Cultivating Comfort

Ergonomic Solutions for the Cannabis Industry

May 2025

Berkshire Hathaway HOMESTATE COMPANIES
Workers Compensation Division ™

Muscular Skeletal Disorders in Cannabis Manufacturing

Employers in the marijuana industry should provide safeguards to protect workers from repetitive stress injuries (NIOSH HHE 2015)

Exposure to highly repetitive work – particularly during hand-trimming activities – increases workers' risk for musculoskeletal disorders

- HHE Report No. HETA-2015-0111-3271, Evaluation of Potential Hazards during Harvesting

$12+ Billion

Falls on the same level cost employers approximately $9.99 billion. Additionally, slips or trips without a fall add another $2.34 billion to the total cost.

Statistic from Cannabis Loss Sources

$20+ Billion

Repetitive motion injuries are among the most common work-related injuries, costing U.S. businesses approximately $20 billion annually in direct costs

Statistic from Cannabis Loss Sources

AGENDA

Assessing the Problem

1. Discuss impact of poor ergonomics on the health of your workforce
2. Identify Caution Zone Tasks which can cause injuries
3. Review a method of quantifying slip and trip exposures

Developing Solutions

1. Reducing Risk through Effective Controls
2. Review Practical Solutions and how to implement effective ergonomic controls

Impact of Poor Ergonomics

Increase MSD's

Workers in cannabis operations often perform repetitive tasks such as trimming, harvesting, and packaging. Without proper ergonomic practices, these repetitive motions can lead to musculoskeletal disorders (MSDs), which affect muscles, tendons, ligaments, nerves, and joints

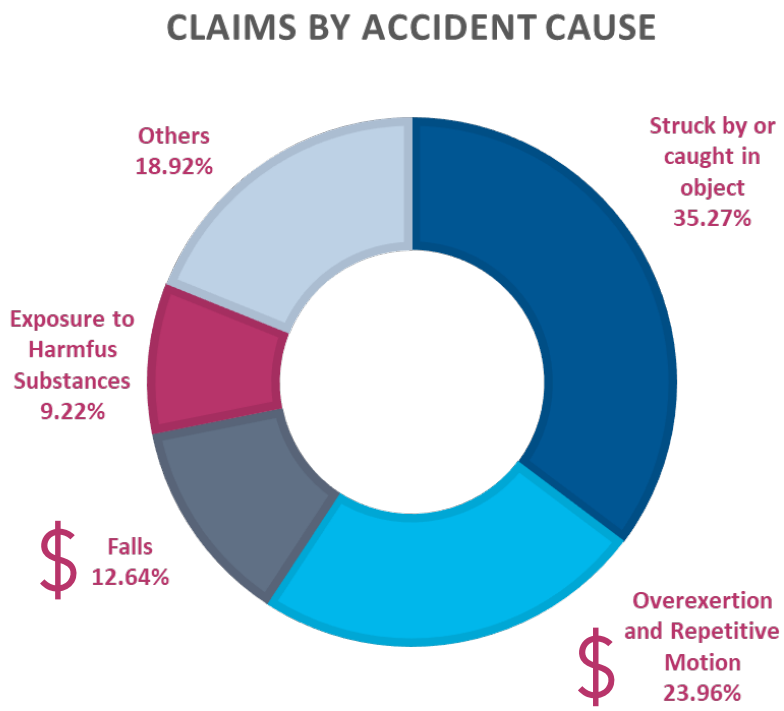
Reduced Efficiency

When workers are uncomfortable or in pain due to poor ergonomic conditions, their efficiency and productivity can decline. Proper ergonomic practices help minimize fatigue and discomfort, allowing workers to perform their tasks more effectively and with fewer breaks

Increase Turnover

High injury rates and poor working conditions can lead to increased employee turnover. This turnover results in additional costs for recruiting, hiring, and training new employees. Maintaining good ergonomic practices can improve job satisfaction and retention rates

Cannabis Worker Injury & Accident Statistics



75%	14.2%	10.78%
Of injuries occurred in **farm and greenhouse settings**	Of injuries occurred in **retail settings**	Of injuries occurred in **food and extract manufacturing**

Statistics from Washington State between July 2014 and 2021

- Are cannabis employees aware of the hazards of their jobs?
- Have owners and managers accurately assessed the hazards to workers and developed health and safety plans to protect them?
- *Are workstations and work processes in place designed to minimize risks to employees?*
- Is the proper personal protective equipment (PPE) in place, and do employees know when and how to use it?

Identifying & Quantifying the Problem

Identifying & Quantifying the Problem

Identify and Observe Job Tasks

- Walkthrough and Observation
- Worker Input

Use the Caution Zone Checklist

- Download and use the Caution Zone
- Complete the checklist for each job, noting tasks, postures, and forces that may contribute to MSDs.

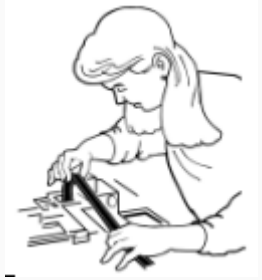
Identify Risk Factors

- Identify tasks with risk factors like awkward postures, high hand forces, or repetitive movements.

Assess and Prioritize

- Analyze Checklist Results: Evaluate the checklist results to determine the extent of risk in each job.
- Prioritize jobs for further action based on the severity and frequency of identified risks.

Washington Caution Zone Jobs

Example	Criteria
	Working with the hand(s) above the head, or the elbow(s) above the shoulders more than 2 hours total per day.
	Working with the neck or back bent more than 30 degrees (without support and without the ability to vary posture) more than 2 hours total per day.
	Squatting more than 2 hours total per day.

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Washington Caution Zone Jobs

Example	Criteria
	Kneeling more than 2 hours total per day.
	Pinching an unsupported object(s) weighing 2 or more pounds per hand, or pinching with a force of 4 or more pounds per hand, more than 2 hours total per day(comparable to pinching half a ream of paper).
	Gripping an unsupported objects(s) weighing 10 or more pounds per hand, or gripping with a force of 10 or more pounds per hand, more than 2 hours total per day (comparable to clamping light duty automotive jumper cables onto a battery).

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Washington Caution Zone Jobs

Example	Criteria
	Repeating the same motion with the neck, shoulders, elbows, wrists, or hands (excluding keying activities) with little or no variation every few seconds, more than 2 hours total per day.
	Performing intensive keying more than 4 hours total per day.
	Using the hand (heel/base of palm) or knee as a hammer more than 10 times per hour, more than 2 hours total per day.

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Washington Caution Zone Jobs

Example	Criteria
	Lifting object weighing more than 70 pounds once per day or more than 55 pounds more than 10 times per day.
	Lifting objects weighing more than 10 pounds if done more than twice per minute, more than 2 hours total per day.
	Lifting objects weighing more than 25 pounds above the shoulders, below the knees or at arms length more than 25 times per day.

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Washington Caution Zone Jobs

Example	Criteria
	Using impact wrenches, carpet strippers, chain saws, percussive tools (jackhammers, scalers, riveting or chipping hammers) or other tools that typically have high vibration levels, more than 30 minutes total per day.
	Using grinders, sanders, jigsaws or other hand tools that typically have moderate vibration levels more than 2 hours total per day

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Risk Factor Identification

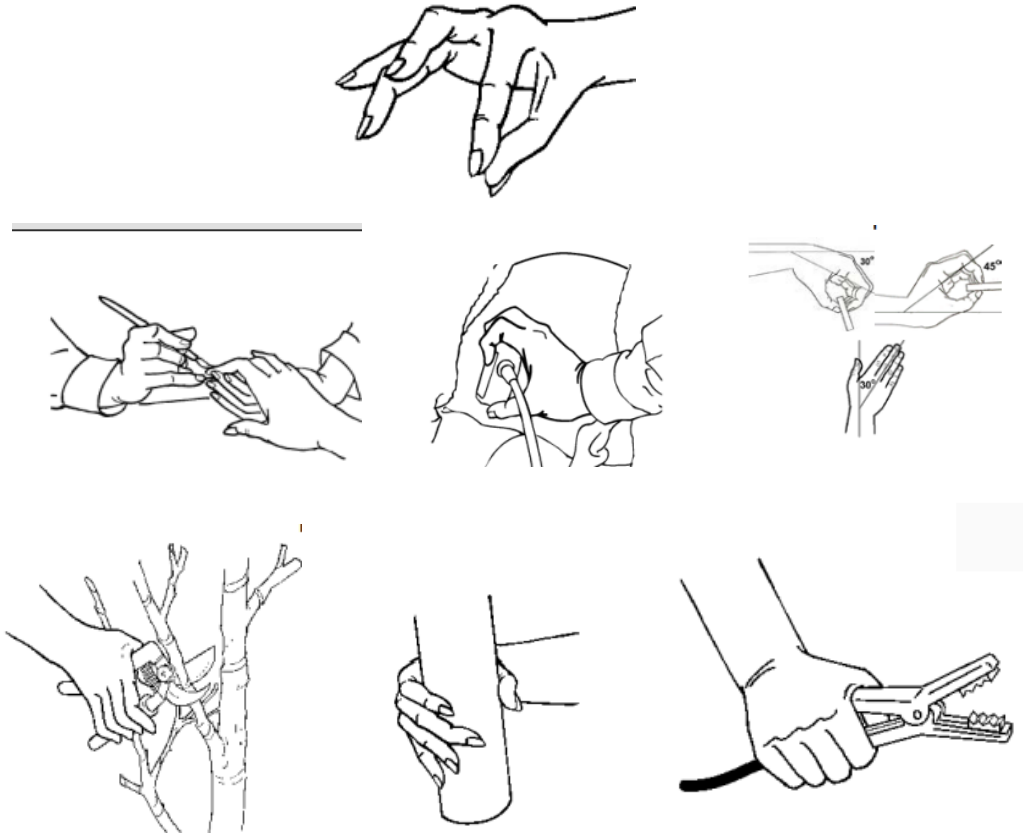
Awkward Postures (more than 4 hours a day)

- Working with the hand(s) above the head, or the elbows above the shoulders
- Repeatedly raising the hand(s) above the head, or the elbow(s) above the shoulder(s) more than once per minute
- Working with the neck bent more than 45° (without support or the ability to vary posture)
- Working with the back bent forward more than 30° (without support or the ability to vary posture)
- Working with the back bent forward more than 45° (without support or the ability to vary posture)
- Squatting

Risk Factor Identification

High Hand Force (more than 3 hours a day)

- Pinching an unsupported object(s) weighing 2 lbs. or more per hand, or pinching with a force of 4 lbs. or more per hand (comparable to pinching a half a ream of paper)
- Gripping an unsupported object(s) weighing 10 lbs. or more per hand, or gripping with a force of 10 lbs. or more per hand (comparable to clamping light duty automotive jumper cables onto a battery)
- Using the same motion with little or no variation every few seconds (excluding keying activities) More than 2 hours a day



PREVENTING FALLS* from SLIPS and TRIPS

ONE **STEP** AT A TIME

*Falls that occur on the same level

That's approximately **728,353** slips and trips annually

About **12%** of all accepted injury claims are from a slip or trip.

PRACTICE good housekeeping:

- CLEAN up all spills and debris immediately
- MARK or IDENTIFY spills and wet areas
- KEEP walkways clear of clutter and other obstacles
- CLOSE file cabinets and storage drawers immediately
- COVER or TAPE down cords or cables

SELECT and **WEAR** proper footwear:

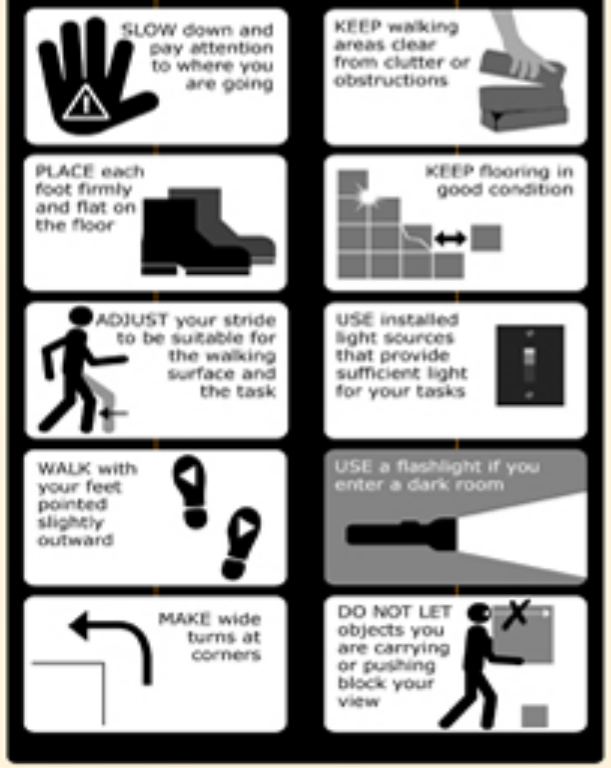
- MATCH your footwear to all the hazards of your job
- KEEP shoes in good repair, clean and free from contaminants

To **PREVENT** falls:

- USE appropriate, non-slip flooring material
- PROVIDE adequate lighting

Statistical source: Association of Workers' Compensation Boards of Canada, Injury Statistics Across Canada, 2015

5 WAYS to REDUCE the RISK of Slipping Tripping



Common CAUSES

Slips

- Slippery materials (water, ice, snow, oils, powders, granular solids)
- Slippery surfaces (polished tile or stone, smooth painted concrete or metal)
- Inappropriate footwear for the surface

Trips

- Uneven walking surfaces
- Unexpected or unseen steps, platforms or thresholds
- Wrinkled carpeting, or loose rugs or mats
- Obstructions such as an open bottom file cabinet drawer
- Exposed or loose cables, wires or cords
- Clutter on the floor or stairs

Employers should make sure the health and safety program includes slips and trips prevention:

- CONDUCT regular inspections
- IDENTIFY high-risk areas such as stairs, entrances, and high-traffic areas
- TRAIN managers, supervisors and workers

Slip and Trip Exposures

	High potential (Score = 4)	Medium potential (Score = 3)	Low potential (Score = 2)	Very low potential (Score = 1)
Surface composition	Highly polished and smooth surface (example: polished marble)	Adequate traction, but reduced when wet (example: smooth concrete)	Adequate traction, slightly reduced when wet (example: untreated wood)	Adequate traction conditions (example: carpet)
Foreign substance potential	Surface contaminants are likely present (example: water)	Surface contaminants are occasionally present (example: spills)	Surface contaminants are rare (example: beverage spills)	Surfaces have no potential for contaminants
Surface conditions	Worn mats, holes, cracks	Broken tiles, ripped carpet	Worn carpeting, cracked tile	No deficiencies
Surface changes	Carpet to marble	Carpet to tile	Pavement to gravel	No change
Level changes	Slope greater than a step	Step up or step down	Bumps and subtle level changes	Level
Obstructions	Obstacles located in walkway (example: step around or over objects)	Obstacles are in the walkway, but guarded (example: extension cords)	No obstacles directly in walkway (example: planters)	None
Visibility	No contrast level changes, very low light	Contrast in colors and low light	Contrast in colors and adequate lighting	Ample lighting
Human factors	High percentage of elderly, or disabled patients / residents / customers	Improper footwear worn by employees	Employees wearing appropriate footwear	No high-risk traffic expected
Stairs (including any elevators and escalators)	Frequently used stairs, step ladders or uneven treads	Stairs used by a few personnel to limit areas	Stairs seldom used and maintained	No stairs or emergency only
Unusual features	Children's play area, outside garden with fountains	Temporary displays / signage, seasonal decorations	Permanent signage	No distracting features

1. Score the FACTOR in each column for each area evaluated:
   4=High Potential 3=Medium Potential
   2=Low Potential 1=Very Low Potential

2. Calculate the AREA SCORE add up the actual score and save, then divide by the possible score to convert to a percentage
   - If a factor is not applicable leave it blank!

3. Calculate the OVERALL SCORE add up the area scores and divide by the total number of areas evaluated

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Slip and Trip Exposures

#	Areas Evaluated	Surface Composition	Foreign Substance Potential	Surface Conditions	Surface Changes	Level Changes	Obstructions	Visibility	Human Factors	Stairs, Elevators	Unusual Features	Area Score
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												

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Ergonomics and Major Loss Sources

OSHA does not have an ergonomic standard

- Ergonomics and MSDs
- MSDs are injuries or disorders affecting the muscles, nerves, tendons, ligaments, joints, cartilage, or spinal discs.
- Caused by repetitive motion, awkward postures, or sustained force.
- Ergonomics and STFs
- STFs are incidents where individuals slip, trip, or fall, often leading to injuries.
- These can be caused by uneven surfaces, poor lighting, or cluttered workspaces.

Ergonomics refers to the design and arrangement of work tasks, tools, and environments to fit the capabilities and limitations of workers.

Slip and Trip

Slips

- Wet Floors: Caused by spills, cleaning activities, or rainwater tracked indoors. Wet surfaces reduce traction and increase the risk of slipping.
- Slippery Floors: Glossy or polished surfaces can be hazardous, especially in areas prone to moisture. Unsuitable footwear can exacerbate this risk.
- Dusty Floors: Dust and loose fragments from work activities can create a slippery surface, preventing shoes from gripping the floor.
- Loose Mats and Floor Coverings: Mats that don't grip well can slide underfoot, causing slips.

Trips

- Obstacles: Items left in walkways, such as tools, boxes, or equipment, can cause trips.
- Trailing Cables: Cables and cords that are not properly secured can create trip hazard.
- Uneven Flooring: Differences in floor levels, such as cracks or raised edges, can lead to trip.
- Loose Flooring: Flooring that is not properly secured can shift and cause trips.

Slip and Trip

Environmental Factors

- Poor Lighting: Inadequate lighting can make it difficult to see hazards, increasing the risk of slips and trips
- Icy Conditions: Outdoor areas or entrances can become slippery due to ice, especially in colder climates
- Wet Ground: Similar to wet floors, wet ground outside can be tracked indoors, creating slip hazards

Housekeeping

- Cluttered Workspaces: Poor housekeeping practices, such as leaving items in walkways or not cleaning up spills promptly, can lead to slips and trips

Footwear

- Unsuitable Footwear: Wearing shoes that do not provide adequate grip, or support can increase the risk of slips and trips

Muscular Skeletal

Repetitive Motion

- Cause: Performing the same motion repeatedly can strain muscles, tendons, and ligaments
- Example: Typing, assembly line work, or repetitive lifting
- Impact: Can lead to conditions like carpal tunnel syndrome or tendonitis

Awkward Postures

- Cause: Working in positions that put stress on certain body parts
- Example: Bending, twisting, or reaching overhead
- Impact: Can result in back pain, neck strain, or shoulder injuries

Forceful Exertions

- Cause: Applying excessive force during tasks
- Example: Lifting heavy objects, pushing or pulling loads
- Impact: Can cause muscle strains, ligament sprains, and joint injuries

Static Postures

- Cause: Maintaining the same position for extended periods
- Example: Standing or sitting without movement
- Impact: Can lead to muscle fatigue and circulatory issues

Muscular Skeletal

Contact Stress

- Cause: Pressure from hard surfaces or edges on the body
- Example: Leaning on a hard desk edge or using tools that press into the skin
- Impact: Can cause localized injuries like bruises or nerve compression

Vibration

- Cause: Exposure to vibrating tools or machinery
- Example: Using power tools or driving heavy machinery
- Impact: Can lead to hand-arm vibration syndrome or other circulatory issues

Environmental Factors

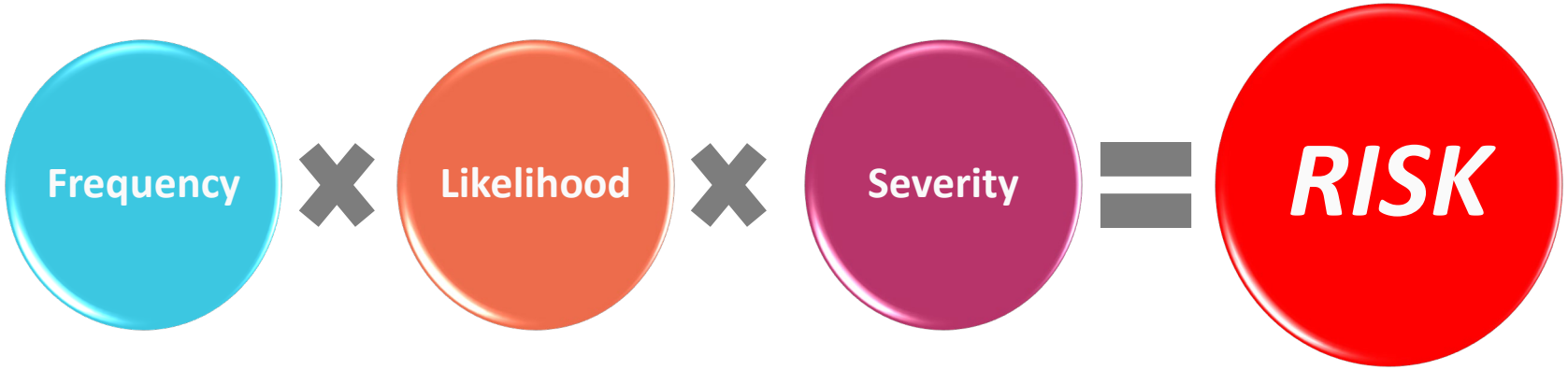
- Cause: Poor lighting, temperature extremes, or inadequate workspace design
- Example: Working in dim light or extreme cold
- Impact: Can exacerbate other ergonomic risks and contribute to overall discomfort

Poor Workstation Design

- Cause: Inadequate setup of workstations or tools.
- Example: Non-adjustable chairs, poorly placed monitors.
- Impact: Can lead to poor posture and increased risk of MSDs

Reducing Risk Though Ergonomic Solutions

Occupational Safety & Health Risk



Frequency: number of times exposed to hazard – the number of times you climb a ladder

Likelihood: chance that severity will be realized – the chance that you will fall each time you use a ladder

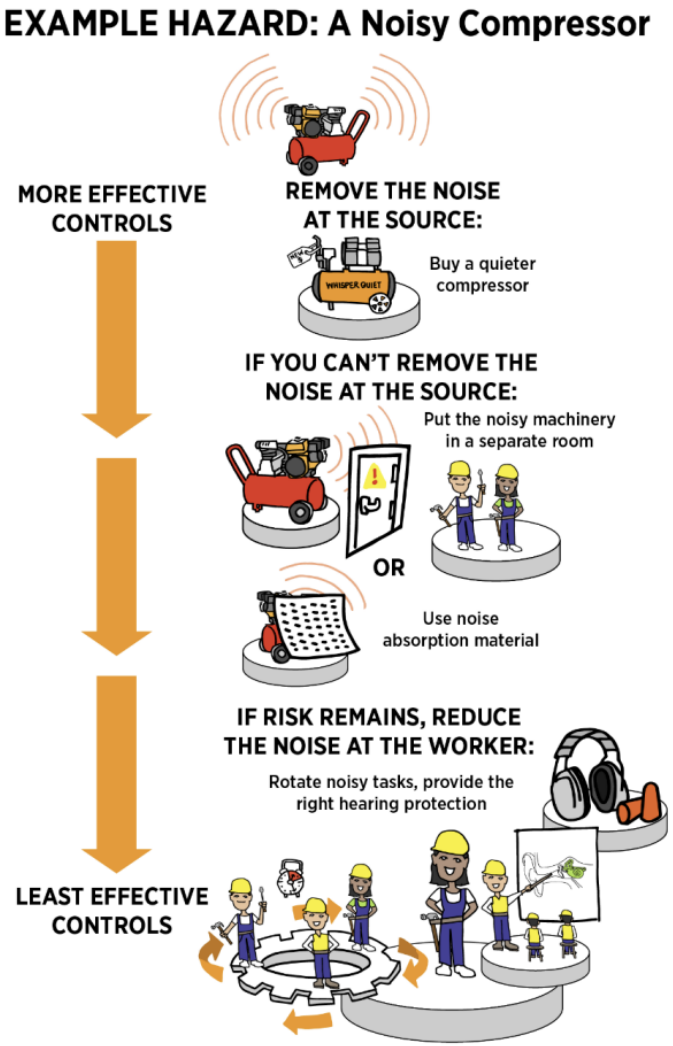
Severity: consequences of hazard being realized – the injuries and costs associated with a fall off the ladder if it occurs

- Risk can't be eliminated
- Can be identified, quantified and reduced

Reducing Risk - Control Hierarchy

Effective Controls Make a Difference

- Training rarely makes a significant impact unless training about a change in status quo
- PPE is very dependent on employee adherence
- Engineering controls are much more positive to control loss
- Substitution and Elimination of the hazard are the most effective controls



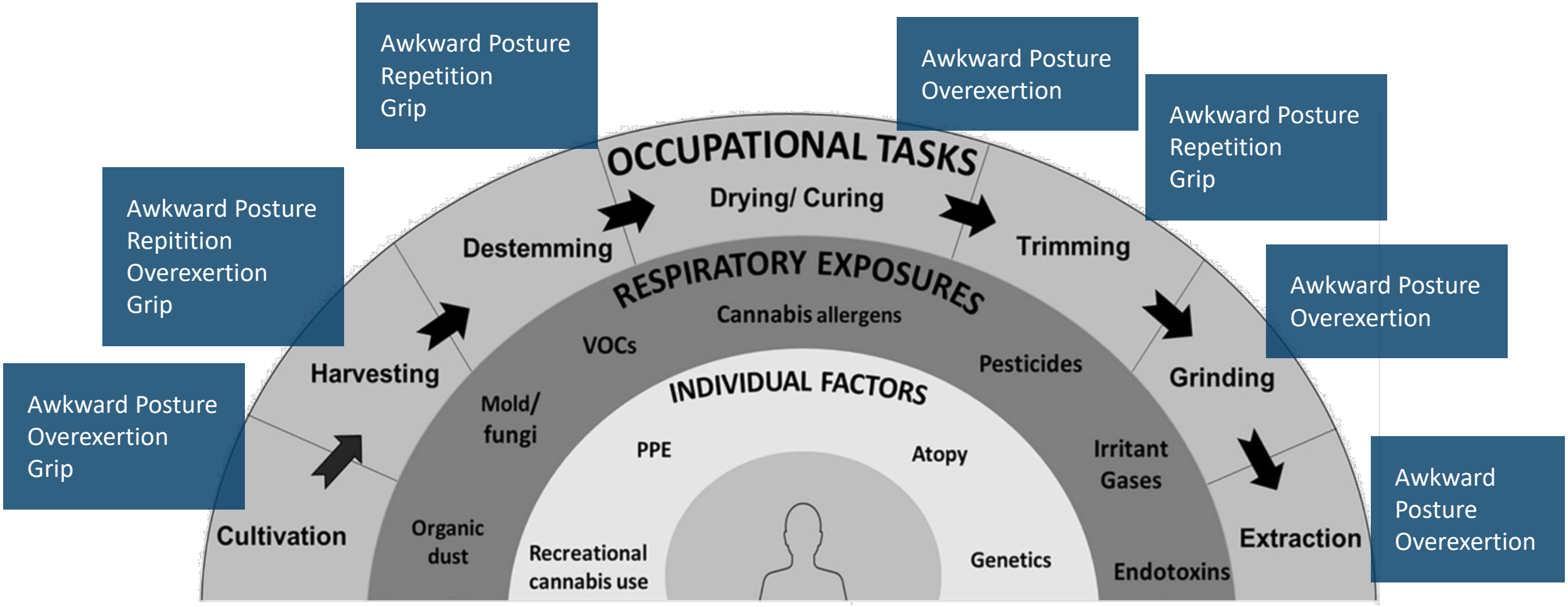
From:
OSHA IDENTIFYING HAZARD CONTROL OPTIONS: The Hierarchy of Control

Elimination and Substitution

Elimination of High-Risk Tasks

- Trimming and Packaging: Workers often perform repetitive motions while trimming cannabis plants and packaging products. These repetitive tasks can lead to strain injuries, particularly in the hands, wrists, and shoulders
- Cultivation and Harvesting: Handling heavy plants and equipment, bending, and reaching can cause back, neck, and shoulder injuries. Poor ergonomic practices during these activities can exacerbate musculoskeletal issues
- Extraction Processes: Operating extraction equipment requires precision and can involve awkward postures, leading to strain injuries. Additionally, improper use of equipment can pose risks of burns or inhalation hazards
- Transporting Products: Moving heavy containers and products can result in lifting injuries, particularly if proper lifting techniques are not used
- General Manufacturing Tasks: Tasks such as cleaning, maintenance, and operating machinery can involve repetitive motions and awkward postures, contributing to cumulative trauma

Cannabis Task Related Ergonomic Exposures



The Emerging Spectrum of Respiratory Diseases in the US Cannabis Industry
A Detailed study of Cannabis Respiratory issues

Controlling Ergo Exposures

Engineering Controls

- Automated Trimming Machines: Many facilities have adopted automated trimming machines. These machines significantly reduce the need for repetitive manual labor
- Mechanical Lifts and Conveyors: Using mechanical lifts and conveyor systems to move heavy plants and products can minimize the need for manual lifting and carrying, reducing the risk of back and shoulder injuries
- Ergonomic Tools: Substituting standard tools with ergonomic versions, such as scissors with cushioned grips for trimming, can reduce hand fatigue and repetitive strain injuries
- Adjustable Workstations: Implementing height-adjustable tables and chairs allows workers to maintain better posture and reduce strain during tasks like trimming and packaging
- Automated Packaging Systems: Automated packaging systems can replace manual packaging tasks, reducing repetitive motions and the associated risks of musculoskeletal disorders

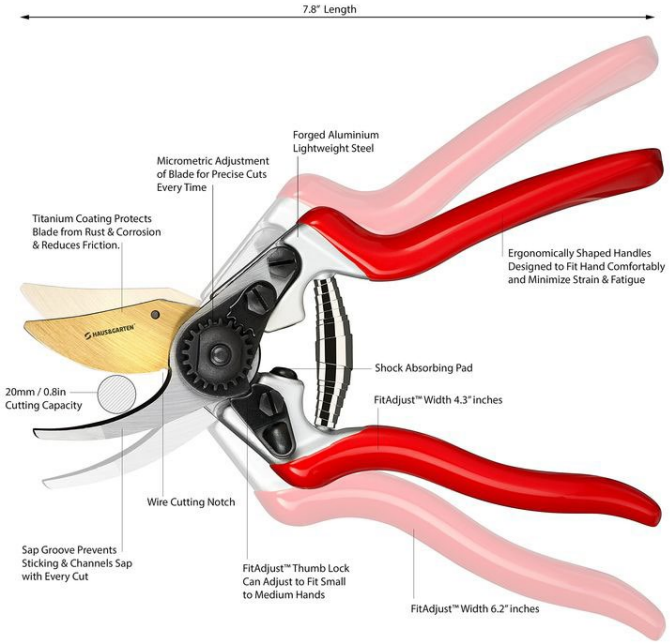
Controlling Ergo Exposures

Trimming Shears

- Adjustable Tension
- Non-Stick Blade Material (must still be cleaned regularly)
- End Stroke Softeners
- Spring Assist Opening with lock for storage
- Handle angle, size and cushioning
- Different shears for different hands

Cleaning

- Shears must be kept clean to be effective



Cleaning Shears

- Use Solvent: Regularly wipe the blades with isopropyl alcohol to dissolve sticky resin.
- Freezing Method: Place the shears in the freezer for a few hours.
- Lubrication: Apply a thin layer of clipper oil or spray lubricant to the blades before starting the trimming process.
- Warm Water and Soap: After trimming, soak the shears in warm, soapy water to loosen any remaining resin.
- Ultrasonic Sound and Water: Uses cavitation to remove debris (current equipment mostly healthcare related)

Clean the shears frequently during trimming sessions to prevent excessive buildup. Keeping a small brush or cloth handy can help with quick cleanups

Workstation Adjustability

Adjust it to the Worker

- Adjustable Chairs and Stools
- Sit Stand Stools
- Height Adjustable Worksurfaces
- Angle Adjustable Worksurfaces
- Removal of sharp edges (90°)
- Ergo Arms or Support Slings
- Mats and Cushioning

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Controlling Ergo Exposures

Administrative Controls

- Job Transfer Procedures for individuals who are highly susceptible to an ergo disorder
- Job Rotation to control time performing high exposure tasks
- Medical Surveillance – Symptom Surveys
- Creation of a formal job description with essential job functions that can not be accommodated (Check with your Lawyer)

Controlling Ergo Exposures

Personal Protective Equipment

- Back Belts
  - Increase Hernias
  - Weaken abdominal muscles if used improperly
  - Little correlation to loss
- Gloves
  - MUST FIT PROPERLY
- Skin Protection
  - Affects heat and temperature of employee
- Respiratory Protection
  - Adds weight to head and face
  - Increases force on neck from forward tilted work

Controlling Ergo Exposures

Employee Training

- Job Instruction Training ideally JHA Based
- Work Hardening for new employees
- Adjusting Workstations
- Ergonomic Risks and Controls
- Personal Protective Equipment
- Stretches

SUMMARY

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