contains the following sections:

- *Overview*—describes the physical and mental demands, as well as major and minor variations of the job
- *Physical Demands Analysis (PDA)*—describes the nature of the job, including job organisation, workstation layout, characteristics of objects handled, environmental conditions, and the personal protective equipment required
- *Risk Factor Identification Checklist*—identifies potential ergonomic risk factors for the job
- *Work Manual*—identifies body parts at increased risk of an MSI because of the job and describes general injury prevention methods and specific control methods to reduce risk
- *MSI Safety Guide*—describes the ergonomic risks associated with the job, highlights injury risk factors, and suggests work techniques and exercises

Body Manual. A 68-page manual that describes safe work practices and exercise programs that can help prevent common MSIs. Injured workers may take the Body Manual to their rehabilitation professional for guidance on the appropriateness of illustrated exercises.

General Risk Factor Solutions Manual. A 14-page manual that suggests ways to prevent injuries by changing environmental conditions and work organisation. This manual is used in conjunction with the Work Manual section of each Tool Kit.

Getting Started

Figure 1 describes the entire IMIRP implementation process and indicates which documents you will need to complete each step of the process. Before you begin, read the common industry job titles and descriptions in Appendix F and determine which of the Tool Kits you will probably need. Tentative timelines for Tool Kit production and ordering codes are in Appendix G. Order the Tool Kits as soon as possible by faxing your request to WCB Films and Posters at (604) 279-7406.

Note: The IMIRP process for some trades/maintenance jobs (Carpenter, Electrician, Machinist, Mechanic—heavy duty, Millwright, Oiler, Pipefitter, Welder) is slightly different from the process described in the IMIRP Implementation Guide. Noteworthy differences are described in each trades/maintenance Tool Kit.

Figure 1. IMIRP Implementation Process

STEP 1 Determine Jobs at Risk

- Review injury statistics
  Use *Worksheet 1* (Appendix A)
- Survey workers about discomfort
  Use *Discomfort Survey* (Appendix B)
  Use *Worksheet 2* (Appendix C)
- Prioritise jobs
  Use *Worksheet 3* (Appendix D)

Repeat Steps 2 to 6 for each Job at Risk

STEP 2 Match Job at Risk to Common Industry Job (CIJ)

- Compare job titles with CIJ titles
  Use *Worksheet 4* (Appendix E)
  Use *Common Industry Job Titles and Descriptions* (Appendix F)
  Use *Timelines for Tool Kit Production* (Appendix G)
  Use *CIJ Tool Kit* sections:
    Overview
    Physical Demands Analysis

STEP 3 Identify Risk Factors

- Document ergonomic risk
  Use *CIJ Tool Kit* section:
    Risk Factor Identification Checklist
  OR
  Use *General Risk Factor Identification Checklist* (Appendix H)

STEP 4 Determine Appropriate Solutions

- Find possible solutions
  - Use *CIJ Tool Kit* sections:
    - Work Manual
    - MSI Safety Guide
  - Use *Body Manual*
  - Use *General Risk Factor Solutions Manual*
- Consider a range of options
  - Use *Solution Option Form* (Appendix I)—stage one
- Interview personnel
  - Use *Impact Factor Questions* (Appendix J)
- Seek consensus about solutions
  - Use *Solution Option Form* (Appendix I)—stage two

STEP 5: Implement Solutions

- Choose a strategy
- Manage change effectively

STEP 6: Evaluate Solutions

- Assess short-term progress
  - Re-use *CIJ Tool Kit* section:
    Risk Factor Identification Checklist
    OR
    Re-use *General Risk Factor Identification Checklist* (Appendix H)
  - Use *Employee Follow-up Survey* (Appendix K)
- Assess long-term progress
  - Re-use *Worksheet 1* (Appendix A)
  - Use *Discomfort Survey (Follow-up)* (Appendix L)

STEP 1: Determine Jobs at Risk

The first step in the IMIRP implementation process involves determining which jobs present a greater risk of injury in order to decide where OHSC efforts should be concentrated.

Review injury statistics

Search injury and first aid records for documented evidence (signs and/or symptoms) of MSIs affecting specific body parts.

The signs and/or symptoms of an MSI include:

- Discomfort or pain
- Tenderness
- Inflammation
- Burning sensation
- Decreased motion
- Weakness or clumsiness
- Tingling or numbness
- Shooting/stabbing pain
- Whitening of the fingers or toes

Instructions for Worksheet 1

You will find a blank copy of Worksheet 1 in Appendix A and a filled-in sample on page 6. Use Worksheet 1 to record which body parts are being injured most often and the incidence of injury for each mill job title. At the end of Step 1, you will enter the summary information from this worksheet into Worksheet 3, which you will find in Appendix D.

1. For each mill job title, indicate the number of workers performing the job and the number of injury reports filed in the past year (the one-year period before the date you have entered on the worksheet).

2. Review each injury report and indicate the occurrence of a non-traumatic injury with signs and/or symptoms of an MSI by placing a checkmark (✓) beside the relevant body part in the "Tally of Signs and/or Symptoms" column. If a sign and/or symptom does not apply to any of the body parts listed, place a checkmark beside "Other." Do not consider acute conditions or traumatic injuries (e.g., a broken leg). The number of checkmarks should correspond to the number of occasions a body part is reported with a sign and/or symptom of an MSI.

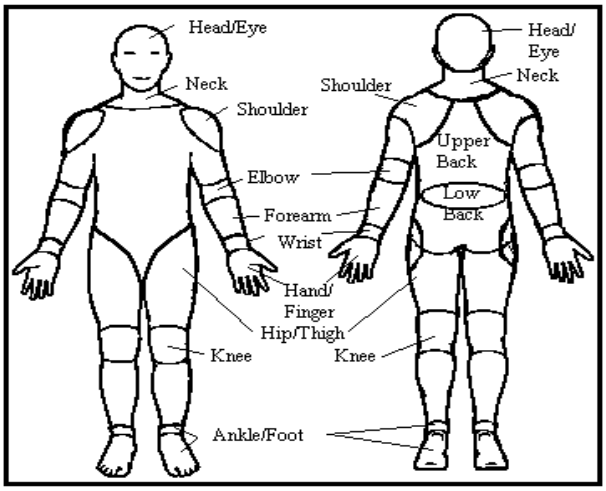
   Example: An injury report indicates that a Grader has pain and swelling in both wrists, and pain in the low back. Place one checkmark in the "Tally of Signs and/or Symptoms" column of both the "Wrist (L)" and "Wrist (R)" rows and one in the "Low Back" row.

3. Calculate and fill in the "Tally Totals" and "Job Total Value" sections. Keep your completed Worksheet 1 to use later in Step 1 of the IMIRP implementation process.

Sample Worksheet 1. Tally of signs and/or symptoms for a mill job title by body part.

Mill Job Title*: Grader Date: January 30, 1999

Number of Workers*: 12 Number of Injury Reports (Past Year)*: 24



Signs and/or Symptoms of MSIs

- Discomfort or Pain
- Tenderness
- Inflammation
- Burning sensation
- Decreased motion
- Weakness or clumsiness
- Tingling or numbness
- Shooting/Stabbing pain
- Whitening of the fingers or toes

Body Part	Tally of Signs and/or Symptoms (✓)	Tally Totals
Head/Eye		
Neck	✓✓✓✓✓	*5*
Upper Back		
Shoulder (L)		
Shoulder (R)	✓	*1*
Elbow (L)		
Elbow (R)		
Forearm (L)	✓✓✓	*3*
Forearm (R)	✓✓✓✓✓ ✓✓	*7*
Wrist (L)	✓✓✓✓✓ ✓✓✓✓✓	*10*
Wrist (R)	✓✓✓✓✓ ✓✓✓✓✓ ✓	*11*
Hand/Finger (L)		
Hand/Finger (R)		
Low Back	✓✓✓	*3*
Hip/Thigh (L)		
Hip/Thigh (R)		
Knee (L)		
Knee (R)		
Ankle/Foot (L)	✓✓✓	*3*
Ankle/Foot (R)	✓✓✓	*3*
Other		

Job Total Value* *46*

*** Information transferred to Worksheet 3**

Survey workers about discomfort

Identify jobs that lead to worker discomfort. Determine the body parts involved and the associated level of discomfort.

Instructions for Discomfort Survey

You will find a blank copy of the Discomfort Survey in Appendix B.

1. Review the contents of the Discomfort Survey. Note that:

   - Q. 5 refers to the individual's job title at the time of the survey
   - Q. 7 refers to any other jobs that the individual may be assigned to in addition to the current job named in answer to Q. 5
   - Q. 8 refers to jobs held by the individual before the survey date
   - Q. 10 refers to the level of discomfort the individual has experienced using a scale that ranges from zero (no discomfort) to 5 (severe discomfort)

2. Give a copy of the Discomfort Survey to every worker and record the number of surveys distributed. Explain the purpose of the survey in the context of the IMIRP process.

3. Collect the completed surveys as soon as possible and record the number returned. Keep the surveys to use when completing Worksheet 2.

Instructions for Worksheet 2

You will find a blank copy of Worksheet 2 in Appendix C and a filled-in sample on page 9. Use Worksheet 2 to record the results from the Discomfort Survey. At the end of Step 1, you will enter the summary information from this worksheet into Worksheet 3, which you will find in Appendix D.

1. For each mill job title, indicate the number of workers surveyed, the date of the survey, and the number of workers answering "Yes" to Q. 9—"In the last year, have you felt any discomfort or pain while performing your job?" Also indicate the number of Discomfort Surveys returned.

2. Review all the completed Discomfort Surveys for a particular mill job title and indicate each occurrence of discomfort in a particular body part by entering the discomfort values in the "Tally of Discomfort Values" column.

   Example: A Grader indicates a discomfort level of 3 for the left wrist, 5 for the right wrist, and 4 for the low back. Write the discomfort values of 3 in the "Wrist (L)" row, 5 in the "Wrist (R)" row, and 4 in the "Low Back" row in the "Tally of Discomfort Values" column.

3. Determine the "Tally Totals" and the "Number of Incidences." Calculate the "Average Discomfort Value" for each body part by dividing the figure in the "Tally Total" column by the figure in the "Number of Incidences" column.

   Example: "Upper Neck" in the sample is assigned an average discomfort value of 3 because 12 ("Tally Totals") divided by 4 ("Number of Incidences") equals 3.

4. Determine the "Sum of Tally Totals" and the "Sum Total of Incidences" for the job by adding all the values in the "Tally Totals" column and all the values in the "Number of Incidences" column.

5. Calculate the "Grand Average of Discomfort Values" by dividing the "Sum of Tally Totals" by the "Sum Total of Incidences." Keep your completed Worksheet 2 to use later in Step 1 of the IMIRP implementation process.

Sample Worksheet 2. Tally of reported discomfort for a mill job title by body part.

Mill Job Title: Grader Date: January 30, 1999

Number of Workers: 12 Number of Surveys with 'Yes' to discomfort/pain (Q. 9)*: 7

Number of Surveys returned*: 9

Body Part	Tally of Discomfort Values	Tally Totals	Number of Incidences	Average Discomfort Value
Head/Eye				
Neck	*4, 4, 2*	*10*	*3*	*3.33*
Upper Back	*3, 3, 3, 3*	*12*	*4*	*3*
Shoulder (L)				
Shoulder (R)				
Elbow (L)	*1*	*1*	*1*	*1*
Elbow (R)	*2*	*2*	*1*	*2*
Forearm (L)	*3, 3, 5*	*11*	*3*	*3.67*
Forearm (R)	*4, 4, 4, 4, 3, 2*	*17*	*6*	*2.83*
Wrist (L)	*3, 5, 4*	*12*	*3*	*4*
Wrist (R)	*5, 2, 3, 3, 3*	*16*	*5*	*3.2*
Hand/Finger (L)	*2, 2*	*4*	*2*	*2*
Hand/Finger (R)				
Low Back	*4, 4, 3, 1*	*12*	*4*	*3*
Hip/Thigh (L)				
Hip/Thigh (R)				
Knee (L)				
Knee (R)				
Ankle/Foot (L)	*5, 5*	*10*	*2*	*5*
Ankle/Foot (R)	*5, 5*	*10*	*2*	*5*
Other				

Sum of Tally Totals*	Sum Total of Incidences*
117	*36*

Grand Average of Discomfort Values*
3.25

*** Information transferred to Worksheet 3**

Prioritise jobs

Use the information collected for each mill job title to decide how to prioritise the jobs most in need of an ergonomic intervention.

Instructions for Worksheet 3

You will find a blank copy of Worksheet 3 in Appendix D and a filled-in sample on page 11. Use Worksheet 3 to summarise the findings of Worksheet 1 and Worksheet 2 and determine the priority ranking of all mill job titles. In Step 2, you will enter the priority rankings assigned to each mill job title into Worksheet 4.

1. Transfer the applicable information from Worksheets 1 and 2 to Worksheet 3 for each mill job title.

2. Analyse the contents of Worksheet 3. Carefully consider all the factors listed to determine how much risk of injury each mill job presents. Decide which jobs need immediate attention.

   Example: In the sample Worksheet 3 on page 11, three positions are compared. The workers in the Millwright position have a high level of discomfort (4.3), but only four workers perform this job. The Dry Chain Puller position has the most workers and the most injury reports, but the level of discomfort is low. Comparing the Dry Chain Puller and Grader positions, the number of workers and the number of injury reports are similar. The major difference between the two is the higher level of discomfort for the Grader. All of these considerations suggest that the Grader position is most in need of an ergonomic intervention.

3. Complete the "Priority" column on Worksheet 3 by assigning a ranking (first, second, third, etc.) for each job. Keep your completed Worksheet 3 to use in Step 2 of the IMIRP implementation process.

   Note: Many factors can come into play when making a decision on job priority. A mill's OHSC members may develop their priority rankings based on which job has (1) the greatest number of workers that may benefit from an ergonomic intervention, (2) the most injury reports, and (3) the highest level of discomfort. Access to other information—such as the average cost of an injury, the length of time a person is unable to work, or the turnover rate of a particular job—can also be helpful when making priority-ranking decisions.

Sample Worksheet 3. Collection of information for all mill job titles for determining priority

From Worksheet 1 – Signs and/or Symptoms				From Worksheet 2 – Discomfort Survey					Priority*+
Mill Job Title	**Number of Workers**	**Number of Injury Reports**	**Job Total Value**	**Number of Surveys with 'Yes' to discomfort/pain (Q. 9)**	**Number of Surveys Returned**	**Sum of Tally Totals**	**Sum Total of Incidences**	**Grand Average of Discomfort Values**	
Dry Chain Puller	*15*	*30*	*55*	*8*	*9*	*92*	*40*	*2.3*	*2*
Millwright	*4*	*8*	*15*	*4*	*4*	*43*	*10*	*4.3*	*3*
Grader	*12*	*24*	*46*	*7*	*9*	*117*	*36*	*3.25*	*1*

*** Information transferred to Worksheet 4**
+ Order of priority for illustrative purposes only

STEP 2: Match Job at Risk to Common Industry Job (CIJ)

The second step in the IMIRP implementation process involves matching each mill job that was identified in Step 1 as a high-priority job to a CIJ and corresponding Tool Kit.

Compare job titles with CIJ titles

List mill job titles in order of priority for ergonomic intervention and match each one to a Tool Kit designed to address the ergonomic issues of a particular CIJ.

Instructions for Worksheet 4

You will find a blank copy of Worksheet 4 in Appendix E and a filled-in sample on page 14. To complete Worksheet 4, you will need to refer to Appendix F, Common Industry Job Titles and Descriptions, and Appendix G, Timelines for Tool Kit Production.

1. Enter the job titles from Worksheet 3 in the "Mill Job Titles" column in order of priority.

2. Match each mill job title to the most appropriate CIJ title and job description in Appendix F.

   Example: Any worker pulling lumber from a chain and stacking it (e.g., Dry Chain Puller, Green Chain, Export Chain) is referred to as an Offbearer (CIJ title), based on the job categories in Appendix F.

3. When you have matched a mill job to an appropriate CIJ title, determine whether the corresponding Tool Kit is available by looking at the Timelines for Tool Kit Production in Appendix G. Two lists are provided: one sorted by the estimated date of production, the other by CIJ title. If a Tool Kit is available, check "Yes". If a Tool Kit is not available but is in production, check "No" and enter the date it will be available. If there is no appropriate CIJ title, it is possible that your mill job is not in the IMIRP data collection and therefore a Tool Kit will not be created. Leave the "CIJ Title" row blank, check "No" in the "Tool Kit Available" column, and see the "No Tool Kit?" box (below).

4. Obtain a copy of the appropriate Tool Kit from WCB Films and Posters. Read the Overview and Physical Demands Analysis sections to confirm that the Tool Kit is suitable. If your review of the sections makes you certain that the Tool Kit chosen is appropriate, enter the corresponding CIJ title in Worksheet 4. If your review of the sections makes you conclude that the mill job is different from the CIJ, leave the "CIJ Title" row blank, check "No" in the "Tool Kit Available" column, and see the "No Tool Kit?" box (below).

5. Once you have a number of jobs matched to CIJ titles and Tool Kits, assign OHSC personnel to a sub-committee for each high-priority job. Ideally, each sub-committee should have one management and one worker representative, and both representatives should have attended the OHSC and Supervisor Ergonomics Training Session. Enter the names of sub-committee members in the "OHSC Personnel Assigned" column.
6. Have the sub-committee members prepare workers for the process to be undertaken and answer any questions or concerns they may have. Workers will need to understand the reasons for ergonomic changes if they are going to accept new job processes and designs.

No Tool Kit?

If a Tool Kit is not available immediately or will not be produced for the job you are investigating, look for CIJ titles and job descriptions (Appendix F) that are closely related to the job and have Tool Kits available (Appendix G). Review the Overview and the Physical Demands Analysis sections to determine whether there are similar tasks listed. Determine whether the suggested solutions can be considered, either on a permanent or interim basis, for the mill job. Always use the appropriate CIJ documents if, and when, they become available. If you are unable to match the job titles on Worksheet 4 with CIJ titles and Tool Kits, you may not be able to proceed to Step 3 of the IMIRP implementation process. You may have to consider the following options:

- If the job is one in which a significant number of workers have been injured, you might arrange to have a risk assessment conducted independently by ergonomists or other qualified personnel.

- If the job is common to a significant number of sawmills, you might approach the IMIRP Society and ask to have the job included in the project.

- If the job is common to a small number of sawmills, you might propose that these mills work together to share the information and savings of a joint risk assessment.

Sample Worksheet 4. Job priority and Common Industry Job (CIJ) titles for mill jobs

Priority+	Mill Job Title	CIJ Title	Tool Kit available? (check one)	If 'No', enter date expected	OHSC Personnel Assigned	
					Worker	Management
1	*Grader*	*Grader*	Yes ☑ No ☐		*Robin*	*Jean*
2	*Dry Chain Puller*	*Offbearer*	Yes ☑ No ☐		*Jamie*	*Sam*
3	*Millwright*	*Millwright*	Yes ☐ No ☑	*1999/07*	*Bill*	*Susan*
4	*Job A*		Yes ☐ No ☑		*Kim*	*Chris*
5			Yes ☐ No ☐			
6			Yes ☐ No ☐			
7			Yes ☐ No ☐			
8			Yes ☐ No ☐			
9			Yes ☐ No ☐			
10			Yes ☐ No ☐			
11			Yes ☐ No ☐			
12			Yes ☐ No ☐			
13			Yes ☐ No ☐			
14			Yes ☐ No ☐			
15			Yes ☐ No ☐			
16			Yes ☐ No ☐			
17			Yes ☐ No ☐			
18			Yes ☐ No ☐			
19			Yes ☐ No ☐			
20			Yes ☐ No ☐			

+ Order of priority for illustrative purposes only

STEP 3: Identify Risk Factors

The third step in the IMIRP implementation process involves identifying ergonomic risk factors for a specific job matched to a CIJ in Step 2.

Document ergonomic risk

Investigate and document potential ergonomic risk factors for the job that concerns you.

Note: OHSC members who have completed the OHSC and Supervisor Ergonomics Training Session have learned how to conduct such an investigation and will obtain the most reliable and consistent results.

Instructions for Risk Factor Identification Checklist

You will find a Risk Factor Identification Checklist in the Tool Kit for the job that concerns you. If a Tool Kit is not available immediately, or will not be produced for the job you are investigating, you may wish to use the General Risk Factor Identification Checklist in Appendix H.

1. See page 1 of the checklist for instructions.

2. Check the "Before implementation" box, then complete the individual sections.

3. Use the information gathered on the checklist to make a link between:

    - Body parts at risk of injury during particular tasks of the job
      AND
    - Direct risk factors (DRFs) discussed in the Work Manual section of each Tool Kit

4. Keep your completed checklist to use in Step 4 of the IMIRP implementation process.

STEP 4: Determine Appropriate Solutions

The fourth step in the IMIRP implementation process involves finding and evaluating possible solutions to the ergonomic problems identified in Step 3.

Find possible solutions

Investigate changes that you might make to reduce the occurrence of MSIs. Your main resource for this information is in each Work Manual.

Instructions for Work Manual

You will find a Work Manual section in the Tool Kit for the job that concerns you. Each Work Manual is divided into two parts: the Injury Education part provides information about the body parts at risk of an MSI, and the Injury Prevention part describes ways to reduce the risk of an MSI.

1. Decide which body parts you need to learn about by reviewing the body part sections in the Risk Factor Identification Checklist that you completed in Step 3. Turn to the appropriate body part page (e.g., Neck) in the Injury Education section of the Work Manual.

   Note: There may be more than one set of concerns for each body part.

2. Read the body part pages. Decide whether they apply to the job that concerns you. Distribute the information to the workers at the job. Each body part section contains:

   - A photograph of a worker or work environment and a related statement (e.g., the statement in the Neck section of the Work Manual for Graders says, "A Grader must hold the head forward in order to inspect boards")
   - A summary of direct risk factors (DRFs) for the job and body part (e.g., "Awkward Posture, Static Posture")
   - Background information about the body part (e.g., "A number of smaller muscles around the neck produce the forces necessary to support and move the head")
   - Direct risk factors that should be addressed to prevent MSIs
   - Indirect risk factors that should be addressed to prevent MSIs
   - Consequences of the body part/direct risk factor combination
   - The location of suggested solutions

3. Turn to the Summary of Solutions tables at the end of the Work Manual. Identify the solutions associated with the body part that concerns you in combination with the DRFs you wish to address. Keep in mind that any particular solution may address more than one body part.

4. Use the information in the Work Manual to make a list of possible solutions.

5. Look in other IMIRP resources (MSI Safety Guide, Body Manual, General Risk Factor Solutions Manual) for additional solutions.

Consider a range of options

Meet with your sub-committee or your entire OHSC to discuss how you might solve the ergonomic problems identified. Several solutions are provided in the Injury Prevention section of the Work Manual. For solutions aimed at the way workers use their bodies, refer to the Body Manual. For solutions aimed at environmental conditions and work organisation issues, refer to the General Risk Factor Solutions Manual. Do not limit your discussion of possible solutions to those found in the IMIRP documents. Solutions can come from many sources, including workers, ergonomists, and engineers.

Evaluate all possible solutions by using the Solution Option Form. Keep in mind that you will complete the Solution Option Form in two stages:

- Stage one: you will gather information about a possible solution
- Stage two: you will decide whether or not to implement the solution

Note: In some cases, your mill may have implemented a solution before beginning the IMIRP implementation process. It is still important to fill out a Solution Option Form and indicate that the solution has been implemented. This will provide a record of ergonomic efforts made before you began using IMIRP documentation.

Instructions for Solution Option Form (stage one)

You will find a blank copy of the Solution Option form in Appendix I and a filled-in sample on page 20. You will complete this form in two stages. In this stage, you will assemble information about a possible solution in preparation for interviewing personnel about the impact the solution might have.

1. Use a separate copy of the form to consider each possible solution. Fill in the following sections of the form:

    - Company Name, Division, and Main Contact(s)
    - CIJ title
    - Solution Description (describe the solution in a few words or provide the name and page number of the solution from the Work Manual, MSI Safety Guide, Body Manual, or General Risk Factor Solutions Manual)
    - Risk Control Code (see the Risk Control Key in the Injury Prevention section of the Work Manual: E stands for Engineering Controls, A stands for Administrative Controls, WP stands for Work Practice Controls, and PPE stands for Personal Protective Equipment)
    - Body Parts
    - Direct Risk Factor(s) of concern

2. Make sure you have read and understood all the information about the possible solution.

3. Keep your partially completed Solution Option Form to use later in Step 4 of the IMIRP implementation process.

Interview personnel

Talk to anyone who may have relevant input about re-designing the work environment, including individuals employed at the workstation, in area maintenance, and at mill purchasing.

Instructions for Impact Factor Questions

You will find a copy of six questions about impact factors (all identified in consultation with the IWA and COFI) in Appendix J.

1. All individuals interviewed should be aware of the impact factors referred to in Appendix J and named on the Solution Option Form. Explain to interview subjects that you want them to think about the potential results of a possible solution and comment on:

    - The effectiveness of the solution
    - The cost of the solution
    - The time involved
    - The number of workers affected
    - The likelihood of acceptance by supervisors and workers
    - The probable effect on the production process and product

Seek consensus about solutions

Work with other OHSC members to consider all the information gathered about the possible solutions you have found. Your OHSC might want to draft and circulate a brief report that summarises your findings. Use the information from your discussion and the response to your report to continue filling out the Solution Option Form. The form can be used to show evidence of the ergonomics process at your mill.

Instructions for Solution Option Form (stage two)

You will complete the form that you began earlier in Step 4. (See the filled-in sample on page 20.) In this stage of the form-filling process, you will make a final decision about whether or not to implement a solution.

1. The entire OHSC needs to establish guidelines for the scale values of measurable impact factors. Assign values or a range of values to each number on the scale (1 to 5) used to rate the impact factors.

    Example: The entire OHSC might decide that a "low cost" solution is one that requires an expenditure of zero to five-hundred dollars. In terms of timeliness, a "long" timeframe may be more than one year.

2. The entire OHSC or the sub-committee needs to reach a consensus on the scores assigned to impact factors for each solution. Complete the "Impact Factors" section of the form. Add the scores and fill in the "Total Score" box.

3. Rank the solution in relation to all the options by using the information from the "Impact Factors" section and other information you have gathered. Assign a ranking to the solution and complete the "Solution Priority Number" sections. Solutions with high-priority numbers should be considered for immediate implementation.

   Example: Your OHSC considered 10 possible solutions to a problem and decided which solutions would be most likely to work. The committee assigned each solution a priority number ranging from 1 (most likely to solve problem) to 10 (least likely to solve problem).

4. Decide whether or not to implement the solution and check the appropriate box in the "Decision" section.

5. Fill in the "Date of Decision" and the section where you are asked to "list the primary reason(s)" for the decision you have made.

6. Fill in the "Date of Implementation" section. Be realistic. Choose a date that all members of the OHSC believe will allow the solution to be implemented on time.

7. Use the bottom section of the form to describe any modifications you will make to the solution for implementation. If you need more space, use additional pages. It is important to describe modifications in detail, since these changes could affect the risk-reducing ability of the solution.

8. Fill in the "Date of Follow-up" section. You should choose a date approximately one year after the solution has been implemented.

Solution Option Form

Company Name: Division: Main Contact(s) Management: Ian Worker: Jim

Solution Priority Number	CIJ Title	Solution Description	Document and Page	Risk Control Code E	A	WP	PPE	Decision	Date of Decision	Date of Implementation	Date of Follow-up
3	*Chipper Operator*	*Diagonal Fin*	*WM 41*	✓				☑ Implement ☐ Do not implement	*Feb. 17, 1999*	*November 1999*	

Body Parts		Direct Risk Factor	
☑ Neck ☑ Shoulder ☐ Elbow ☐ Wrist ☐ Low Back ☐ Knee ☐ Ankle/Foot		☑ Force ☑ Repetition ☐ Static Posture ☐ Contact Stress ☑ Awkward Posture ☐ Vibration	

Impact Factors								
Effectiveness:	[not very]	1	2	3	(4)	5	[very]
Cost:	[high]	1	2	(3)	4	5	[low]
Timeliness:	[long]	(1)	2	3	4	5	[short]
%Workers Impacted:	[low]	1	2	3	(4)	5	[high]
Likelihood of Acceptance:	[not very]	1	2	3	4	(5)	[very]
Production/Quality:	[negative]	1	2	3	4	(5)	[positive]

Total Score 22 /30

Please list the primary reason[s] for either implementing or not implementing this solution:

Implementation of the solution will occur during scheduled mill shutdown.

Purchasing department needs to investigate various options for purchase.

If the solution was modified for implementation, please describe:

AEI Code

(office use only)

STEP 5: Implement Solutions

The fifth step in the IMIRP implementation process involves moving forward with the solutions chosen in Step 4.

Choose a strategy

Decide on an appropriate implementation strategy. Strategies will vary from mill to mill.

Manage change effectively

Many people feel threatened by change in the workplace: they did not initiate the changes, yet they are often most affected. Make sure that you inform everyone who will be affected, either directly or indirectly, by the changes. Make the changes more acceptable to everyone by:

- Explaining why the change is being made, exactly what will change, and how people will be affected
- Asking for reactions
- Clearing up any misunderstandings
- Answering questions and acknowledging objections
- Asking what could be done to make the change go as smoothly as possible
- Asking for support and commitment
- Coaching, supporting, and reinforcing

STEP 6: Evaluate Solutions

The sixth step in the IMIRP implementation process involves evaluating the effectiveness of the solutions chosen.

Assess short-term progress

Two weeks after implementing a solution find out if any risk factors have been eliminated or reduced. Determine if any new risks have been created.

Instructions for Risk Factor Identification Checklist

Obtain a new copy of the Risk Factor Identification Checklist you used in Step 3 (you will have used the checklist from either the Tool Kit or Appendix H). Ideally, the OHSC members who completed the first Risk Factor Identification Checklist for the job should evaluate the short-term progress. Keep in mind that the checklist is designed to identify ergonomic risk factors, not to assess them.

1. Complete the Risk Factor Identification Checklist a second time by following the instructions on page 1 of the checklist. Check the "After implementation" box.

2. Compare the second checklist with the first checklist. See if different columns are checked ("Sometimes" instead of "Often," "Yes" instead of "No"). Take note of any changes.

Instructions for Employee Follow-up Survey

You will find a blank copy of the Employee Follow-up Survey in Appendix K. Using the survey form will help you determine whether solutions have succeeded in reducing or eliminating the risk factors previously identified without creating any new risks.

1. Give a survey form to each worker affected by the ergonomic change.

2. Collect the completed surveys and compile the results.

3. Look at the results of the survey to determine how much individual workers were involved in the ergonomic process and whether their opinions and expertise were used.

4. Inform others of the results of your survey, including fellow OHSC members, affected workers, management, and the IMIRP Society.

Assess long-term progress

Approximately one year after implementing a solution, assess the effectiveness of the changes. Options for assessment include gathering information about injuries and discomfort, or having the work environment re-assessed by ergonomists or others qualified to conduct risk assessments.

Instructions for Worksheet 1

Obtain a new copy of Worksheet 1, which you used in Step 1 to gather information about injuries (see Appendix A).

1. Complete Worksheet 1 a second time by following the instructions outlined in Step 1.

2. Compare the newly completed worksheet with the worksheet done earlier. Decide whether the number of injury reports increased, decreased, or stayed the same.

3. Inform others of your results, including fellow OHSC members, affected workers, management, and the IMIRP Society.

Instructions for Discomfort Survey (Follow-up)

You will find a blank copy of the Discomfort Survey (Follow-up) in Appendix L.

1. Give a survey form to each worker affected by the ergonomic change initiated a year earlier.

2. Collect the completed forms and compile the results.

3. Any surveys that indicate Before and Yes for question 1 and 2 respectively should be used to compare with the results obtained when you surveyed workers about discomfort in Step 1. Decide whether the levels of discomfort increased, decreased, or stayed the same, and if different body parts have been affected.

4. Inform others of your results, including fellow OHSC members, affected workers, management, and the IMIRP Society.

Conclusion

The Industrial Musculoskeletal Injury Reduction Program (IMIRP) depends on shared information. The following documents can be especially valuable:

- Worksheet 1 (injury statistics)
- Worksheet 2 (results of the Discomfort Survey)
- Worksheet 4 (priority ranking of jobs to be considered)
- Solution Option Form (information about solutions considered and implemented)

OHSC members are encouraged to send copies of completed documents used in the IMIRP implementation process, by mail or facsimile, to:

The IMIRP Project
c/o Advanced Ergonomics Inc.
2668 Shale Court
Coquitlam, BC V3E 2T7

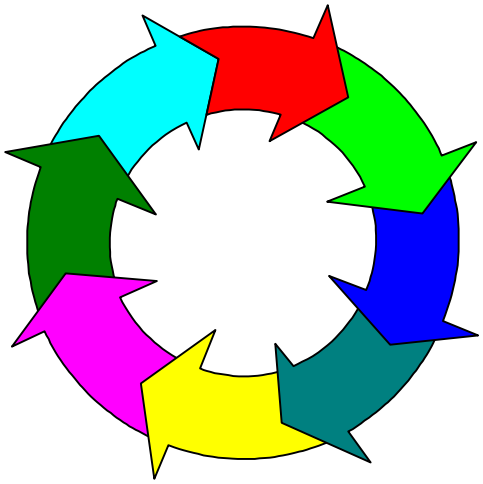
Facsimile: (604) 945-6215

Please forward any information about an OHSC decision, whether the solution decided on was implemented or not. This will allow the IMIRP Society to keep a record of solutions that were considered by various mills, why some solutions were implemented, and why others were rejected.

The IMIRP team will make sure all mills benefit by sharing information and making everyone in the sawmill industry aware of successful solutions.

IMIRP

APPENDICES



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Disclaimer

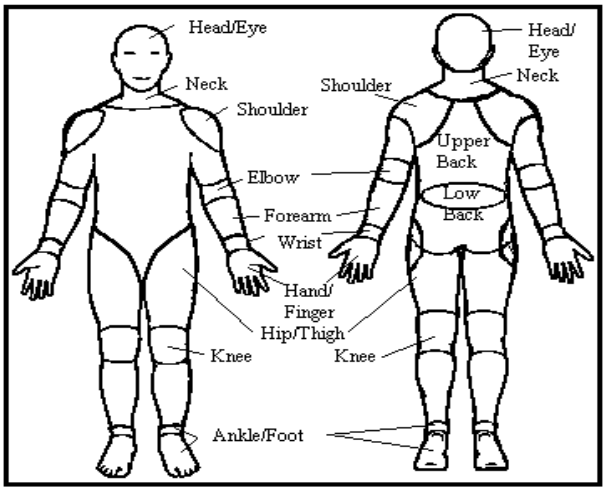
The BC sawmill IMIRP documents were developed by Advanced Ergonomics Inc. (AEI) based on analyses conducted in a number of voluntary, participating sawmills in British Columbia and should be considered applicable only to the BC sawmill industry. Modification to these documents may reduce their usefulness and/or lead to hazardous situations. Individuals or committees wishing to make Physical Demands Analyses (PDAs) site-specific, or wishing to implement options from the Work Manuals, are advised to first complete the two-day OHSC and Supervisor Ergonomics Training Session. Modifications to a PDA must be within the scope of competence of those individuals making the changes and must be reported to any rehabilitation professional using the PDA. Neither AEI nor the IMIRP Society accepts any responsibility for the use or misuse of these documents.

Appendix A - Worksheet 1

Worksheet 1. Tally of signs and/or symptoms for a mill job title by body part.

Mill Job Title*: Date:

Number of Workers*: Number of Injury Reports (Past Year)*:



Signs and/or Symptoms of MSIs

- Discomfort or pain
- Tenderness
- Inflammation
- Burning sensation
- Decreased motion
- Weakness or clumsiness
- Tingling or numbness
- Shooting/Stabbing pain
- Whitening of the fingers or toes

Body Part	Tally of Signs and/or Symptoms (✓)	Tally Totals
Head/Eye		
Neck		
Upper Back		
Shoulder (L)		
Shoulder (R)		
Elbow (L)		
Elbow (R)		
Forearm (L)		
Forearm (R)		
Wrist (L)		
Wrist (R)		
Hand/Finger (L)		
Hand/Finger (R)		
Low Back		
Hip/Thigh (L)		
Hip/Thigh (R)		
Knee (L)		
Knee (R)		
Ankle/Foot (L)		
Ankle/Foot (R)		
Other		

Job Total Value*

*** Information transferred to Worksheet 3**

Appendix B - Discomfort Survey

IMIRP
DISCOMFORT SURVEY

- This survey is part of the Industrial Musculoskeletal Injury Reduction Program (IMIRP). It is being used to gather information about discomfort and pain occurring in sawmills for the purpose of reducing injuries.

- Please note, you will be asked about your feeling of discomfort and pain while performing your job. Your rating of this discomfort or pain should be what you feel at the **end** of a shift in a typical workday.

If you have any other questions, please ask your supervisor.

Personal Information

1. Year of birth**: 19_____**

2. Height: _____

3. Weight: _____

4. Gender: *(check one)* ☐ Male ☐ Female

Job Information

5. Current job title: _____

6. Length of time at current job:

(Check one)

☐ Less than 3 months
☐ 3 to 12 months
☐ More than 1 but less than 3 years
☐ 3 to 5 years
☐ More than 5 but less than 10 years
☐ More than 10 years

7. Other jobs currently performed: _____ _____ _____ _____

How often:
(Enter a letter from the legend) ☐ ☐ ☐ ☐

A. less than 25% of the shift
B. 25 to 50% of the shift
A. more than 50% of the shift

8. Past/Previous job titles:

_____ _____ _____ _____

Years worked at this job (e.g. 1986-1990): **19__ - 19__** **19__ - 19__** **19__ - 19__** **19__ - 19__**

Discomfort Information

9. In the last year, have you felt any musculoskeletal discomfort or pain while performing your job?
(Check one)

☐ **Yes** If **Yes**, please continue on the next page.

☐ **No** If **No**, you are now finished the questionnaire. **Thank you very much for your time.**

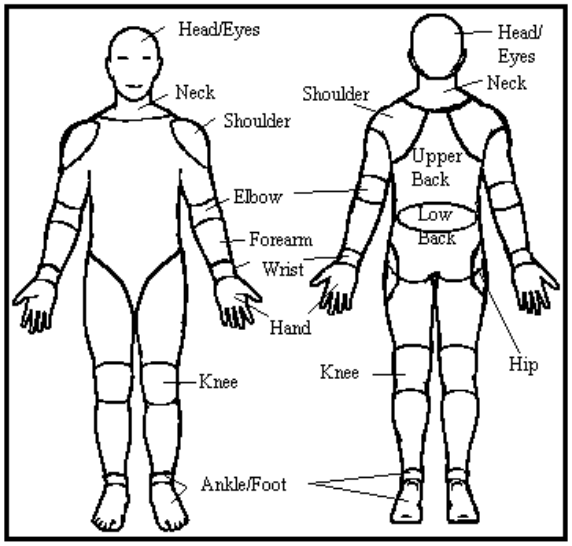
10. Using the scale below, rate your discomfort or pain levels by circling the appropriate number associated with each body part. Please notice that this is the feeling when you perform your job. Do this for each body part in which you feel discomfort or pain.

Example : *For "Moderate discomfort or pain" in the neck:*

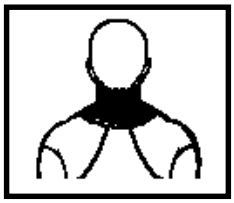
2	**Neck**	0	1	2	(3)	4	5

Mild discomfort
Moderate discomfort
Minor discomfort
Major discomfort
No discomfort
Severe discomfort

1	**Head/Eye**	0	1	2	3	4	5
2	**Neck**	0	1	2	3	4	5
3	**Upper back**	0	1	2	3	4	5
4	**Shoulder**						
	Left	0	1	2	3	4	5
	Right	0	1	2	3	4	5
5	**Elbow**						
	Left	0	1	2	3	4	5
	Right	0	1	2	3	4	5
6	**Forearm**						
	Left	0	1	2	3	4	5
	Right	0	1	2	3	4	5
7	**Wrist**						
	Left	0	1	2	3	4	5
	Right	0	1	2	3	4	5
8	**Hand/finger**						
	Left	0	1	2	3	4	5
	Right	0	1	2	3	4	5
9	**Low back**	0	1	2	3	4	5
10	**Hip/thigh**						
	Left	0	1	2	3	4	5
	Right	0	1	2	3	4	5
11	**Knee**						
	Left	0	1	2	3	4	5
	Right	0	1	2	3	4	5
12	**Ankle/foot**						
	Left	0	1	2	3	4	5
	Right	0	1	2	3	4	5
Other: _____ (e.g. left leg, stomach)		0	1	2	3	4	5



Shade in the areas of the body above in which you feel the most pain or discomfort. For example, for neck discomfort or pain:



11. Does your present job make your discomfort or pain worse?

(*Check one*) ☐ Yes ☐ No

If Yes, explain? _____

_____

_____

12. Have you received any treatment (e.g. medication, hot/cold treatment, physiotherapy etc.) to relieve the discomfort or pain? (*Check one*) ☐ Yes ☐ No

If Yes, explain: _____

_____

_____

13. a) Do you have any ideas what are the factors in your job (e.g. the object handled, the workstation, the work technique, tool used etc.) causing the discomfort or pain? _____

_____

_____

_____

b) Do you have any suggestions to improve the work condition to prevent or reduce the possibility of causing the discomfort or pain? _____

_____

_____

Thank you very much for your time!

Appendix C - Worksheet 2

Worksheet 2. Tally of reported discomfort for a mill job title by body part.

Mill Job Title: Date:

Number of Workers: Number of Surveys with 'Yes' to discomfort/pain (Q. 9)*:

Number of Surveys Returned*:

Body Part	Tally of Discomfort Values	Tally Totals	Number of Incidences	Average Discomfort Value
Head/Eye				
Neck				
Upper Back				
Shoulder (L)				
Shoulder (R)				
Elbow (L)				
Elbow (R)				
Forearm (L)				
Forearm (R)				
Wrist (L)				
Wrist (R)				
Hand/Finger (L)				
Hand/Finger (R)				
Low Back				
Hip/Thigh (L)				
Hip/Thigh (R)				
Knee (L)				
Knee (R)				
Ankle/Foot (L)				
Ankle/Foot (R)				
Other				

Sum of Tally Totals*	Sum Total of Incidences*

Grand Average of Discomfort Values*

*** Information transferred to Worksheet 3**

Appendix D - Worksheet 3

Worksheet 3. Collection of information for all mill job titles from Worksheet 1 and 2.

From Worksheet 1 – Signs and/or Symptoms				From Worksheet 2 – Discomfort Survey					Priority*
Mill Job Title	Number of Workers	Number of Injury Reports	Job Total Value	Number of Surveys with 'Yes' to discomfort/pain (Q. 9)	Number of Surveys Returned	Sum of Tally Totals	Sum Total of Incidences	Grand Average of Discomfort Values	

*** Information transferred to Worksheet 4**

Appendix E - Worksheet 4

Worksheet 4. Job priority and Common Industry Job (CIJ) titles for mill jobs

Priority	Mill Job Title	CIJ Title	Tool Kit available? (check one)	If 'No', enter date expected	OHSC Personnel Assigned	
					Worker	Management
1			Yes ☐ No ☐			
2			Yes ☐ No ☐			
3			Yes ☐ No ☐			
4			Yes ☐ No ☐			
5			Yes ☐ No ☐			
6			Yes ☐ No ☐			
7			Yes ☐ No ☐			
8			Yes ☐ No ☐			
9			Yes ☐ No ☐			
10			Yes ☐ No ☐			
11			Yes ☐ No ☐			
12			Yes ☐ No ☐			
13			Yes ☐ No ☐			
14			Yes ☐ No ☐			
15			Yes ☐ No ☐			
16			Yes ☐ No ☐			
17			Yes ☐ No ☐			
18			Yes ☐ No ☐			
19			Yes ☐ No ☐			
20			Yes ☐ No ☐			

Appendix F - Common Industry Job Titles and Descriptions

Jobs are categorised into eight areas:

- Log Breakdown/Log Merchandising
- Sawmill Manufacturing Breakdown
- Planing/Finishing
- Kilns/By Products/Other
- Trades/Maintenance
- Mobile Equipment Operator
- Fingerjointing
- Portable Sawmill

Log Breakdown/Log Merchandising		
1	Cant Saw Operator or Sawyer *(trim/quad band, headrig)*	operates saw to produce maximum size cants, slabs or side lumber & maximum recovery from logs according to cutting orders
2	Chip-n-Saw Operator	operates chip-n-saw unit to break down logs into lumber cants, depending on pre-determined machine set up
3	Chipper Canter Operator	operates chipper canter unit to produce maximum size cants from the logs
4	Cut-off Saw Operator *(drag saw)*	cuts logs to apply to orders
5	Debarker Operator	monitors the feeding of logs through automatic barker
6	Deck Hand	assists boom boat, boom feeder boat operator, tug boat operators
7	Headrig Tailsawyer	guides and turns slabs and cants, ensures flow of wood is uninterrupted
8	Log Chaser	straightens logs on deck
9	Log Haul Feeder	operates a mechanical pike pole to supply individual logs to log haul infeed
10	Log Marker	marks logs to be sorted out (marks for species, length and size)
11	Log Merchandiser	operates computer that sets up the log to be cut according to the highest value boards (gets the most out of the log)
12	Log Scaler	scales and grades incoming logs - scaling ticket
13	Scragg Saw Operator	operates scragg saw to cut logs into cants and slabs from small diameter logs
14	Slipman/Boomman	feeds logs in to the mill using a pike pole or like device

Sawmill Manufacturing Breakdown		
15	Drop Sorter	sorts wood using drop gate
16	Edger Operator *(main, cant-gang, chipper)*	operates an edger to rip and size a flow of dimension type lumber and/or slabs, originating from a primary breakdown unity or equivalent
17	Edger Operator *(pony)*	operates a pony edger
18	End Stacker Helper	helps stacker operator
19	End Stacker Operator	operates end stacker to build loads
20	Gang Saw Operator *(slash, circular)*	operates saw to process cants received from log breakdown units into lumber
21	Grade Stamper	stamps grades on lumber as per graders marks
22	Grader	grades lumber
23	Horizontal/Vertical Resaw Operator	operates the resaw in accordance with multi settings for required thickness for lumber cants or slabs
24	Lumber Straightener	untangles and straightens lumber for easier handling at the next work station
25	Offbearer	pulls and stacks lumber
26	Sorter Bin Attendant	monitors auto-bin sorter, discharges lumber on to chain for stacker
27	Sorter Feeder *(manual)*	activates conveying equipment & delivers lumber on the infeed chain by turning, etc. lumber as it approaches and passes his work station
28	Sorter Operator *(automatic)*	ensures the flow of lumber into a bin sorting unit or a tray system
29	Splitting Saw Operator	controls flow of material to the operation of the splitter saw
30	Strip Layer	maintains a supply of tier separator strips
31	Tailer *(auto trimmer, edger, resaw)*	straightens lumber on the outfeed behind automatic trimmer
32	Tallyman	tallies loads for orders
33	Trimmer Puller *(main, stationary saw)*	pulls boards to length for trimming defects from the ends
34	Trimsaw Operator *(auto, cant, bull double end with or w/o controls)*	trims lumber according to the graders' marks
35	Trimsaw Operator *(hula, chop saw)*	trims lumber according to the graders' marks

Planing/Finishing		
36	Assistant Shipper	maintains the basic forms of shipping department - tallies, filling orders, invoices
37	Block Piler	lifts trim ends from a belt or conveyor and stacks and straps them.
38	Car Loader	prepares, loads, straps and blocks various types of flat cars and box cars
19	End Stacker Operator	operates end stacker to build loads
39	Grade Control Inspector	quality control of graders
21	Grade Stamper	stamps grade on wood (individual or bundles) according to markings placed by grader
22	Grader	grades lumber
40	Jointer Operator	operates jointing machine
41	Load Strapper/Bander	straps loads for shipping
42	Machine Stress Rater	Monitors MSR machine, tests sample lumber and calibrates machine
25	Offbearer	pulls and stacks finished lumber
43	Packaging Press Operator	operates press, straps and wraps load for shipping
44	Planer Feeder	feeds boards through planer
45	Planerman	sets up planers and allies equipment associated with the planer, lubrication, changing of heads and prep work prior to change over
46	Racker/Selector	packs lumber by grade and length
47	Shipper/Loading Coordinator	directs and coordinates the operational shipping (truck, rail) operations
48	Stenciller/End Sealer	paints the end of the lumber and the company stencil on both sides of the stack
49	Sticker Feeder	feeds a sticker to produce material according to order as specified
50	Strip Piler	piles load lath strips and/or kiln stickoff moving belt or landing table
32	Tallyman	tallies loads for orders
51	Tie-up/End Capper	ties bundles and places caps on end
52	Tilt Hoist Operator	operates tilt hoist to feed lumber into the planer-mill
35	Trimsaw Operator *(hula, chop saw)*	trims lumber according to the graders' marks
53	Warehouseman	conducts the business of the mill stores and supplies

Kilns/By Products/Other		
54	Blockman	assists forklift operator or kiln operator in his duties (yard area)
55	By-Products or Waste System Serviceman	may perform all duties listed for hog and chipper feeder, setup, grinderman, babbitman, scow tender etc.
56	Chemical/Computer Attendant	Prepares chemical mixture combinations to treat (protect) lumber
57	Chipper Operator	tends and controls flow of material to chipper
58	Clean-up	cleans up in various areas in and around the mill
59	Clock Watchman	punches a clock at required key stations for the purpose of security & fire prevention
60	Dispatcher	handles plant communication systems
61	Divider Station Operator	operates a divider station to control and divert flow of material to 2 or more chippers or hogs
62	Fire Watch	continuously inspects areas in & around the mill where a fire hazard exists
63	General Labourer	duties as assigned
39	Grade Control Inspector/Quality Control Inspector	quality control of graders
64	Hog Operator	tends and controls flow of material to hog
65	Janitor	cleans office areas, bathrooms, lunch rooms etc.
66	Kiln Operator	operates the kiln for the purpose of drying lumber
67	Scow Tender	loads scows simultaneously with chips, hog fuel and/or sawdust from mills
68	Security or Guard	works at plant entrance or patrolling on foot or in truck on designated areas
69	Utility *(back-end/front-end)*	relieves workers for breaks and can do many jobs in the mill
70	Week end Casual/Spareman	goes to job where needed

Trades/Maintenance		
71	Babbitman/Grinderman	saws and knives (pouring molten metal)/ babbits knives, changes & grinds knives
72	Benchman	levels and tensions the band saws and changes the round saws
73	Carpenter	does any carpentry work needed
74	Electrician	does any electrical work that needs to be performed
75	Machinist	machines parts
76	Mechanic *(heavy duty)*	fixes mobile equipment
77	Planer Technician	maintains/fixes planer machines and related equipment
78	Millwright	keeps the mill running and performs machinery maintenance
79	Oiler	oils machinery
80	Painter	does any painting that needs to be done
81	Pipefitter	does any pipefitting that needs to be done
82	Plumber	does any plumbing that needs to be done
83	Saw Filer *(round)*	grinds and levels the round saws
84	Saw Fitter	sharpens saws and performs saw changes
85	Set-up Man	sets up planer including changing of heads and changing of knives
86	Welder	performs welding tasks in the mill

Mobile Equipment Operator		
87	Backhoe Operator	operates the backhoe
88	Boomboat Operator/Boomman	brings booms and bundles to the raceway
89	Carrier Driver	drives carriers to move loads around yard
90	Cat Operator (D6/D8) Bulldozer	uses bulldozer to supply hog fuel to powerhouse
91	Crane Chaser/Slingman	assists in loading the crane for crane operator
92	Crane Operator *(mobile)*	operates cranes used for the purpose of moving loads of lumber from chain to storage and/or packaging areas
93	Crane Operator *(stationary)*	operates cranes used for loading and unloading rail cars
94	Forklift Driver *(regular, timber stacking)*	drives forklift to pile and unpile products & transports loads of materials to and from various work stations
95	Front End Loader Operator *(bucket)*	snow & debris removal around yard, transportation of materials, feed hog and chip conveyor
96	Grapple Operator	moves logs in yard
97	Heel Boom Operator	operates a crawler mounted log loading machine
98	Kiln Tractor Driver	operates a small tractor to load and unload kilns with kiln cars
99	Swamper *(Forklift, bundle crane)*	places dunnage
100	Truck Driver *(single, semi, freight)*	hauls chips, bark mulch and lumber to and from various locations
101	Tug Boat Operator	brings booms to sawmill and guards booms, logs deliveries & booms cut
102	Yard Truck/Bobcat	does yard maintenance and clean-up, odd duties (i.e. garbage collecting)

Finger Jointing		
103	Load Distributor	monitors bins and may sorts and singulates blocks
104	Fingerjoint Feeder	singulates and feeds blocks into fingerjointer
105	Cornerman	feeds jointing machine
106	Outfeed Stacker	stacks end products
107	Chop Saw	trims defects out of blocks

Portable Sawmills		
108	Portable Sawmill Operator	operates portable sawmill

Appendix G - Timelines for Tool Kit Production

The IMIRP project has analysed and produced Tool Kits on all identified Common Industry Jobs (CIJs) in the British Columbia sawmill industry. This includes some jobs common to finger jointing and value added operations. The following list details the timelines for distribution of the Tool Kits.

The following list is sorted alphabetically. Please allow up to 6 weeks for delivery.

The IMIRP project has been funded by the BC Sawmill Industry therefore, **sawmills within BC may order these documents free of charge.**

Organisations outside the BC sawmill subclass can order these documents for a nominal fee. The fee structure is as follows:

- Sample Binder (Body Manual, Grader Tool Kit, Implementation Guide, General Risk Factors Solutions Manual, and binder) - $75
- Each Tool Kit - $25
- Each Body Manual - $20

Fax requests to Sherry Hyde at (604) 879-4524 or Email at hyde@attcanada.ca
Call Sherry if you have any questions (604) 879-4525

Contact: _____

Company: _____ Subclass: _____

Street address: _____

City: _____ Province: _____ Postal code: _____

Phone: _____ Fax: _____

Item	Available	Code	# Requested
Empty IMIRP Binder	1999/05	Binder	
Body Manual*	1999/05	BodyManual	
Implementation Guide - *Revised*	2000/09	IG	
General Risk Factors Solutions Manual - *Revised*	2000/09	GRFSM	

** Each sawmill division may order one Body Manual for each employee*

IMIRP Tool Kits

The code is the ordering name for the Common Industry Job documents.

For each Tool Kit there are 5 sub-documents available, coded 1-5
1 – Overview
2 – Physical Demands Analysis
3 – Risk Factor Identification Checklist
4 – Work Manual
5 – MSI Safety Guide

Please note: some jobs share a particular document therefore the same job codes may be used under multiple occupations.

Tool Kit/Occupation	Available	Tool Kit Code	# Requested
Assistant Shipper	2000/06	AssistShipper1	
		AssistShipper2	
		AssistShipper3	
		AssistShipper4	
		AssistShipper5	
Auto Trimmer • Trimsaw Operator (auto, cant, bull double end with or w/o controls)	1999/05	AutoT1	
		AutoT2	
		AutoT3	
		AutoT4	
		AutoT5	
Babbitman/Grinderman	1999/06	BG1	
		BG2	
		BG3	
		BG4	
		BG5	
Benchman	1999/05	Bench1	
		Bench2	
		Bench3	
		Bench4	
		Bench5	
Block Piler	1999/06	BlockPiler1	
		BlockPiler2	
		BlockPiler3	
		BlockPiler4	
		BlockPiler5	
Bobcat Operator	2000/01	Bobcat1	
		Bobcat2	
		Bobcat3	
		Bobcat4	
		Bobcat5	

Tool Kit/Occupation	Available	Tool Kit Code	# Requested
Boom Area • Deck Hand • Tug Boat • Boomboat Operator • Log Haul Feeder • Log Marker • Splitting Saw Operator	2000/06	Boom1	
		Boom2	
		Boom3	
		Boom4	
		Boom5	
Booth - *Revised* • Cant Saw Operator or Sawyer (trim/quad band, headrig) • Chip-n-Saw Operator • Chipper Canter Operator • Cut-off Saw Operator (drag saw) • Debarker Operator • Gang Saw Operator (slash, circular) • Log Merchandiser • Headrig Sawyer • Scragg Saw Operator	2000/10	Booth(revised)1	
		Booth(revised)2	
		Booth(revised)3	
		Booth(revised)4	
		Booth(revised)5	
Bulldozer Operator	2000/01	Bulldozer1	
		Bulldozer2	
		Bulldozer3	
		Bulldozer4	
		Bulldozer5	
By-Products Management Person • Chipper Operator • By Products/Waste System Serviceperson • Hog Operator • Divider Station Operator	2000/10	By-Products1	
		By-Products2	
		By-Products3	
		By-Products4	
		By-Products5	
Car Loader	1999/10	CarLoader1	
		CarLoader2	
		CarLoader3	
		CarLoader4	
		CarLoader5	
Carrier Driver	2000/10	Carrier1	
		Carrier2	
		Carrier3	
		Carrier4	
		Carrier5	
Chipper Operator	1999/06	Chipper1	
		Chipper2	
		Chipper3	
		Chipper4	
		Chipper5	

Tool Kit/Occupation	Available	Tool Kit Code	# Requested
Chop Saw	2000/06	Chop1	
		Chop2	
		Chop3	
		Chop4	
		Chop5	
Clean-up	1999/05	Clean1	
		Clean2	
		Clean3	
		Clean4	
		Clean5	
Cornerperson	2000/06	Corner1	
		Corner2	
		Corner3	
		Corner4	
		Corner5	
Crane Operator • Mobile Crane Operator • Stationary Crane Operator • Crane Chaser/Slingman	2000/01	Crane1	
		Crane2	
		Crane3	
		Crane4	
		Crane5	
Drop Sorter	1999/05	Drop1	
		Drop2	
		Drop3	
		Drop4	
		Drop5	
Edger Operator (Booth) • main, cant-gang, chipper	1999/05	EdgerBooth1	
		EdgerBooth2	
		Booth3	
		Booth4	
		Booth5	
Edger Operator (Manual) • pony	1999/05	EdgerManual1	
		EdgerManual2	
		EdgerManual3	
		EdgerManual4	
		EdgerManual5	
End Stacker Helper	2000/06	ESHelper1	
		ESHelper2	
		ESHelper3	
		ESHelper4	
		ESHelper5	
End Stacker Operator	1999/06	EndStacker1	
		EndStacker2	
		EndStacker3	
		EndStacker4	
		EndStacker5	

Tool Kit/Occupation	Available	Tool Kit Code	# Requested
Fingerjoint Feeder	2000/06	FJFeeder1	
		FJFeeder2	
		FJFeeder3	
		FJFeeder4	
		FJFeeder5	
Forklift • regular, timber stacking	1999/05	Forklift1	
		Forklift2	
		Forklift3	
		Forklift4	
		Forklift5	
Front End Loader Operator	2000/01	FELoader1	
		FELoader2	
		FELoader3	
		FELoader4	
		FELoader5	
General Labourer	2000/01	See multiple TK	
Grade/Quality Control Inspector • Grade Control Inspector • Quality Control Inspector	2000/06	GQCI1	
		GQCI2	
		GQCI3	
		GQCI4	
		GQCI5	
Grader - *Revised* • Grade Stamper	2000/10	Grader(revised)1	
		Grader(revised)2	
		Grader(revised)3	
		Grader(revised)4	
		Grader(revised)5	
Grapple Operator • Butt-n-top Operator • Heel Boom Operator	2000/01	Grapple1	
		Grapple2	
		Grapple3	
		Grapple4	
		Grapple5	
Headrig Tailsawyer	2000/01	HeadrigT1	
		HeadrigT2	
		HeadrigT3	
		HeadrigT4	
		HeadrigT5	
Horizontal/Vertical Resaw Operator	1999/06	H/VResaw1	
		H/VResaw2	
		H/VResaw3	
		H/VResaw4	
		H/VResaw5	

Tool Kit/Occupation	Available	Tool Kit Code	# Requested
Hula Saw Operator • Trimsaw Operator (hula, chop)	1999/05	Hula1	
		Hula2	
		Hula3	
		Hula4	
		Hula5	
Janitor	2000/01	Janitor1	
		Janitor2	
		Janitor3	
		Janitor4	
		Janitor5	
Kiln Area • Blockman • Forklift Swamper • Kiln Operator	2000/06	KilnArea1	
		KilnArea2	
		KilnArea3	
		KilnArea4	
		KilnArea5	
Load Distributor	2000/06	LoadDist1	
		LoadDist2	
		LoadDist3	
		LoadDist4	
		LoadDist5	
Load Strapper/Bander	1999/06	LoadStrapper1	
		LoadStrapper2	
		PackEnd3	
		PackEnd4	
		PackEnd5	
Log Chaser	1999/06	LogChaser1	
		LogChaser2	
		LogChaser3	
		LogChaser4	
		LogChaser5	
Log Loader • Wagner Operator • Le Tourneau Operator	2000/01	LogLoader1	
		LogLoader2	
		LogLoader3	
		LogLoader4	
		LogLoader5	
Log Scaler	1999/06	LogScaler1	
		LogScaler2	
		LogScaler3	
		LogScaler4	
		LogScaler5	
Lumber Straightener	2000/01	LumberS1	
		LumberS2	
		LumberS3	
		LumberS4	
		LumberS5	

Tool Kit/Occupation	Available	Tool Kit Code	# Requested
Machine Stress Rater (MSR)	2000/06	MSR1	
		MSR2	
		MSR3	
		MSR4	
		MSR5	
Offbearer	1999/05	Off1	
		Off2	
		Off3	
		Off4	
		Off5	
Outfeed Stacker	2000/06	OutStack1	
		OutStack2	
		OutStack3	
		OutStack4	
		OutStack5	
Packaging Press Operator	1999/05	Pack1	
		Pack2	
		PackEnd3	
		PackEnd4	
		PackEnd5	
Planer Feeder	1999/05	PlanFeed1	
		PlanFeed2	
		PlanFeed3	
		PlanFeed4	
		PlanFeed5	
Planerman • Planer Technician • Set-up Man	1999/06	Planerman1	
		Planerman2	
		Planerman3	
		Planerman4	
		Planerman5	
Portable Sawmill Operator	2000/10	Portable1	
		Portable2	
		Portable3	
		Portable4	
		Portable5	
Racker/Selector	2000/06	Racker1	
		Racker2	
		Racker3	
		Racker4	
		Racker5	
Saw Filer (round)	1999/05	SawFiler1	
		SawFiler2	
		SawFiler3	
		SawFiler4	
		SawFiler5	

Tool Kit/Occupation	Available	Tool Kit Code	# Requested
Saw Fitter	1999/06	SawFitter1	
		SawFitter2	
		SawFitter3	
		SawFitter4	
		SawFitter5	
Scow Tender	2000/06	Scow1	
		Scow2	
		Scow3	
		Scow4	
		Scow5	
Security Guard/Clock Watchman	2000/01	SG/CW1	
		SG/CW2	
		SG/CW3	
		SG/CW4	
		SG/CW5	
Shipper Coordinator	2000/06	Shipper1	
		Shipper2	
		Shipper3	
		Shipper4	
		Shipper5	
Slipman	1999/05	Slipman1	
		Slipman2	
		Slipman3	
		Slipman4	
		Slipman5	
Sorter • manual • automatic	2000/10	Sorter1	
		Sorter2	
		Sorter3	
		Sorter4	
		Sorter5	
Sorter Bin Attendant	1999/05	SBA1	
		SBA2	
		SBA3	
		SBA4	
		SBA5	
Stenciller/End Sealer	1999/06	StenEnd1	
		StenEnd2	
		PackEnd3	
		PackEnd4	
		PackEnd5	
Strip Layer	1999/05	StripL1	
		StripL2	
		StripL3	
		StripL4	
		StripL5	

Tool Kit/Occupation	Available	Tool Kit Code	# Requested
Strip Piler	1999/06	StripPiler1	
		StripPiler2	
		StripPiler3	
		StripPiler4	
		StripPiler5	
Tailer	2000/06	Tailer1	
		Tailer2	
		Tailer3	
		Tailer4	
		Tailer5	
Tallyman	1999/06	Tallyman1	
		Tallyman2	
		PackEnd3	
		PackEnd4	
		PackEnd5	
Tie-up End Capper	2000/06	EndCap1	
		EndCap2	
		EndCap3	
		EndCap4	
		EndCap5	
Tilt Hoist Operator	1999/05	Tilt1	
		Tilt2	
		Tilt3	
		Tilt4	
		Tilt5	
Trades/Maintenance - *Revised* • Carpenter • Chemical/Computer Attendant • Electrician • Fire Watch • Machinist • Mechanic (heavy duty) • Millwright • Oiler • Painter • Pipefitter • Plumber • Welder Note: Trades/Maintenance jobs share documents 1 - 4. Each job has its own MSI Safety Guide – document 5.	2000/10	Trade1 Trade2 Trade3 Trade4 Carpenter5 Chem/Comp5 Electrician5 FireWatch5 Machinist5 Mechanic5 Millwright5 Oiler5 Painter5 Pipefitter5 Plumber5 Welder5	

Tool Kit/Occupation	Available	Tool Kit Code	# Requested
Trimmer Puller	2000/01	TrimmerP1	
		TrimmerP2	
		TrimmerP3	
		TrimmerP4	
		TrimmerP5	
Truck Driver	2000/01	Truck1	
		Truck2	
		Truck3	
		Truck4	
		Truck5	
Utility (back-end, front-end)	2000/01	See multiple TK	
Warehouseperson	2000/06	Warehouse1	
		Warehouse2	
		Warehouse3	
		Warehouse4	
		Warehouse5	
Weekend Casual/Spareperson	2000/01	See multiple TK	

No Tool Kits Produced for Sawmill Industry
Backhoe Operator
Kiln Tractor Driver
Sticker Feeder
Dispatcher

Appendix H - General Risk Factor Identification Checklist

Purpose

The Risk Factor Identification Checklist for a _____ is used to **identify** potential ergonomic risk factors. Keep in mind that the purpose of this checklist is only to **identify** potential ergonomic risk factors, **not** to assess them.

The checklist can be used as part of your ergonomic intervention process, when workers express concerns about their work environment, during regular workplace inspections and observations, or when conducting an accident or injury investigation. Ideally, management and worker representatives who have completed the IMIRP Occupational Health & Safety Committee and Supervisor Ergonomic Training Session should complete this checklist. Try to view different workers in the same occupation when completing the checklist. Some specific examples are given to help answer the questions.

Instructions

General

Except for the first two questions, all remaining questions will require an answer with an implied frequency. For appropriate questions indicate with a check mark (✓) whether the answer to the question is 'No' or 'Yes'. This way you will have a record indicating that all risk factors have been considered in the identification process.

If you indicate 'No', please continue to the next question. If the question refers to a situation which does not exist (e.g., there is no seating available), please indicate 'No' in the appropriate box and continue to the next question.

If your answer is 'Yes', please check the appropriate box and then circle the frequency ('S' for 'Sometimes' or 'O' for 'Often'). If you answer 'Yes – Sometimes', then this risk factor may be a potential area of concern. If you answer 'Yes – Often' then there is an increased likelihood that this risk factor is an issue. Each mill will be responsible for defining what 'Sometimes' and 'Often' will mean to them. It is important that all people who complete the checklist are consistent in how they determine if a risk factor occurs 'Sometimes' or 'Often'. Use the 'Comments' section to indicate specific tasks, or to make other notes about the direct risk factors.

Since ergonomic risk factors frequently occur in combinations, you may find similar questions in different sections. Answering all questions will ensure that the situations that involve combinations of ergonomic risk factors are identified. It is very important to recognise all risk factors that occur in the work area.

Please note that for some of the questions it will be beneficial to ask the worker for their input. Please take the opportunity to include the operator in the risk factor identification process as much as possible. Videotaping the job of interest and reviewing the checklist in a quiet area with the worker may allow for more discussion.

Summary Tables

At the end of each body part section, summarise your findings in the table provided. If any of the direct risk factor sections contain a 'Yes', indicate 'Yes' in the appropriate section of the summary table. Answer the questions referring to injury statistics and discomfort survey findings. If there are only 'No' answers in a direct risk factor section, indicate 'No' in the summary table for that section. Use the summary information to determine how you will use the Work Manual.

Risk Factor Identification Checklist – _____

Management Representative _____

Worker Representative _____

Date _____

Risk Identification completed:

☐ Before implementation of solutions

☐ After implementation of solutions

	Job History	No	Yes	Comments
1	Are there records of musculoskeletal injuries or accidents to indicate a risk of musculoskeletal injury? (refer to Worksheet 1 in Implementation Guide)			
2	Are there worker comments to indicate a risk of musculoskeletal injuries? (refer to Worksheet 2 in Implementation Guide)			

Definitions

Force: Force is the amount of physical effort required by the person to do a task and/or maintain control of tools and equipment. The effort depends on the type of grip, object weight and dimensions, body posture, type of activity, surface of the object, temperature, vibration, duration of the task, and number of repetitions.

Repetition: Repetition is defined as similar or the same motions performed repeatedly. The severity of risk depends on the frequency of repetition, speed of the movement or action, the number of muscle groups involved, and the required force. Repetition is influenced by machine or line pacing, incentive programs, piecework, and deadlines.

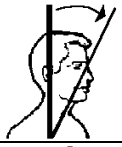
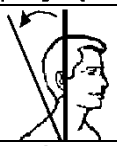
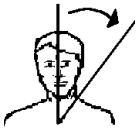
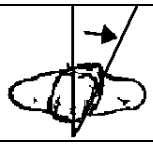
Static Postures: Static loading (sustained exertions) is physical effort (body postures) that is held, requiring muscle contraction for more than a short time.

Contact Stress: Contact stress is the contact of the body with a hard surface or edge. Contact stress can also result when using a part of the body as a hammer or striking instrument.

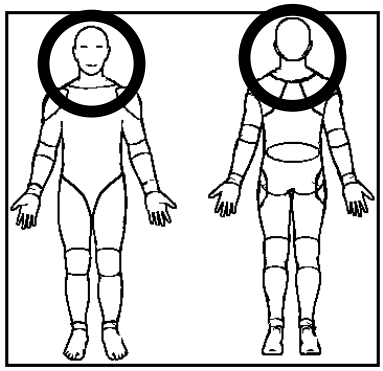
Awkward Postures: Awkward postures occur when there is a deviation from a power working posture. Some examples of awkward postures typically include reaching behind, twisting, working overhead, and forward or backward bending.

Vibration: Vibration is oscillation of a tool or surface. Vibration can be transmitted through the arm or through the whole body.

NECK

Repetition		N	Y		Comments:
Are identical or similar motions performed over and over again? (e.g., looking over the shoulder frequently)				S O	
Ask the worker: Do you spend a large percentage of the day performing one action or task?				S O	
Static Posture					
Ask the worker: Do tasks require your neck or shoulders to be maintained in a fixed or static posture? (e.g., holding arms away from the body to operate controls)				S O	
Awkward Posture					
Flexion				S O	
Extension				S O	
Lateral Bending				S O	
Rotation				S O	

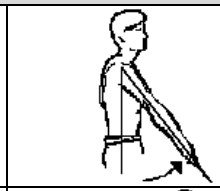
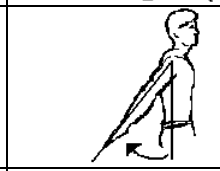
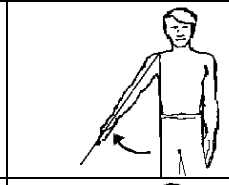
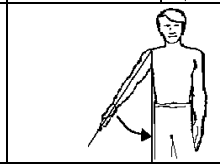
Please indicate whether the following direct risk factors were identified at the **NECK**.		
Direct Risk Factors	Repetition	☐Yes ☐No
	Static Posture	☐Yes ☐No
	Awkward Posture	☐Yes ☐No
In the **Injury Statistics** investigation, were there injury reports for the Neck or Head/Eye or Upper Back? (see Worksheet 1 in the Implementation Guide)		☐Yes ☐No
In the **Discomfort Survey** investigation, were there reports of discomfort for the Neck or Head/Eye or Upper Back? (see Worksheet 2 in the Implementation Guide)		☐Yes ☐No



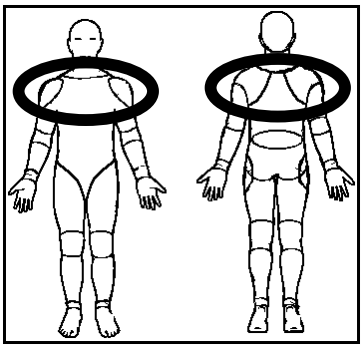
Body parts within the circled area will be classified as NECK issues.

SHOULDER

Force	N	Y		Comments:
Is forceful physical handling performed? Such as: Lifting			S O	
Lowering			S O	
Pushing			S O	
Pulling			S O	
Carrying			S O	
Repetition				
Are identical or similar motions performed over and over again? (e.g., operating controls)			S O	
Ask the worker: Do you spend a large percentage of the day performing one action or task? (e.g., operating Bobcat)			S O	
Static Posture				
Ask the worker: Do tasks require your shoulders to be maintained in a fixed or static posture? (e.g., holding arms away from the body when operating controls)			S O	
Ask the worker: Do you hold parts, tools, or objects for long periods? (e.g., holding controls)			S O	

Awkward Posture		N	Y		Comments:
Flexion				S O	
Extension				S O	
Abduction				S O	
Adduction				S O	

Please indicate whether the following direct risk factors were identified at the **SHOULDER**.		
Direct Risk Factors	Force	☐Yes ☐No
	Repetition	☐Yes ☐No
	Static Posture	☐Yes ☐No
	Awkward Posture	☐Yes ☐No
In the **Injury Statistics** investigation, were there injury reports for the Shoulder or Neck or Upper Back? (see Worksheet 1 in the Implementation Guide)		☐Yes ☐No
In the **Discomfort Survey** investigation, were there reports of discomfort for the Shoulder or Neck or Upper Back? (see Worksheet 2 in the Implementation Guide)		☐Yes ☐No



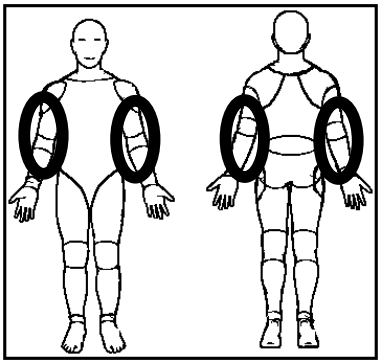
Body parts within the circled area will be classified as SHOULDER issues.

ELBOW

Force	N	Y		Comments:
Is forceful physical handling performed? Such as: Lifting			S O	
Lowering			S O	
Pushing			S O	
Pulling			S O	
Carrying			S O	
Turning materials			S O	
Are objects handled in a power grip? (e.g., controls) 			S O	
Are objects handled in a pinch grip? 			S O	
Are objects handled in a hook grip? 			S O	
Ask the worker: Do you wear gloves while performing your job? If the answer is **No**, check the **No** box and go to next section.		*	S O	
*If the answer to the above question is **Yes**, ask the worker: Are the gloves too large/small?			S O	
Does the thickness of the gloves cause problems with gripping?			S O	
Repetition				
Are identical or similar motions performed over and over again? (e.g., operating controls)			S O	
Ask the worker: Do you spend a large percentage of the day performing one action or task? (e.g., operating Bobcat)			S O	

Static Posture	N	Y		Comments:
Ask the worker: Do tasks require your hand and arm to be maintained in a fixed or static posture? (e.g., holding controls)			S O	
Ask the worker: Do you apply constant pressure on controls/objects with your hand? (e.g., holding controls)			S O	
Ask the worker: Do you hold parts, tools, or objects for long periods? (e.g., controls)			S O	
Contact Stress				
Ask the worker: Do **<u>any</u>** objects, tools or parts of the workstation put pressure on **<u>any</u>** parts of your hand or arm, such as the backs or sides of fingers, palm or base of the hand, forearm, elbow? (e.g., arms resting on the restraint bar)			S O	
Vibration				
Ask the worker: Is vibration transmitted to your hand through a tool or piece of equipment?			S O	

Please indicate whether the following direct risk factors were identified at the **ELBOW**.		
Direct Risk Factors	Force	☐Yes ☐No
	Repetition	☐Yes ☐No
	Static Posture	☐Yes ☐No
	Contact Stress	☐Yes ☐No
	Vibration	☐Yes ☐No
In the **Injury Statistics** investigation, were there injury reports for the Elbow or Forearm? (see Worksheet 1 in the Implementation Guide)		☐Yes ☐No
In the **Discomfort Survey** investigation, were there reports of discomfort for the Elbow or Forearm? (see Worksheet 2 in the Implementation Guide)		☐Yes ☐No



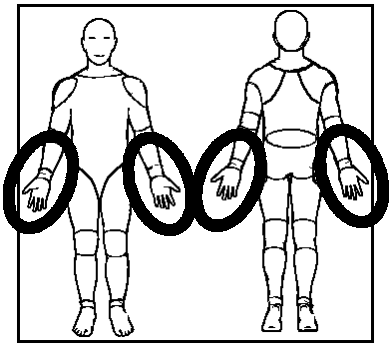
Body parts within the circled area will be classified as ELBOW issues.

WRIST/HAND

Force	N	Y		Comments:
Is forceful physical handling performed? Such as: Lifting			S O	
Lowering			S O	
Pushing			S O	
Pulling			S O	
Carrying			S O	
Turning materials			S O	
Are objects handled in a power grip? (e.g., controls) 			S O	
Are objects handled in a pinch grip? 			S O	
Are objects handled in a hook grip? 			S O	
Ask the worker: Do you wear gloves while performing your job? If the answer is **No**, check the **No** box and go to next section.		*	S O	
*If the answer to the above question is **Yes**, ask the worker: Are the gloves too large/small?			S O	
Does the thickness of the gloves cause problems with gripping?			S O	
Repetition				
Are identical or similar motions performed over and over again? (e.g., operating controls)			S O	
Ask the worker: Do you spend a large percentage of the day performing one action or task? (e.g., operating Bobcat)			S O	

Static Posture	N	Y		Comments:
Ask the worker: Do tasks require any part of your arm or hand to be maintained in a fixed or static posture? (e.g., holding controls)			S O	
Ask the worker: Do you apply constant pressure on controls/objects with your hand? (e.g., holding controls)			S O	
Ask the worker: Do you hold parts, tools, or objects for long periods? (e.g., holding controls)			S O	
Contact Stress				
Ask the worker: Do **<u>any</u>** objects, tools or parts of the workstation put pressure on **<u>any</u>** parts of your hand or arm, such as the backs or sides of fingers, palm or base of the hand, forearm? (e.g., pressure from controls on hands)			S O	
Ask the worker: Do you use your hand like a hammer for striking?			S O	
Awkward Posture				
Flexion 			S O	
Extension 			S O	
Ulnar Deviation 			S O	
Radial Deviation 			S O	
Vibration				
Ask the worker: Is vibration transmitted to your hand through a tool or piece of equipment?			S O	

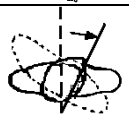
Please indicate whether the following direct risk factors were identified at the **WRIST/HAND**.		
Direct Risk Factors	Force	☐Yes ☐No
	Repetition	☐Yes ☐No
	Static Posture	☐Yes ☐No
	Contact Stress	☐Yes ☐No
	Awkward Posture	☐Yes ☐No
	Vibration	☐Yes ☐No
In the **Injury Statistics** investigation, were there injury reports for the Wrist or Hand/Finger or Forearm? (see Worksheet 1 in the Implementation Guide)		☐Yes ☐No
In the **Discomfort Survey** investigation, were there reports of discomfort for the Wrist or Hand/Finger or Forearm? (see Worksheet 2 in the Implementation Guide)		☐Yes ☐No



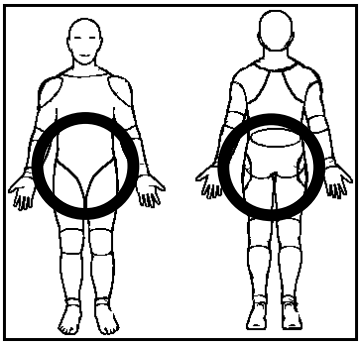
Body parts within the circled area will be classified as WRIST issues.

LOW BACK OR HIP/THIGH

Force	N	Y		Comments:
Is forceful physical handling performed? Such as: Lifting			S O	
Lowering			S O	
Pushing			S O	
Pulling			S O	
Carrying			S O	
Repetition				
Are identical or similar motions performed over and over again?			S O	
Ask the worker: Do you spend a large percentage of the day performing one action or task? (e.g., operating Bobcat)			S O	
Static Posture				
Ask the worker: Do tasks require your trunk and upper body to be maintained in a fixed or static posture? (e.g., sitting for long periods)			S O	
Are workers required to sit or stand in a stationary position for long periods of time during the shift?			S O	
Contact Stress				
Ask the worker: Do **any** objects, tools or parts of the workstation put pressure on **any** parts of your hip/thigh? (e.g., seat digging into the back of the thigh)			S O	

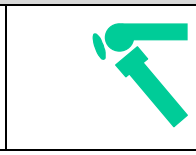
Awkward Posture		N	Y		Comments:
Flexion				S O	
Extension				S O	
Lateral Bending				S O	
Twisting				S O	
Vibration					
Ask the worker: Is your whole body exposed to vibration for significant portions of the work shift? (e.g., sitting on vibrating seat)				S O	

Please indicate whether the following direct risk factors were identified at the **LOW BACK or HIP/THIGH**.		
Direct Risk Factors	Force	☐Yes ☐No
	Repetition	☐Yes ☐No
	Static Posture	☐Yes ☐No
	Contact Stress	☐Yes ☐No
	Awkward Posture	☐Yes ☐No
	Vibration	☐Yes ☐No
In the **Injury Statistics** investigation, were there injury reports for the Low Back or Hip/Thigh? (see Worksheet 1 in the Implementation Guide)		☐Yes ☐No
In the **Discomfort Survey** investigation, were there reports of discomfort for the Low Back or Hip/Thigh? (see Worksheet 2 in the Implementation Guide)		☐Yes ☐No

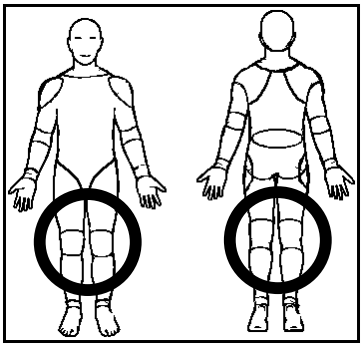


Body parts within the circled area will be classified as LOW BACK issues.

KNEE

Repetition	N	Y		Comments:
Are identical or similar motions performed over and over again?			S O	
Static Posture				
Ask the worker: Do tasks require you to maintain your knee(s) in a fixed or static posture? (e.g., operating foot pedals with bent knees)			S O	
Are workers required to sit or stand in a stationary position for long periods of time during the shift?			S O	
Do workers kneel (with one or both knees)?			S O	
Contact Stress				
Ask the worker: Do **any** objects or parts of the workstation put pressure on your knee(s)?			S O	
Awkward Posture				
Extreme Flexion 			S O	

Please indicate whether the following direct risk factors were identified at the **KNEE**.		
Direct Risk Factors	Repetition	☐Yes ☐No
	Static Posture	☐Yes ☐No
	Contact Stress	☐Yes ☐No
	Awkward Posture	☐Yes ☐No
In the **Injury Statistics** investigation, were there injury reports for the Knee or Hip/Thigh? (see Worksheet 1 in the Implementation Guide)		☐Yes ☐No
In the **Discomfort Survey** investigation, were there reports of discomfort for the Knee or Hip/Thigh? (see Worksheet 2 in the Implementation Guide)		☐Yes ☐No

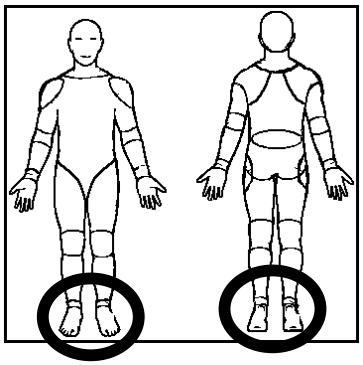


Body parts within the circled area will be classified as KNEE issues.

ANKLE/FOOT

Repetition	N	Y		Comments:
Are identical or similar motions performed over and over again? (e.g., activating foot pedals)			S O	
Static Posture				
Are workers required to stand in a stationary position for long periods of time during the shift? (e.g., holding foot pedal down)			S O	
Awkward Posture				
Flexion 			S O	
Extension 			S O	
Vibration				
Ask the worker: Is your whole body exposed to vibration for significant portions of the work shift?			S O	

Please indicate whether the following direct risk factors were identified at the **ANKLE/FOOT**.		
Direct Risk Factors	Repetition	☐Yes ☐No
	Static Posture	☐Yes ☐No
	Awkward Posture	☐Yes ☐No
	Vibration	☐Yes ☐No
In the **Injury Statistics** investigation, were there injury reports for the Ankle or Foot? (see Worksheet 1 in the Implementation Guide)		☐Yes ☐No
In the **Discomfort Survey** investigation, were there reports of discomfort for the Ankle or Foot? (see Worksheet 2 in the Implementation Guide)		☐Yes ☐No



Body parts within the circled area will be classified as ANKLE/FOOT issues.

CHARACTERISTICS OF OBJECTS BEING HANDLED

	N	Y		Comments:
Are there problems handling a load due to its size or shape? (e.g., large debris)			S O	
Are there problems handling a load due to its fragile, unbalanced, or non-rigid conditions?			S O	
Ask the worker: Do you experience situations where mechanical aids or equipment are not readily available to assist with manipulating an object? (e.g., hoists)			S O	
Are handles for tools and equipment inappropriate in terms of size or shape? (e.g., controls)			S O	
Ask the worker: Do any objects that you work with (other than tools or equipment) have handles? If the answer is **No**, check the **No** box and go to the next section.			S O	
If the answer to the above question is **Yes**, ask the worker: Are the handles an inappropriate size or shape for the characteristics of the object?			S O	

ENVIRONMENTAL CONDITIONS

Temperature				
Ask the worker: Are your hands or arms exposed to cold from exhaust air, cold liquids or solids?			S O	
Ask the worker: Are you exposed directly to temperature extremes that may cause you to use more force or cause you to fatigue quicker than normal? (e.g., hot or cold, either by equipment or natural environment)			S O	
Lighting				
Ask the worker: Do you assume awkward postures to overcome problems associated with glare, inadequate lighting, or poor visibility? (e.g., working at night)			S O	

ENVIRONMENTAL CONDITIONS [CONTINUED]

Noise	N	Y		Comments:
Have there been complaints on the level of noise in the work area?			S O	
Ask the worker: Are there any distracting or annoying noises at the workstation?			S O	

WORK ORGANISATION

	N	Y		Comments:
Is the work externally-paced or controlled by a machine or the process?			S O	
Do peak workloads or sudden increases in pace occur with the tasks?			S O	
Ask the worker: Are there indications of excessive fatigue or pain, or symptoms of adverse health effects due to extended work days or overtime?			S O	
Ask the worker: Are there indications of excessive fatigue or adverse health effects due to shiftwork?			S O	
Ask the worker: Are rest periods or task variety insufficient to prevent the build-up of fatigue or the risk of adverse health effects?			S O	
Ask the worker: Are tasks in a job rotation program similar to one another, and therefore not providing a variation in movements?			S O	

Appendix I - Solution Option Form

Company Name: Division: Main Contact(s) Management: Worker:

Solution Priority Number	CIJ Title	Solution Description	Document and Page	Risk Control Code				Decision	Date of Decision	Date of Implementation	Date of Follow-up
				E	A	WP	PPE				
								☐ Implement ☐ Do not implement			

Body Parts					Direct Risk Factor		
☐ Neck	☐ Shoulder	☐ Elbow	☐ Wrist			☐ Force	☐ Repetition
☐ Low Back	☐ Knee	☐ Ankle/Foot				☐ Static Posture	☐ Contact Stress
						☐ Awkward Posture	☐ Vibration

Impact Factors								Please list the primary reason[s] for either implementing or not implementing this solution:
Effectiveness:	[not very]	1	2	3	4	5	[very]	
Cost:	[high]	1	2	3	4	5	[low]	
Timeliness:	[long]	1	2	3	4	5	[short]	
%Workers Impacted:	[low]	1	2	3	4	5	[high]	
Likelihood of Acceptance:	[not very]	1	2	3	4	5	[very]	
Production/Quality:	[negative]	1	2	3	4	5	[positive]	
Total Score	☐ /30							

If the solution was modified for implementation, please describe:	AEI Code (office use only)

Appendix J - Impact Factor Questions

1) How effective will this solution be in terms of decreasing MSI risk factors?

1	2	3	4	5
Not Very		**Somewhat**		**Very**

2) How much is this solution going to cost to develop, implement, and maintain?

1	2	3	4	5
High		**Medium**		**Low**

3) How much time will this solution take to develop, implement, and maintain?

1	2	3	4	5
Long Period				**Short Period**

4) What percentage of workers will be impacted positively by this change?

1	2	3	4	5
Low				**High**

5) What is the likelihood supervisors and workers will accept this solution?

1	2	3	4	5
Not Very Likely		**Somewhat Likely**		**Very Likely**

6) What will be the effect of the chosen solution on the production process or the quality of the product?

1	2	3	4	5
Negative				**Positive**

Appendix K - Employee Follow-up Survey

Company Name: _____ **Division:** _____

Date: _____ **Job Title:** _____

Purpose: This form is for employees whose work, workstation, or equipment has been changed.

Date of Change: _____

Changes made: _____

_____

_____

Please answer the following. If necessary, use the other side of the page for comments.

1. Were safety problems with your work, workstation, or equipment found?

☐ YES *Check (✔) one.* ☐ NO

Which ones? _____

_____

_____

2. Have problems with your work, workstation, or equipment been missed?

☐ YES *Check (✔) one.* ☐ NO

Which ones? _____

_____

_____

3. Did you have a chance to be a part of the changes of your work, workstation, or equipment?

☐ YES *Check (✔) one.* ☐ NO

Which part did you help with? *Check (✔) as many as apply.*

☐ Finding Problems ☐ Measuring Problems
☐ Suggesting Changes ☐ Making Changes

4. Did the changes work?

☐ YES *Check (✔) one.* ☐ NO

How? _____

_____

_____

5. Did the changes cause other problems?

☐ YES *Check (✔) one.* ☐ NO

How? _____

_____

_____

6. Are there any other changes you would like to make to your work, workstation, or the equipment?

☐ YES *Check (✔) one.* ☐ NO

Which ones? _____

_____

_____

Thanks for your time! Please include any other comments on the back of the page.

Appendix L - Discomfort Survey (Follow-up)

IMIRP FOLLOW-UP DISCOMFORT SURVEY

- This survey is part of the Industrial Musculoskeletal Injury Reduction Program (IMIRP). It is being used to gather information about discomfort and pain occurring in sawmills for the purpose of reducing injuries.

- Please note, you will be asked about your feeling of discomfort and pain while performing your job. Your rating of this discomfort or pain should be what you feel at the **end** of a shift in a typical workday.

1. Did you begin working at this workstation before or after changes were completed (approximately one year ago)?

   ☐ Before ☐ After *Check (✔) one.*

2. Did you participate in the last IMIRP Discomfort Survey (approximately one-year ago)?

   ☐ Yes ☐ No *Check (✔) one*

- **If you answered Before for Question 1, and Yes for Question 2, please continue to Question 3; otherwise turn the page and complete the remainder of the Discomfort Survey.**

3. Please indicate (✓) which statement most accurately reflects your present situation:

   ☐ Overall, I have **less** discomfort and/or pain now than I had one year ago.

   ☐ Overall, I have **more** discomfort and/or pain now than I had one year ago.

Personal Information

1. Year of birth**: 19_____**

2. Height: _____

3. Weight: _____

4. Gender: *(check one)* ☐ Male ☐ Female

Job Information

5. Current job title: _____

6. Length of time at current job:

(Check one)

☐ Less than 3 months
☐ 3 to 12 months
☐ More than 1 but less than 3 years
☐ 3 to 5 years
☐ More than 5 but less than 10 years
☐ More than 10 years

7. Other jobs currently performed: _____ _____ _____ _____

How often:

(Enter a letter from the legend) ☐ ☐ ☐ ☐

A. less than 25% of the shift
B. 25 to 50% of the shift
C. more than 50% of the shift

8. Past/Previous job titles:

_____ _____ _____ _____

Years worked at this job (e.g. 1986-1990): **19__ - 19__** **19__ - 19__** **19__ - 19__** **19__ - 19__**

Discomfort Information

9. In the last year, have you felt any musculoskeletal discomfort or pain while performing your job?
(Check one)

☐ **Yes** If **Yes**, please continue on the next page.

☐ **No** If **No**, you are now finished the questionnaire. **Thank you very much for your time.**

10. Using the scale below, rate your discomfort or pain levels by circling the appropriate number associated with each body part. Please notice that this is the feeling when you perform your job. Do this for each body part in which you feel discomfort or pain.

Example : *For "Moderate discomfort or pain" in the neck:*

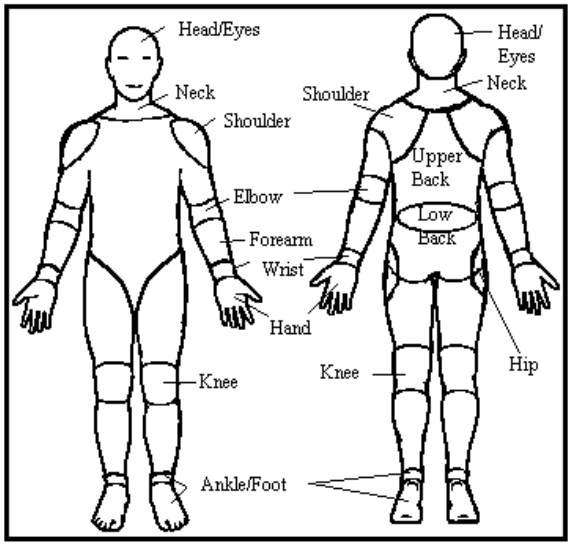
2	**Neck**	0	1	2	(3)	4	5

Mild discomfort **Moderate discomfort**

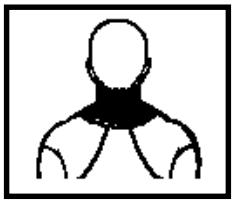
Minor discomfort **Major discomfort**

No discomfort **Severe discomfort**

1	**Head/Eye**	0	1	2	3	4	5
2	**Neck**	0	1	2	3	4	5
3	**Upper back**	0	1	2	3	4	5
4	**Shoulder**						
	Left	0	1	2	3	4	5
	Right	0	1	2	3	4	5
5	**Elbow**						
	Left	0	1	2	3	4	5
	Right	0	1	2	3	4	5
6	**Forearm**						
	Left	0	1	2	3	4	5
	Right	0	1	2	3	4	5
7	**Wrist**						
	Left	0	1	2	3	4	5
	Right	0	1	2	3	4	5
8	**Hand/finger**						
	Left	0	1	2	3	4	5
	Right	0	1	2	3	4	5
9	**Low back**	0	1	2	3	4	5
10	**Hip/thigh**						
	Left	0	1	2	3	4	5
	Right	0	1	2	3	4	5
11	**Knee**						
	Left	0	1	2	3	4	5
	Right	0	1	2	3	4	5
12	**Ankle/foot**						
	Left	0	1	2	3	4	5
	Right	0	1	2	3	4	5
Other: _____ (e.g. left leg, stomach)		0	1	2	3	4	5



Shade in the areas of the body above in which you feel the most pain or discomfort. ***Example:*** *for Neck discomfort or pain→*



11. Does your present job make your discomfort or pain worse?

(*Check one*) ☐ Yes ☐ No

If Yes, explain? _____

_____

_____

12. Have you received any treatment (e.g. medication, hot/cold treatment, physiotherapy etc.) to relieve the discomfort or pain? (*Check one*) ☐ Yes ☐ No

If Yes, explain: _____

_____

_____

13. a) Do you have any ideas what are the factors in your job (e.g. the object handled, the workstation, the work technique, tool used etc.) causing the discomfort or pain? _____

_____

_____

_____

b) Do you have any suggestions to improve the work condition to prevent or reduce the possibility of causing the discomfort or pain? _____

_____

_____

Thank you very much for your time!