

Quick Exposure Check (QEC)

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What is QEC?

- Quick Exposure Checklist
 - Observational tool
 - Assesses exposure to the risks for work-related risk musculoskeletal disorders (MSDs)
 - Provides a starting point for interventions
- According to the QEC Reference Guide
 - Easy, straightforward tool to use
 - Provides Exposure Scores for body areas
 - Identifies needed exposure reduction
 - Assists with job comparisons as well as before and after ergonomic interventions

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Strengths of QEC

- Rapid assessment of job tasks
- Validated tool
- Before and after comparison of changes
- Involves both the evaluator and the worker performing the task
- Can compare exposures between two or more people performing the same task



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Strengths of QEC

- Can examine individual tasks or entire job
- Includes input from evaluator and worker
- Considers:
 - Back, Shoulder, Wrist/Hand, Neck
 - Driving
 - Vibration
 - Work Pace
 - Stress



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Weaknesses of QEC

- Not user friendly
- Required training or constant use of reference guide.
- Too long to complete
- Potential for human error with calculations.



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Using the QEC

Establishing Priorities

1. Determine which job will be assessed
 - WSIB Claims
 - Requests from supervisor, workers etc.
 - Injury reports
 - Annual job review (combined with PDD reviews)
 - Changes to work process



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Steps to Complete QEC

2. Inform worker(s) about the process.
3. Identify job task(s).
 - PDD, talking to worker(s) performing the job.
 - Have worker(s) performing the job verify job tasks.
4. Identify actions performed in each task.
5. Define cycles, frequency and duration of tasks, breaks etc.
6. Add detailed task information
 - Tools/equipment and weights



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Steps to Complete QEC

7. Complete the Observer Assessment
8. Answer each question with respect to the tasks you have selected
 - Assess the 'worst case' for each body area.
9. Observer may want to carry out some measures for any intervention that may be introduced e.g. by measuring the weight of the load.
 - This measure should be used to supplement the exposure assessment and **not** to replace the worker's assessment of the load, as workers' opinions are very important.



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Steps to Complete QEC

10. Ask the worker to answer the Worker Assessment section

- Ask the worker for more detail if appropriate as a basis for identifying the nature of the problem and opening a dialogue to seek solutions

11. Ask the worker for suggestions on how to make improvements

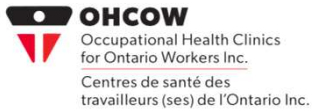
12. Score the Assessment

13. Determine actions required

14. Reassess after changes



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Observer's Assessment

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QEC Sections - Assessment of the Back

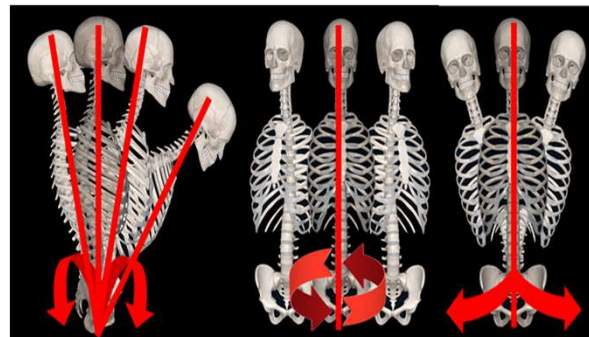
Back Posture (A1-A3)	Assessment for back posture should be made when the back is most heavily loaded.	For example, when lifting a box the back is under highest loading when the person leans or reaches forward, or bends down to pick up the load.
When performing the task, is the back:		
Almost Neutral at or below waist height < 20° of flexion/extension, twisting, or side bending	A1	
Moderately flexed/twisted side bent 20° -60° of flexion/extension, twisting or side bending	A2	
Excessively flexed/twisted side bent > 60° of flexion, twisting or side bending	A3	



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QEC Sections - Assessment of the Back

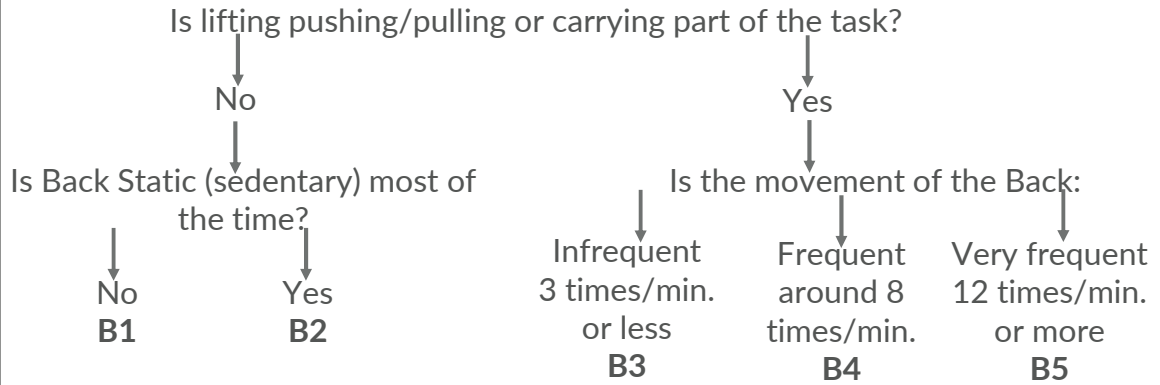
- Back Movement B1-B5
- How the question is answered determines if the back is:
 - Static (B1 - B2)
 - Moving (B3 - B5)
- This is important when scores are calculated



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QEC Sections - Assessment of the Back

- Back Movement B1-B5
- Most confusing part of QEC



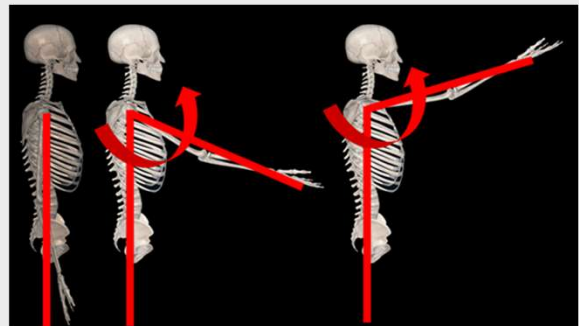
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QEC Sections - Assessment of the Shoulder/Arm

Shoulder/Arm Position (C1-C3)	Based upon the position of the hands when the shoulder/arms are most heavily loaded during work.	May not be at the same time as when the exposure of the back is assessed. For example, the load on the shoulder may not be at the highest level when the person bends down to pick up a box from the floor, but may become greater subsequently when the box is placed at a higher level.
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When the task is performed, are the hands:

at or below waist height	C1
at about chest height	C2
at or above shoulder height	C3



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QEC Sections - Assessment of the Shoulder/Arm

Shoulder/Arm Movement (D1-D3)	
Is the shoulder/arm movement:	
Infrequent - some intermittent movement.	D1
Frequent - regular movement with some pauses	D2
Very frequent almost continuous movement.	D3



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QEC Sections - Assessment of the Wrist/Hand

Wrist/hand posture (E1-E2)	Posture is assessed when the most awkward wrist posture is adopted. This may be wrist flexion/extension, side bending (ulnar/radial deviation).	Wrist is almost straight (E1) if the movement is limited within a small angular range (e.g. less 15° of the neutral wrist posture). If an obvious wrist angle can be observed during the performance of the task, the wrist is considered to be deviated or bent (E2).
Is the task performed with:		
almost a straight wrist	E1	
a deviated or bent wrist	E2	



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QEC Sections - Assessment of the Wrist/Hand

Wrist/hand movement (F1-F3)	Refers to the movement of the wrist/hand and forearm, excluding the movement of the fingers.	One motion is counted every time the same or similar motion pattern is repeated over a set period of time (e.g. 1 minute).
Are there similar motion patterns repeated		
10 times/minute or less	F1	
11-20 times/minute	F2	
> 20 times/minute	F3	



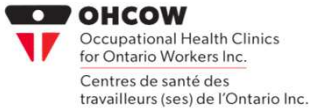
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QEC Sections - Assessment of the Neck

Neck Posture (G1-G3)	Posture is defined as excessively bent or twisted if angle is greater than 20° relative to the torso.	If this angle is exceeded select either G2 or G3 dependent upon the duration. Otherwise select G1.
When performing the task, is the head/neck bent or twisted?		
No	G1	
Yes, occasionally	G2	
Yes, continuously	G3	



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Worker's Assessment

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QEC Sections - Maximum Weight Handled

Maximum weight handled (H1-H4)	Weight borne by the worker, and not the maximum weight handled in the task or the load handled with the use of equipment.	Worker's perception of the load weight may differ from the actual weight category, e.g. a light load may seem heavy if held at full reach. Actual weight of load can be measured by observer for any intervention that may be introduced. This measure should be used to supplement the exposure assessment and not to replace the worker's assessment of the load.
Is the maximum weight handled manually for this task:		
Light: 5 kg (11 lbs.) or less	H1	
Moderate: 6 - 10 kg (13 - 22 lbs.)	H2	
Heavy: 11 - 20 kg (22 - 44 lbs.)	H3	
Very heavy: > 20 kg (44 lbs.)	H4	



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QEC Sections - Time spent on task

Time spent on task (J1-J3)	Examines the amount of time per day the worker spends conducting the task being assessed.	
On average, how much time do you spend per day performing this task?		
Less than 2 hours	J1	
2 - 4 hours	J2	
> 4 hours	J3	



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QEC Sections - Maximum force level


Maximum force level (K1-K3)	Refers to the maximum force level exerted by one hand when performing the task. Even if the task is performed with two hands, ask the worker about the force for one hand only.	Measures of the forces involved can be made by the observer to inform any intervention that may be introduced. However, this measure should be used to supplement the exposure assessment and not to replace the worker's perception of the force required to perform the task.
When performing this task, what is the maximum amount for force exerted by one hand?		
Low: less than 1 kg (2.2 lbs.)	K1	
Medium: 1 - 4 kg (2.2 - 8.8 lbs.)	K2	
High: > 4 kg (8 lbs.)	K3	



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QEC Sections – Visual Demand


Visual Demand (L1-L2)	Ask the worker to specify if the level of visual demand of the task is 'low' (almost no need to view fine details) or 'high' (need to view some fine details).	If the requirement is 'high', ask for more information about this aspect of the task.
Are the visual demands for this task:		
Low: There is almost no need to view fine details.	L1	
High: There is a need to view some fine details.	L2	



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QEC Sections – Driving

Driving Demand (M1-M3)	Investigates whole-body vibration that may result from driving a vehicle at work. The worker is asked to estimate total time spent driving a vehicle during the working day.	If the worker does not drive, do not leave the answer blank, place a tick in M1 'Less than one hour per day or Never'. Only refers to driving at work, do not include driving to and from work.
At work, is a vehicle driven for:		
< 1 hour/day or never	M1	
1 - 4 hours/day	M2	
> 4 hours/day	M3	



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QEC Sections – Vibration

Vibration Demand (N1-N3)	Enquires about the hand-arm vibration that may arise from using vibrating tools at work. The worker is asked to estimate the total time spent using vibrating tools during the working day.	If the worker does not use vibrating tools, do not leave the answer blank, place a tick in N1 'Less than one hour per day or Never'.
At work, how long are vibratory tools used for?		
< 1 hour/day or never	N1	
1 - 4 hours/day	N2	
> 4 hours/day	N3	



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QEC Sections – Work Pace

Work Pace (P1-P3)	Asks about the difficulties that workers may have keeping up with their work.	If the answer is 'often', ask for more information about this aspect of the work.
Is there difficulty keeping up with the pace of the work?		
Never	P1	
Sometimes	P2	
Often	P3	



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QEC Sections – Stress

Stress (Q1-Q3)	Asks how stressful the worker finds their job.	If the answer is 'moderately' or 'very', ask for more information about this aspect of the job.
In general, how stressful is this job?		
Not at all stressful	Q1	
Mildly stressful	Q2	
Moderately stressful	Q3	
Very Stressful	Q4	



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Scoring the Assessment

- When scoring – there are a number of variables to be used in combination



Important risk factors	
Back	Wrist/hand
<ul style="list-style-type: none"> load weight duration frequency of movement posture 	<ul style="list-style-type: none"> force duration frequency of movement posture
Shoulder/arm	Neck
<ul style="list-style-type: none"> load weight duration task height frequency of movement 	<ul style="list-style-type: none"> duration posture visual demand



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Scoring the Assessment - Back

Back Posture (A) & Weight (H)

	A1	A2	A3
H1	2	4	6
H2	4	6	8
H3	6	8	10
H4	8	10	12

Score 1

Back Posture (A) & Duration (J)

	A1	A2	A3
J1	2	4	6
J2	4	6	8
J3	6	8	10

Score 2

Duration (J) & Weight (H)

	J1	J2	J3
H1	2	4	6
H2	4	6	8
H3	6	8	10
H4	8	10	12

Score 3

Static Posture (B) & Duration (J)

	B1	B2
J1	2	4
J2	4	6
J3	6	8

Score 4

Frequency (B) & Weight (H)

	B3	B4	B5
H1	2	4	6
H2	4	6	8
H3	6	8	10
H4	8	10	12

Score 5


Frequency (B) & Duration (J)

	B1	B2	B3
J1	2	4	6
J2	4	6	8
J3	6	8	10

Score 6

Now **ONLY** do 4 if static **OR** 5 and 6 if manual handling (movement).

- If Static
 - Add scores 1-4
- If Manual Handling (movement)
 - Add scores 1, 2, 3, 5 & 6



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Scoring the Assessment - Shoulder

Height (C) & Weight (H)

	C1	C2	C3
H1	2	4	6
H2	4	6	8
H3	6	8	10
H4	8	10	12

Score 1

Height (C) & Duration (J)

	C1	C2	C3
J1	2	4	6
J2	4	6	8
J3	6	8	10

Score 2

Duration (J) & Weight (H)

	J1	J2	J3
H1	2	4	6
H2	4	6	8
H3	6	8	10
H4	8	10	12

Score 3

Frequency (D) & Weight (H)

	D1	D2	D3
H1	2	4	6
H2	4	6	8
H3	6	8	10
H4	8	10	12


Score 4

Frequency (B) & Duration (J)

	D1	D2	D3
J1	2	4	6
J2	4	6	8
J3	6	8	10

Score 5

- Shoulder
 - Add scores 1-5



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Exposure Levels

- Total score for each body area is determined from the interactions between the exposure levels for the relevant risk factors and their subsequent addition.
- Exposure scores for the back, shoulder/arm, wrist/hand and neck have been categorized into 4 exposure categories: Low, Moderate, High or Very High.

Exposure Level				
Score	Low	Moderate	High	Very High
Back (static)	8 - 15	16 - 22	23 - 29	30 - 40
Back (moving)	10 - 20	21 - 30	31 - 40	41 - 46
Shoudler/Arm	10 - 20	21 - 30	31 - 40	41 - 46
Wrist/Hand	10 - 20	21 - 30	31 - 40	41 - 46
Neck	4 - 6	8 - 10	12 - 14	16 - 18



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Exposure Levels

- If Low:
 - One or two interactions may be contributing disproportionately to the score (i.e. a score of 8 or more).
- If Moderate, High and Very High:
 - Likely to be several interactions that should be identified and reduced.
 - One or two interactions maybe at highest levels (i.e. 10 or 12) of exposure and should be addressed urgently to reduce the level of exposure for these factors.

Exposure Level				
Score	Low	Moderate	High	Very High
Back (static)	8 - 15	16 - 22	23 - 29	30 - 40
Back (moving)	10 - 20	21 - 30	31 - 40	41 - 46
Shoudler/Arm	10 - 20	21 - 30	31 - 40	41 - 46
Wrist/Hand	10 - 20	21 - 30	31 - 40	41 - 46
Neck	4 - 6	8 - 10	12 - 14	16 - 18



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Exposure Levels

- Exposure scores for driving, vibration and work pace have been categorized into three exposure categories:
 - Low, Moderate, High.
- Stress has a fourth category:
 - Very High.
- Where scores are Moderate or High, or Very High, the level of exposure should be reduced.

Score	Exposure level			
	Low	Moderate	High	Very High
Driving	1	4	9	-
Vibration	1	4	9	-
Work pace	1	4	9	-
Stress	1	4	9	16



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Previous OHCOW Excel Version

- OHCOW developed an excel version (2015)
- Removes human error of scoring
- Entry required extensive knowledge or continual reference to the guide regarding code definitions and values.
- User required to perform calculations and scoring.
- Often frustrating to use due to confirmation with reference guide

The screenshot shows an Excel spreadsheet interface. At the top, there is a 'Task 1' header. Below it, there are fields for 'Task Name' (with a placeholder 'Insert Task Name') and 'Photo' (with a placeholder 'Insert Photo of Task'). A dropdown menu is visible with options A, B, C, D, and E. Below the dropdown, there are columns labeled A1, A2, and A3. To the right, there are two tables under the heading 'BACK'. The first table is 'Back Posture & Weight' and the second is 'Back Posture & Duration'. Both tables have columns for A1, A2, and A3, and rows for H1, H2, H3, H4 and J1, J2, J3 respectively.

Task 1			
Task Name	Insert Task Name		
Photo	Insert Photo of Task		
A	A3		
B	A1		
C	A2		
D	A3		
E			

Worksheet Options			
BACK			
Back Posture & Weight			
	A1	A2	A3
H1	2	4	6
H2	4	6	8
H3	6	8	10
H4	8	10	12

Back Posture & Duration			
	A1	A2	A3
J1	2	4	6
J2	4	6	8
J3	6	8	10



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QEC - OHCOW - Navigation



Quick Exposure Check (QEC) Calculator

Assessment Information

Assessor's Name:
 Worker's Name:
 Date of Assessment:

Job Title:

		Task 1	Task 2	Task 3
		Insert Task Name	Insert Task Name	Insert Task Name
Back (Assessor)	When performing the task, is the back is lifting pushing/pulling or carrying part of the task?	> 60° of flexion, twisting or side bending Select	Select Yes	Select Yes
Shoulder/Arm (Assessor)	When the task is performed, are the hands is the shoulder/arm movement?	0 Very frequent - 12 times/minute or more Select	Select Yes	Select Yes
Wrist/Hand (Assessor)	Is the task performed with Are there similar motion patterns repeated?	Select	Select	Select
Neck (Assessor)	When performing the task, is the head/neck bent or twisted?	Select	Select	Select
Maximum Weight Handled (Worker)	Is the maximum weight handled manually for this task?	Select	Select	Select
Duration (Worker)	On average, how much time do you spend per day performing this task?	Select	Select	Select
Maximum Force Exerted (Worker)	When performing this task, what is the maximum amount for force exerted by one hand?	Select	Select	Select
Vibration (Worker)	At work, how long are vibratory tools used for?	Select	Select	Select
Driving (Worker)	At work, is a vehicle driven for	Select	Select	Select
Visual Demands (Worker)	Are the visual demands for this task?	Low: There is almost no need to view fine details.	Select	Select
Work Pace (Worker)	Is there difficulty keeping up with the pace of the work?	Select	Select	Select
Stress (Worker)	In general, how stressful is this job?	Select	Select	Select



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QEC - OHCOW - Navigation



Quick Exposure Check (QEC) Calculator

Multiple Job Tasks

Assessor's Name:
 Worker's Name:
 Date of Assessment:

Job Title:

		Task 1	Task 2	Task 3
		Insert Task Name	Insert Task Name	Insert Task Name
Back (Assessor)	When performing the task, is the back is lifting pushing/pulling or carrying part of the task?	> 60° of flexion, twisting or side bending Select	Select Yes	Select Yes
Shoulder/Arm (Assessor)	When the task is performed, are the hands is the shoulder/arm movement?	0 Very frequent - 12 times/minute or more Select	Select Yes	Select Yes
Wrist/Hand (Assessor)	Is the task performed with Are there similar motion patterns repeated?	Select	Select	Select
Neck (Assessor)	When performing the task, is the head/neck bent or twisted?	Select	Select	Select
Maximum Weight Handled (Worker)	Is the maximum weight handled manually for this task?	Select	Select	Select
Duration (Worker)	On average, how much time do you spend per day performing this task?	Select	Select	Select
Maximum Force Exerted (Worker)	When performing this task, what is the maximum amount for force exerted by one hand?	Select	Select	Select
Vibration (Worker)	At work, how long are vibratory tools used for?	Select	Select	Select
Driving (Worker)	At work, is a vehicle driven for	Select	Select	Select
Visual Demands (Worker)	Are the visual demands for this task?	Low: There is almost no need to view fine details.	Select	Select
Work Pace (Worker)	Is there difficulty keeping up with the pace of the work?	Select	Select	Select
Stress (Worker)	In general, how stressful is this job?	Select	Select	Select



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QEC - OHCOW - Navigation



Quick Exposure Check (QEC) Calculator

Assessor's Name: Worker's Name: Job Title:
 Date of Assessment:

		Task 1	Task 2	Task 3
		Insert Task Name	Insert Task Name	Insert Task Name
Back (Assessor)	When performing the task, is the back is lifting pushing/pulling or carrying part of the task?	> 60° of flexion, twisting or side bending Select	Select Yes	Select Yes
Shoulder/Arm (Assessor)	When the task is performed, are the hands: Is the shoulder/arm movement:	Very frequent - 12 times/minute or more Select	Select Yes	Select Yes
Wrist/Hand (Assessor)	Is the task performed with Are there similar motion patterns repeated	Select Select	Select Select	Select Select
Neck (Assessor)	When performing the task, is the head/neck bent or twisted?	Select	Select	Select
Maximum Weight Handled (Worker)	Is the maximum weight handled manually for this task:	Select	Select	Select
Duration (Worker)	On average, how much time do you spend per day performing this task?	Select	Select	Select
Maximum Force Exerted (Worker)	When performing this task, what is the maximum amount for force exerted by one hand?	Select	Select	Select
Vibration (Worker)	At work, how long are vibratory tools used for?	Select	Select	Select
Driving (Worker)	At work, is a vehicle driven for	Select	Select	Select
Visual Demands (Worker)	Are the visual demands for this task:	Low: There is almost no need to view fine details.	Select	Select
Work Pace (Worker)	Is there difficulty keeping up with the pace of the work?	Select	Select	Select
Stress (Worker)	In general, how stressful is this job?	Select	Select	Select

Assessor Information



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QEC - OHCOW - Navigation

- Designed to be user friendly
- Direct questions
- Consists of a dropdown menus

		Task 1	
		Insert Task Name	
Back (Assessor)	When performing the task, is the back is lifting pushing/pulling or carrying part of the task?	> 60° of flexion, twisting or side bending	20° -
	If yes, is the movement of the back:	Select	
		< 20° of flexion/extension, twisting, or side bending	
Shoulder/Arm (Assessor)	When the task is performed, are the hands: Is the shoulder/arm movement:	20° - 60° of flexion/extension, twisting or side bending	
		> 60° of flexion, twisting or side bending	
		very frequent almost continuous movement.	
Wrist/Hand (Assessor)	Is the task performed with Are there similar motion patterns repeated	a deviated or bent wrist	
		> 20 times/minute	
Neck (Assessor)	When performing the task, is the head/neck bent or twisted?	No	



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QEC - OHCOW - Navigation

- Physical cues to aid in selection of body segment angles and positions

Task 3

Insert Task Name
Select
Select
Yes
Select
Select
Select
Select
Select
Select

Body Segment Posture Help

Neck

Spine

Shoulder

Wrist

Neck

Physical Cues



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QEC - OHCOW - Navigation



Quick Exposure Check (QEC) Calculator

Assessor's Name:

Worker's Name:

Date of Assessment:

Job Title:

	Task 1	Task 2	Task 3
	Insert Task Name	Insert Task Name	Insert Task Name
Back (Assessor)	When performing the task, is the back > 60° of flexion, twisting or side bending?	Select	Select
	Is lifting pushing/pulling or carrying part of the task?	Select	Select
	0 Very frequent - 12 times/minute or more	Yes	Yes
Shoulder/Arm (Assessor)	When the task is performed, are the hands:	Select	Select
	is the shoulder/arm movement?	Select	Select
Wrist/Hand (Assessor)	Is the task performed with:	Select	Select
	Are there similar motion patterns repeated?	Select	Select
Neck (Assessor)	When performing the task, is the head/neck bent or twisted?	Select	Select
Maximum Weight Handled (Worker)	Is the maximum weight handled manually for this task?	Select	Select
Duration (Worker)	On average, how much time do you spend per day performing this task?	Select	Select
Maximum Force Exerted (Worker)	When performing this task, what is the maximum amount for force exerted by one hand?	Select	Select
Vibration (Worker)	At work, how long are vibratory tools used for?	Select	Select
Driving (Worker)	At work, is a vehicle driven for	Select	Select
Visual Demands (Worker)	Are the visual demands for this task	Low: There is almost no need to view fine details.	Select
Work Pace (Worker)	Is there difficulty keeping up with the pace of the work?	Select	Select
Stress (Worker)	In general, how stressful is this job?	Select	Select

} Worker's Information



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QEC – OHCOW - Navigation

- Improved color coding to highlight areas of risk

Levels of Risk

Stress (Worker)	In general, how stressful is this job?
Exposure Legend	Total Back Exposure (Static)
None	Total Back Exposure (Moving)
Low	Total Shoulder/Arm Exposure
Moderate	Total Wrist/Hand Exposure
High	Total Neck Exposure
Very High	Total Driving Exposure

Exposure Level				
Score	Low	Moderate	High	Very High
Back (static)	8 - 15	16 - 22	23 - 29	30 - 40
Back (moving)	10 - 20	21 - 30	31 - 40	41 - 46
Shoudler/Arm	10 - 20	21 - 30	31 - 40	41 - 46
Wrist/Hand	10 - 20	21 - 30	31 - 40	41 - 46
Neck	4 - 6	8 - 10	12 - 14	16 - 18



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QEC – OHCOW - Navigation

- Calculations are completed to reduce human error

Work Pace (Worker)	Is there difficulty keeping up with the pace of the work?	Select	Select	Select
Stress (Worker)	In general, how stressful is this job?	Select	Select	Select

Exposure Legend	Total Back Exposure (Static)			
None	Total Back Exposure (Moving)			
Low	Total Shoulder/Arm Exposure	0	0	0
Moderate	Total Wrist/Hand Exposure	0	0	0
High	Total Neck Exposure	0	0	0
Very High	Total Driving Exposure	0	0	0
	Total Vibration Exposure	0	0	0
	Total Work Pace Exposure	0	0	0
	Total Stress Exposure	0	0	0

Automatic Scoring



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QEC – OHCOW - Navigation

- Ability to view each exposure score for prioritizing interventions

Exposure Legend	Total Back Exposure (Static)	
None	Total Back Exposure (Moving)	28
Low	Total Shoulder/Arm Exposure	36
Moderate	Total Wrist/Hand Exposure	28
High	Total Neck Exposure	6
Very High	Total Driving Exposure	4
	Total Vibration Exposure	4
	Total Work Pace Exposure	1

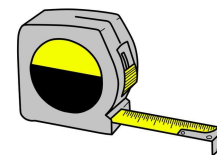
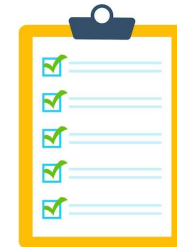
Shoulder/Arm Exposure	& Duration (J)	
	Total	28
	Height (C) & Weight (H)	10
	Height (C) & Duration (J)	4
	Duration (J) & Weight (H)	8
	Frequency (D) & Weight (H)	10
	Frequency (D) & Duration (J)	4
	Total	36



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QEC – Case Example

- Contacted by a H&S professional for assistance in assessing the ergonomic risk factors on a produce packing line
- The QEC was used to quantify the risk and provide a starting place for interventions
- Before you start:
 - Ensure you have a tape measure, phone for pictures/video, scale



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QEC – Case Example



- Packing divided into 4 tasks:
 - Feeders
 - Inspection
 - Packing individual containers
 - Packing containers into boxes & stacking
- For this example, we are going to focus on one task: Filling the hopper



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QEC – Case Example

Feeders: Steps



Bins are stacked on pallets from 7" - 55" →



Lift bin (20 lbs) from and carry to the line →



Carry bin to the line and lift. →



Empty bin into the hopper (41")


Frequency: 1 bin/min
Pallet: 50 bins/pallet



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QEC – Case Example

		Task 1 Feeder
Back (Assessor)	When performing the task, is the back	> 60° of flexion, twisting or side bending
	Is lifting pushing/pulling or carrying part of the task?	Yes
	If yes, is the movement of the back:	Frequent - around 8 times/minute
Shoulder/Arm (Assessor)	When the task is performed, are the hands:	at or above shoulder height
	Is the shoulder/arm movement:	Frequent - regular movement with some
Wrist/Hand (Assessor)	Is the task performed with	a deviated or bent wrist
	Are there similar motion patterns repeated	10 times/minute or less
	When performing the task, is the head/neck bent or twisted?	Yes, occasionally




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QEC – Case Example

Maximum Weight Handled (Worker)	Is the maximum weight handled manually for this task:	Moderate: 6 - 10 kg (13 - 22 lbs.)
Duration (Worker)	On average, how much time do you spend per day performing this task?	> 4 hours
Maximum Force Exerted (Worker)	When performing this task, what is the maximum amount for force exerted by one hand?	High: > 4 kg (8 lbs.)
Vibration (Worker)	At work, how long are vibratory tools used for?	< 1 hour/day or never
Driving (Worker)	At work, is a vehicle driven for:	< 1 hour/day or never
Visual Demands (Worker)	Are the visual demands for this task:	Low: There is almost no need to view fine details.
Work Pace (Worker)	Is there difficulty keeping up with the pace of the work?	Sometimes
Stress (Worker)	In general, how stressful is this job?	Mildly stressful



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QEC - Case Example

Exposure Legend	Exposure Level	Score
None	Total Back Exposure (Static)	0
Low	Total Back Exposure (Moving)	50
Moderate	Total Shoulder/Arm Exposure	40
High	Total Wrist/Hand Exposure	38
Very High	Total Neck Exposure	14
	Total Driving Exposure	1
	Total Vibration Exposure	1
	Total Work Pace Exposure	4
	Total Stress Exposure	4

Score	Exposure Level			
	Low	Moderate	High	Very High
Back (static)	8 - 15	16 - 22	23 - 29	30 - 40
Back (moving)	10 - 20	21 - 30	31 - 40	41 - 46
Shoulder/Arm	10 - 20	21 - 30	31 - 40	41 - 46
Wrist/Hand	10 - 20	21 - 30	31 - 40	41 - 46
Neck	4 - 6	8 - 10	12 - 14	16 - 18

Important risk factors	
Back	Wrist/hand
<ul style="list-style-type: none"> load weight duration frequency of movement posture 	<ul style="list-style-type: none"> force duration frequency of movement posture
Shoulder/arm	Neck
<ul style="list-style-type: none"> load weight duration task height frequency of movement 	<ul style="list-style-type: none"> duration posture visual demand



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QEC - Case Example

Exposure Breakdown: Back

Back Exposure (Moving)	Back Posture (A) & Weight (H)	8
	Back Posture (A) & Duration (J)	10
	Duration (J) & Weight (H)	18
	Frequency (B) & Weight (H)	6
	Frequency (B) & Duration (J)	8
	Total	50

Recommendations:

- Reduce stacking height
- Lift/rotate table
- Job rotation



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QEC – Case Example

Exposure Breakdown: Shoulder/Arm

Wrist/Hand Exposure	Repeated Motion (F) & Force (K)	6
	Repeated Motion (F) & Duration (J)	6
	Duration (J) & Force (K)	10
	Wrist Posture (E) & Force (K)	8
	Wrist Posture (E) & Duration (J)	8
	Total	38

Recommendations:

- Often recommendations implemented for one body area will also improve another which is the case for the shoulder arm
- Reduce stacking height and implement job rotation



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QEC – Case Example

Exposure Breakdown: Wrist/Hand

Wrist/Hand Exposure	Repeated Motion (F) & Force (K)	6
	Repeated Motion (F) & Duration (J)	6
	Duration (J) & Force (K)	10
	Wrist Posture (E) & Force (K)	8
	Wrist Posture (E) & Duration (J)	8
	Total	38

Recommendations:

- Reduce weight of bins
- Other recommendations will improve this body area as well

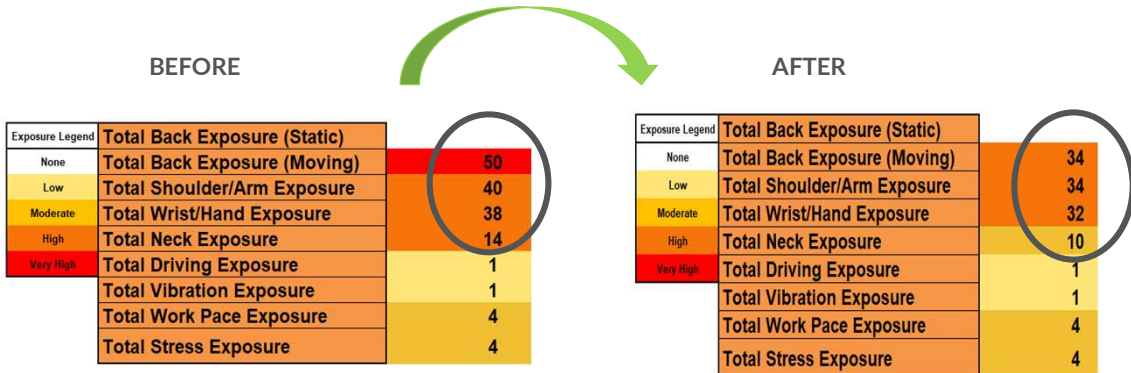


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QEC – Case Example

Re-evaluation

- As changes are implemented the job can be re-evaluated using the QEC
- In the example provided if only the duration was changed the following would be the result:



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