“I Spy With My Ergonomic Eye”

Presented by:

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Introduction & Session Description:
This session will begin with a brief introduction to ergonomics and a review of the role of ergonomics towards compliance with the OH&S and WS&I Acts. Emphasis will be placed on recognition, evaluation and control of employee exposures to ergonomics risk factors through effective use of physical demands profiles and ergonomics surveys. The “I Spy with My Ergonomic Eye” workshop is designed to help you practice your skills to identify employee exposures to ergonomics hazards and then discuss possible controls and/or corrective actions to reduce the risks of musculoskeletal disorders and/or acute injuries due to ergonomic causes.

A little background information...
Training Topics & Objectives:

Introduction
1. Introduction to ergonomics.
2. Ensure awareness of the compliance requirements.
Ergonomics Risk Factors
3. Identification and description of ergonomics risk factors.
Ergonomics and MSD Prevention Programs
5. Physical Demands Profiles
6. Ergonomics surveys
7. Other common elements of a MSD prevention program.

Question or technical term e.g. “physical demands profile” (PDP) or “ergonomics survey”? 

An answer, explanation or practical tip e.g. know the compliance requirements!
Ergonomics.... “What’s that?”

In plain English please...
“Ergonomic” Implies …?

"Synonyms“ or “Benefits“:

• “acceptable“ physical demands
• “safe” exposure to injury risk
• more effective or better task performance
• increase productivity &/or efficiency
• understandable, easy to use, user-friendly
• fewer errors, less rework &/or scrap
• improve job satisfaction
• improve working conditions
• comfortable?

Add your own...

So... If you were a JHSC member conducting a workplace inspection focusing on “ergonomics risk factors”, would you be confident that you actually know exactly what you are looking for?
Ergonomics and Health & Safety Law

How many times does “ergonomics” appear in the health and safety legislation &/or WS&I Act?

Ergonomics...Is it a compliance requirement? Yes or no but support your answer.
OH&S Act Enforcement: “Orders” or “requirements” common under...

- general duty i.e. Sec. 25 (2) (h)
- expert assessment i.e. Sec. 54 (1) (f)
- training, general duty of employers i.e. Sec. 25 (2) (a)
- Instruction and training i.e. Sec. 42 (1)
- maintain equipment Sec. 25 (1) (b)
- (statistics Sec. 12 (1))

Other Relevant Provisions:

- critical injury? loss of consciousness (e.g. fainting)
- right to refuse unsafe work
- powers & responsibilities of certified H&S reps and JHSC
- employer duties e.g. appoint competent supervisors
- supervisor duties e.g. acquaint a worker with a hazard
- employee duties e.g. work in a safe manner

Q. What about the First Aid Regulation?

Q. What about Workplace Safety & Insurance Act?
Ergonomics and WS&I Act Compliance

Can you identify specific provisions???

- compatibility between injury & job demands
- pre-injury job: risk to other workers?
- modified work placements
- job suitability in return to work programs
- physical demands profiles & essential duties
- functional abilities and job matching
  - interpretation of medical restrictions/precautions
  - accommodation through ergonomic interventions
  - undue hardship & cost-effective modifications

Legislation... to protect against harm. What harm can be done?
Effects on the body’s musculoskeletal system…

- (dis)comfort
- aches & pains
- decrease blood flow
- decrease nerve circulation (motor control, sensory feedback)
- decrease range of motion, muscle strength, dexterity, etc.
- increase fatigue: localized or general
- wear down body i.e. overuse or chronic injury
- overload body i.e. overexertion or acute injury

Explain “Musculoskeletal Disorder”…

An UMBRELLA term for many different injuries and illnesses that affect muscles, nerves, tendons, ligaments, joints, or spinal discs.

A specific diagnosis is far more helpful in troubleshooting ergonomics concerns!
General Categories:

• awkward postures
• forceful exertions
• repetitive and/or prolonged muscle activity
• mechanical or contact stresses i.e. trauma
• temperature extremes
• vibration

A structured approach to identify/recognize ergonomics hazards...know what to look for!

Be able to clearly communicate, express and/or describe the exposure...

Be able to connect it to the workplace condition or requirement that creates it...
Awkward Postures

“Whole body” awkward postures.. often characterized by:
- Extreme low back angles
  e.g. significant forward flexion or hyper-extension
- Unusual (combinations of) hip, knee, & ankle angles
  i.e. crawling/crouching/squatting/kneeling

“Localized” awkward postures.. often characterized by:
- a “non-neutral” to extreme angle at a specific joint
- e.g. neck, shoulder, elbow, wrist, fingers, back, ankle, etc.
- many possibilities given various motions at various joints

Examples from your own workplace please...
Amount of physical effort, specifically muscle force, needed to perform an action, motion &/or task... muscle strain i.e. damage to muscle fibers and damage to other body structures e.g. tendons, joints

“Whole body” forceful exertions: often characterized by...
- Gross motor movements
- Use of large muscles or muscle groups i.e. back, legs e.g. lift, lower, push, pull, carry large/heavy objects

“Localized” forceful exertions: often characterized by:
- Fine motor movements
- Forces in small(er) muscles (e.g. forearms, hands, fingers) e.g. 1-hand grip of heavy part; e.g. “pinch” grip of a “heavy” part

Examples from your own workplace please...
Repetitive muscle actions:
frequency of muscle action
performing the same actions &/or motions over and over
e.g. identical/similar actions on high volume of parts

Prolonged muscle activity:
duration of (continuous) muscle effort
maintaining a “static” muscle contraction for “prolonged” period
e.g. constantly gripping a tool

Examples from your own workplace please...
…trauma (e.g. friction) to the body…
Potential health effects include…
• musculoskeletal discomfort, pain
• damage to superficial tissues e.g. contusion
• compress underlying structures e.g. nerves/blood vessels

“Localized”
e.g. front edge of chair impinging on underside of thigh

“Whole Body”
e.g. standing/walking on a hard surface

Examples from your own workplace please…
Exposure to hot or cold thermal environments …
Potential health effects …
• Comfort/discomfort
• Heat-induced illness
  e.g. transient fatigue to heat stroke
• Cold-induced injuries
  e.g. reduced body function to frostbite

**Heat stress:**
Physical work in hot environments
e.g. furnace operator, heat treat operations, ovens

**Cold stress:**
Physical work in cold environments
 e.g. food processing, cold storage

Examples from your own workplace please…
“Whole Body”
Vibration via supporting structure to legs, buttocks, low back
Includes:
• workers standing on vibrating floors, platforms
• persons in proximity to heavy equipment i.e. presses
• operators of heavy moving equipment & vehicles

“Localized” (a.k.a. “Segmental” or Hand-Arm vibration)
• related to use of power tools
• low level vibration: discomfort, local fatigue
• high level vibration: damage to tissues

Disorders:
  i) of blood vessels in fingers
  ii) of nerves in hands
  iii) to bones & joints

Examples from your own workplace please...
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Practice your hazard recognition skills…
“I Spy with my Ergonomic Eye”

- Awkward localized posture
- Localized Contact stress
- Repeated motions
- Localized forceful exertion

“I Spy with my Ergonomic Eye”
Awkward whole-body posture
Localized Forceful Exertion
Repeated motions
Whole-body Contact stress

“I Spy with my Ergonomic Eye”
“I Spy with my Ergonomic Eye”

- Forceful whole-body Exertion
- Awkward whole-body posture
- Hot environment
“I Spy with my Ergonomic Eye”

- Forceful Exertion
- Hand-arm vibration
- Awkward whole-body posture
- Localized contact stress
- Prolonged posture
I Spy: Physical Demands vs. Ergonomics Risks

Bending
Reaching
Squatting
Gripping
Standing

Awkward whole-body posture
Forceful whole-body Exertion
Cold Temperature
Whole-body Contact stress

Are physical demands and ergonomics risk factors the same or different?
Physical Demands vs. Ergonomics Risk Factors

**Physical Demands**
Sit, stand, walk, climb, crawl, crouch, kneel, squat, bend, stoop, twist, balance, lift, lower, carry, push, pull, grip, handle, pinch, finger, reach, throw

**Ergonomics Risk Factors**
Awkward postures
Forceful exertions
Repetitive/prolonged motions
Contact stresses
Vibration
Temperature extremes

Key concepts:
Physical demands and ergonomics risk factors are different. Manage these differences appropriately in an ergonomics/MSD Prevention Program. i.e. Physical Demands Profiles versus ergonomic surveys
What’s in a “name”?

i. Physical Demands “Analysis”

ii. Physical Demands “Profile”

iii. Physical Demands “Description”

Some common examples...

- MOL Physical Demands Analysis (PDA)
- WSIB: Physical Demands Information Form (PDIF)
- OHCOW: Physical Demands Description (PDD) Handbook
- Wide variety of other formats...

PDA? PDIF? PDD? Same/different? Descriptive or analytical?

“Analysis” requires a statement about degree of injury “potential” or “risk”.
Physical demands or exposures to ergonomics risk factors vs. exposure limits!
PDP’s…“starting point” towards ergonomics analysis:

- identify “problem” physical demands
- recognize exposures to ergonomics risk factors
- target work actions for injury risk analysis
- evaluate injury “risk” or “potential”
- apply “generally accepted” analysis tools
- compare employee exposures to recognized limits
- determine if “overexposed” to injury potential
- implement control measures if necessary/appropriate

Follow the health & safety model…
Use PDPs to help recognize/identify concerns
Use accepted ergonomics tools to evaluate
Use H&S/ergonomics/MSD program for controls
Ergonomics/MSD Programs: H&S Guidelines

Available resources...

Workplace ergonomics — A management and implementation Standard

Figure 1
Elements of an OHSMS and the Ergonomics Process
MSD Prevention Guideline for Ontario

Three Parts:

Part 1: Musculoskeletal Disorder Prevention Guideline
Part 2: Resource Manual for the Musculoskeletal Disorder Prevention Guideline
Part 3: Musculoskeletal Disorder Prevention Toolbox

3A: Getting Started
3B: Beyond the Basics
3C: In-depth Risk Assessment Methods
ON MSD Prevention Guideline Table of Contents:

Section 1: Introduction

Section 2: MSD Prevention – Part of Your OH&S Program

Section 3: Establish a Foundation for Success

Section 4: Understand MSD Hazards

  💡 insert “I Spy with My Ergonomic Eye” info here…

Section 5: Recognize MSD Hazards and Related Concerns

  💡 insert PDPs here…

Section 6: Conduct an MSD Risk Assessment

  💡 insert ergonomics surveys here…

Section 7: Choose and Implement MSD Hazard Controls

Section 8: Follow up on & Evaluate the Success of Implemented Controls

Section 9: Communicate Results and Acknowledge Success
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A little moving forward information...