

## C/DETAILED OUTLINE

### 1. Pre-Poster Phase

#### • **Step 1: Selecting a Workplace**

- ❖ As this is a practical assignment, you will need to have access to a worker at a specific workplace, so it's crucial that you based on the following factors to find the most suitable workplace for further analysis:
  - **Accessibility and Familiarity:** Choose a location that is easily accessible and, if possible, familiar to you. This familiarity could be through personal experience, connections with employees, or regular patronage.
  - **Variety of Hazards:** Consider workplaces with a variety of potential hazards (e.g., a factory with machinery, a restaurant with kitchen risks, or a retail store with customer interaction challenges). This diversity will make the project more insightful.
  - **Permission and Access:** Ensure you have the necessary permissions to conduct research in the chosen workplace. Some workplaces may require formal permission from management.

**Example:** Circle K, Big C, manufacturer....

#### • **Step 2: Employees Inquiries**

- ❖ Once the workplace is chosen, you will need to ask employees about items of equipment in use, the layout of the workspace, and talk to people in the workplace to gain a practical appreciation of the hazards that can arise.
- ❖ Below are some questions you could refer to when exploiting the most information about the risk arising from the workplace:

##### • **General Questions**

- Describe a Typical Workday: "Can you walk me through a typical day at work and the main tasks you perform?"
- Perception of Safety: "How safe do you feel in your workplace on a daily basis?"
- Awareness of Hazards: "What are the most common hazards you or your colleagues encounter in this workplace?"

##### • **Specific Hazard Identification**

- Equipment-Related Risks: "What types of equipment or machinery do you use, and what are the associated risks?"
- Environmental Hazards: "Are there any environmental factors in your workplace that might pose a risk (e.g., noise, lighting, ventilation)?"
- Chemical and Biological Hazards: "Do you work with any chemicals or biological materials? What precautions are taken to handle these safely?"
- Physical Strain and Ergonomic Concerns: "Are there tasks that cause physical strain or discomfort? How are ergonomic risks

managed?"

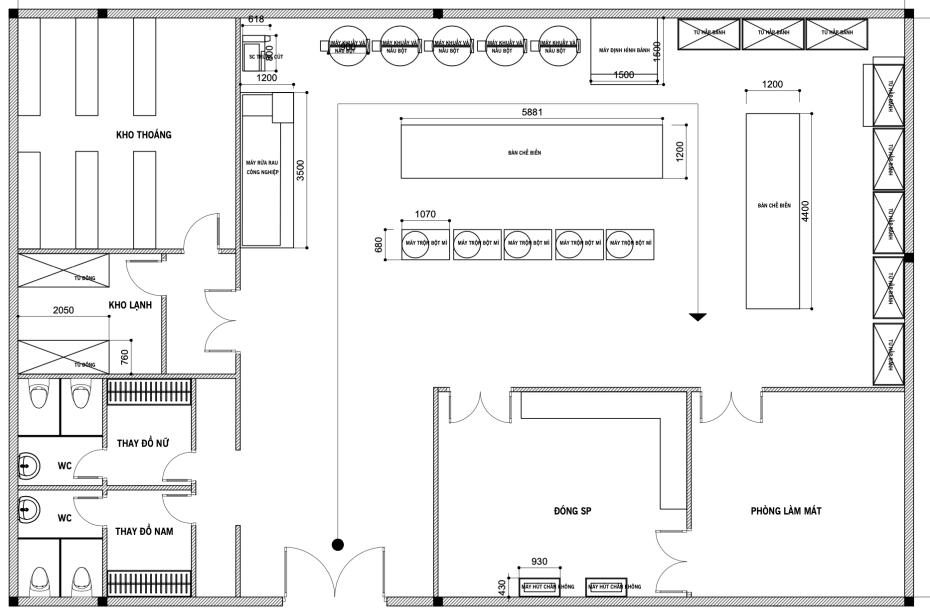


Figure 1 - Inside a Dumpling Factory

- **Safety Measures and Protocols**

- Existing Safety Protocols: "What safety protocols are currently in place, and how are they communicated to staff?"
- Training and Preparedness: "Have you received safety training, and do you feel prepared to handle potential hazards?"
- Emergency Response: "How does the workplace respond to emergencies or accidents? Are there any recent examples?"

- **Employee Involvement and Feedback**

- Reporting and Response: "How are safety concerns reported here, and how does management typically respond?"
- Suggestions for Improvement: "Do you have suggestions for improving safety in your workplace?"
- Safety Culture: "How would you describe the safety culture here? Is there open dialogue about safety concerns?"

- **Past Incidents and Learning**

- Incident History: "Can you recall any significant safety incidents that have occurred, and what was learned from them?"
- Changes Over Time: "Have you noticed any changes in safety practices during your time here?"

- **Personal Experiences**

- Personal Experiences: "Have you ever felt unsafe at work? Can you share that experience?"
- Well-being and Support: "How does the workplace support your well-being and health in relation to safety?"

- **Step 3: Identify potential hazards**

- ❖ Identifying potential hazards in a workplace is a key step in conducting a thorough hazard and risk assessment. The specific hazards can vary greatly depending on the nature of the workplace, but here are some common categories and examples of potential hazards that you might encounter:

## Six types of workplace hazard

Understanding workplace risk...

<b>Safety hazards</b>	<b>Biological hazards</b>				
Slips, trips, and falls	Machinery	Electrocution	Bacteria and viruses	Contaminated waste	Animal droppings
<b>Ergonomic hazards</b>	<b>Physical hazards</b>				
Poor posture	Heavy lifting	Improper work station	Radiation	Extreme weather	Extreme noise
<b>Chemical hazards</b>	<b>Workload hazards</b>				
Unlabelled liquids	Flammable substances	Harmful gases	Workplace violence	Confrontation	Flexibility
<p>Risk assessments are essential to determine the type and severity of threats your employees face whilst at work. Appropriate steps should then be taken to reduce or eliminate harm</p>					

### 6 types of workplace hazards

- **Physical Hazards**
  - **Slips, Trips, and Falls:** Wet or uneven floors, cluttered walkways, loose carpets, or exposed cables.
  - **Machinery and Equipment:** Unguarded moving parts, malfunctioning equipment, or lack of emergency shut-off.
  - **Fire Hazards:** Improperly stored flammable materials, overloaded electrical outlets, or faulty wiring.
  - **Noise Pollution:** Excessive noise from machinery or operations that can lead to hearing damage.
- **Chemical Hazards**
  - **Exposure to Toxic Substances:** Handling or proximity to hazardous chemicals, solvents, or gases without proper protection.

- **Improper Storage and Labeling:** Chemicals stored without proper containment or lacking clear hazard labeling.
  - **Biological Hazards**
    - **Exposure to Infectious Agents:** Working in environments exposed to bacteria, viruses, or fungi (e.g., healthcare, waste management).
    - **Poor Sanitation:** Insufficient cleanliness in workplaces, leading to the spread of disease.
  - **Ergonomic Hazards**
    - **Repetitive Strain Injuries:** Tasks that involve repetitive motion, leading to musculoskeletal injuries.
    - Poor Workspace Ergonomics: Inadequate workstations, chairs, or equipment layout leading to discomfort or injury.
  - **Psychosocial Hazards**
    - **Workplace Stress:** High workloads, tight deadlines, or lack of support leading to stress and burnout.
    - **Harassment or Bullying:** Instances of workplace harassment, intimidation, or bullying affecting mental health.
  - **Environmental Hazards**
    - **Extreme Temperatures:** Working in excessively hot or cold environments without adequate protection.
    - **Poor Air Quality:** Exposure to dust, fumes, or poor ventilation.
  - **Safety Hazards**
    - **Inadequate Safety Measures:** Lack of personal protective equipment (PPE), safety training, or emergency procedures.
    - **Electrical Hazards:** Exposed wires, faulty electrical equipment, or unsafe electrical practices.
  - **Step 4: Relevant Information**
    - ❖ You should consult workplace incident reports, medical records, and injury statistics to understand the frequency and types of injuries that occur. Provide explanations or statistics if there is any available information.
- Example: Convenience Store Workplace Injuries**
- **Slips, Trips, and Falls:**
    - Frequency: Very common. These types of incidents are among the most reported in retail environments, often due to spills, cluttered aisles, or wet floors, especially near beverage dispensers or refrigeration units.
  - **Musculoskeletal Disorders (From Repetitive Tasks):**
    - Frequency: Common. Cashiers and stock personnel often perform repetitive tasks (like scanning items, stocking shelves), leading to strains and pains, particularly in the wrists, back, and shoulders.
  - **Cuts and Lacerations:**

- Frequency: Moderately common. Handling stock, using box cutters, or working in areas with broken glass (like beverage sections) can lead to cuts.
- **Burns (Minor):**
  - Frequency: Occasional. Employees working with hot beverages or in food preparation areas may experience minor burns.
- **Back Injuries (From Lifting):**
  - Frequency: Common. Lifting heavy boxes or crates during stocking can result in back injuries, particularly if proper lifting techniques are not followed.
- **Falls from Height (e.g., Ladders):**
  - Frequency: Less common but significant. Falls can occur when employees use ladders or step stools for stocking higher shelves.
- **Violence or Threats (Including Robbery):**
  - Frequency: Varies widely based on location. Convenience stores can be targets for theft or robbery, potentially leading to physical or psychological trauma.
- **Stress-Related Conditions:**
  - Frequency: Common. High-paced work, customer interactions, and sometimes understaffing can contribute to stress and related health issues.

❖ **Tips for Effective Information Gathering**

- **Respect and Professionalism:** Always approach employees with respect and professionalism. Recognize that they are taking time from their duties to assist you.
- **Active Listening:** Practice active listening. Show genuine interest in their responses, and ask follow-up questions based on their answers.
- **Confidentiality Assurance:** Assure them that individual responses will be kept confidential and that the overall findings will be used solely for academic purposes.
- **Diverse Perspectives:** Try to talk to employees from different roles or departments or even managers to get a well-rounded view of the workplace hazards.

## **2. Assessment of Risks:**

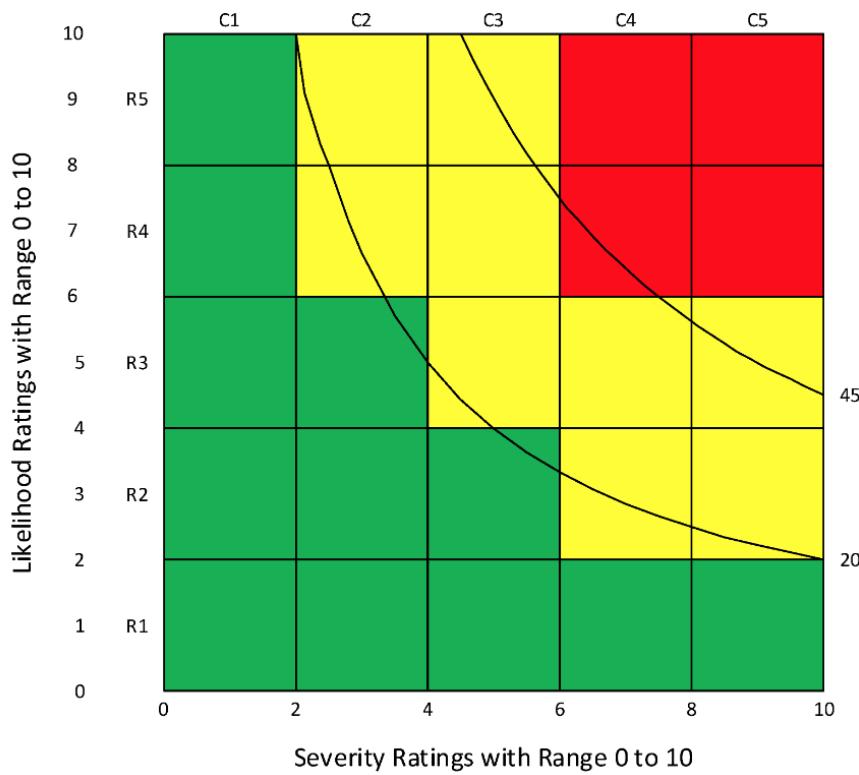
- ❖ **A risk assessment matrix**, also known as a Probability and Severity or Likelihood and Impact risk matrix, is **a visual tool depicting potential risks** affecting a business.
- ❖ The risk matrix is **based on two intersecting factors: the likelihood** the risk event will occur and **the potential impact** the risk event will have. In

other words, it's a tool that helps you **visualize the probability versus the severity of a potential risk.** ([Vicente, 2023](#))

- ❖ Next, you should assess the likelihood and severity of each hazard. You can use a risk assessment matrix to categorize risks into low, medium, or high risk based on your criteria:

**Tips: How to Determine the Likelihood of a Risk Occurring**

- ★ An essential component of the risk assessment matrix is determining the likelihood of a risk occurring.
- ★ Most companies use the following five categories to determine the likelihood of a risk event:
  - ★ **5: Highly Likely.** Risks in the highly likely category are almost certain to occur. Typically, risks with 91 percent or more likelihood fall into this category.
  - ★ **4: Likely.** A likely risk has a 61-90 percent chance of occurring. These risks need regular attention, as they are bound to reoccur and therefore require a consistent mitigation strategy.
  - ★ **3: Possible.** Possible risks may happen about half the time — they have a 41-60 percent chance of occurring and need attention.
  - ★ **2: Unlikely.** Risks in the unlikely category have a relatively low chance of occurring — 11 to 40 percent. But they may still affect your business, so it's a good idea to keep an eye on them.
  - ★ **1: Highly Unlikely.** Highly unlikely risks are exactly as they sound, with a low probability of occurring.



Risk Assessment Matrix

**Example: Identification and assessment of risk factors affecting construction projects**

		Construction area (rural/urban)			
		Bribery and Corruption	New technology		
Probability of Occurrence	V. high	Differing site conditions Change in currency rate Tax rate Project size Owner quality assurance Scope definition Quality control process Fast track schedule	Unexpected Surface conditions Contractor pre-qualified Fluctuation in prices Rate of interest		Changes in laws and regulations
	High	Unpredicted Weather conditions Working hours restrictions No. of subcontractors Safety regulation Invoices delay	Geo-technical investigation Drop in Labor productivity On-site access Contractor Reputation Access conditions On-site congestion Owner financial capacity Ad-hoc consultants Project duration	Material procurement Nominated vendors Nominated sub-contractors Type of contract Availability of variations	Team experience Management experience Project goal Wars and revolutions
	Medium	Pollution Progress payment			
	Low	Archeological survey done Labor skills level Human resource planning Material monopoly Owner type Work/labour permits Equipment breakdown Equipment malfunctions Delay in permits and licenses foreign currency	Labor availability Material delivery Material storage Material theft & damage Non-conforming material Equipment quality	Precipitation/flood Labor accidents Complexity of design	Defective work Security requirements Type of Funds
	V. low	Management strategy Organization structure Equipment maintenance No. of current projects	Earthquake	Rework Design error	
		V.low	Low	Medium	High
Attributes Cost Impact					

**Tips:**

❖ **Information Gathering**

- If you want to gather information about specific hazards, consult:
- + Material safety data sheets (MSDS)

# MATERIAL SAFETY DATA SHEET

MSDS is a document that details the hazardous components of a product, its characteristics, effects on human health as well as its handling precautions.



- + Safety regulations, industry standards, and research reports OSHA (Occupational Safety and Health Administration)

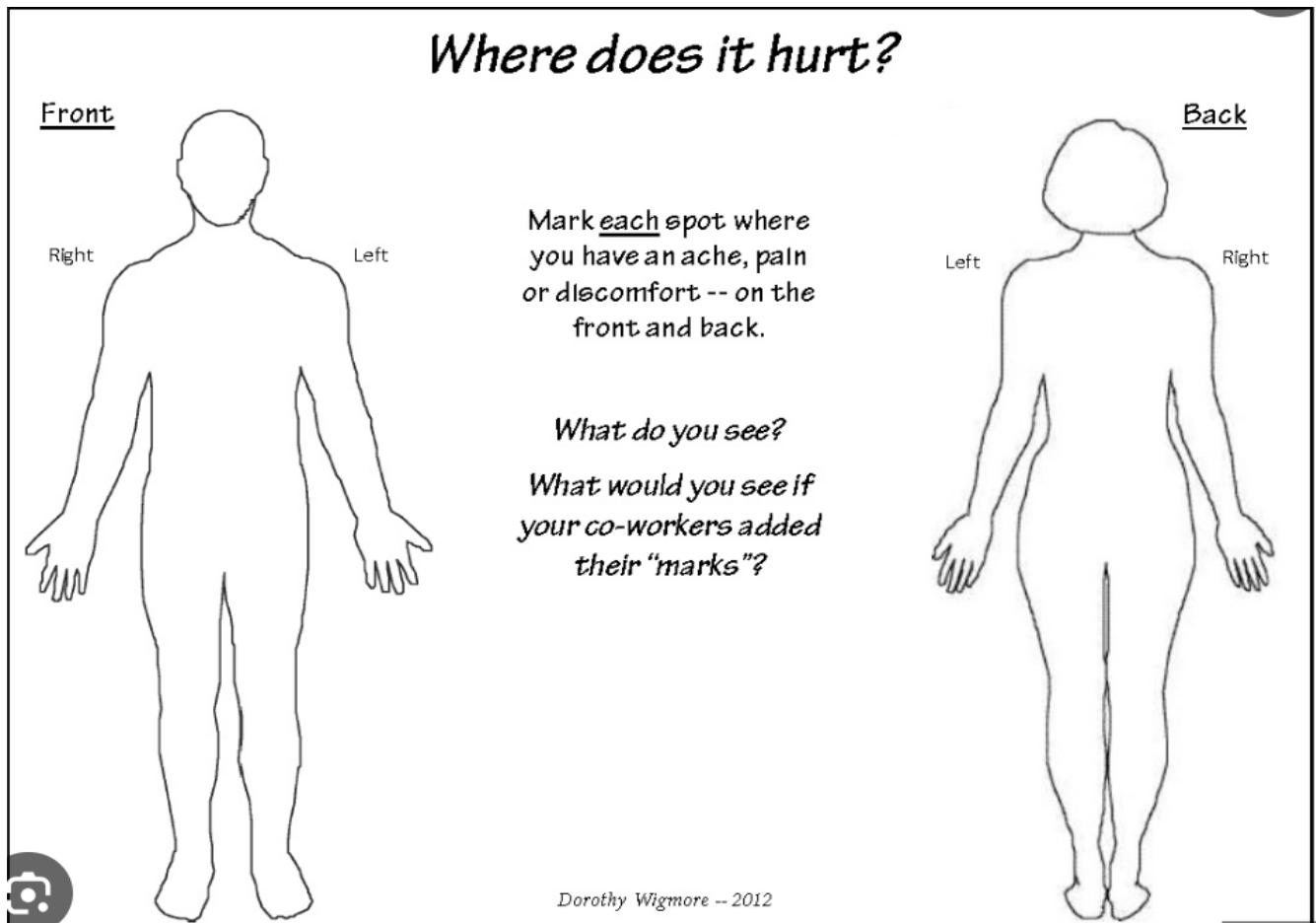


- + [NIOSH](#) (National Institute for Occupational Safety and Health)

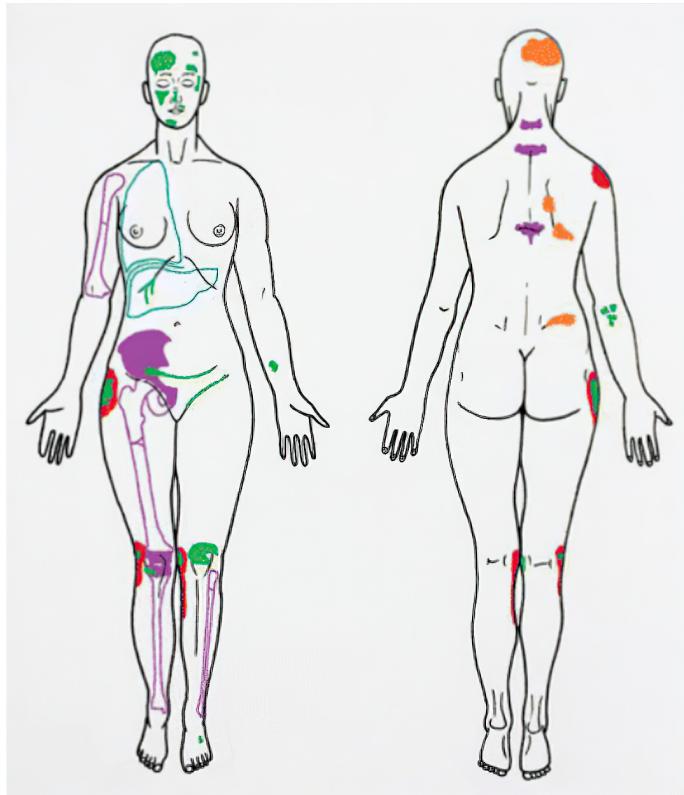
### **3. Body Risk Map:**

- **Injuries Risks Listings**
  - ❖ Create categories for different types of injuries and ailments based on the body parts affected (head, eyes, hands, back,...). Then, identify common injuries that employees may face.
  - ❖ Here are some examples of common workplace injuries categorized by body parts affected, along with the types of ailments associated with each:
    - **Head:**
      - Headache: Often caused by stress, poor posture, or environmental factors like lighting or noise.
      - Back Head Pain: Can be due to strain from poor posture or tension.
    - **Shoulders:**
      - Shoulder Stiffness: Typically results from repetitive tasks, awkward postures, or sustained overhead work.
      - Shoulder Pain and Strain: Caused by overexertion or repetitive movement.
    - **Neck:**
      - Neck Pain and Strain; Stiffness: Common in jobs involving prolonged sitting, especially with poor ergonomic setups.
    - **Back:**
      - Back Pain and Strain: Often a result of heavy lifting, prolonged sitting, or repetitive bending and twisting.
    - **Arms and Hands:**
      - Muscle Fatigue: Can occur from repetitive tasks, such as typing or assembly line work.
      - Electric Shock; Skin Irritation: Risks associated with electrical work or exposure to harmful substances.
    - **Legs and Feet:**
      - Knee Pain and Strain: Common in jobs requiring prolonged standing, kneeling, or heavy lifting.
      - Leg Swelling; Muscle Fatigue: Can be caused by prolonged standing or walking, especially on hard surfaces.
      - Feet Pain: Often due to prolonged standing, inappropriate footwear, or walking on hard surfaces.
    - **General:**
      - Infectious Diseases: Risk in environments with exposure to biological hazards.
      - Burn Scar: Typical in environments with exposure to heat or chemicals.
  - **Visualization**
    - ❖ Then, you can create a visual body risk map using graphic design software like Adobe Illustrator or free tools like Canva. Draw an outline of a human

body and mark areas that are susceptible to injuries. Use color-coding or symbols to represent different types of injuries. Or you can use templates:



**Example:** Schematic Drawings of the pattern of injuries

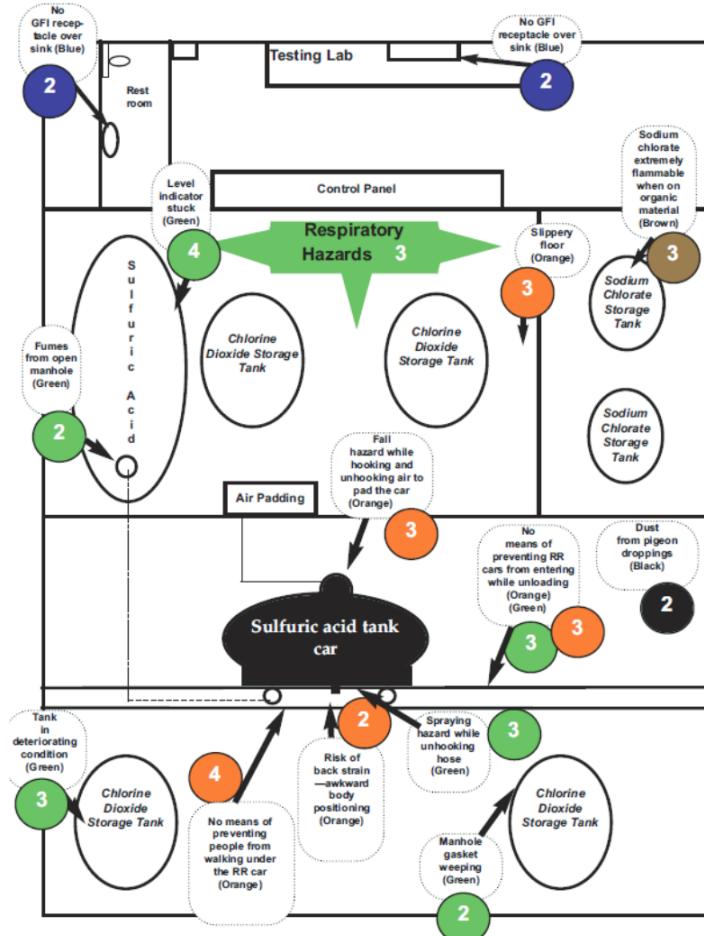


- █ Skin injuries (abrasions, lacerations)
- █ Bleeding into the subcutaneous fat tissue
- █ Tissue pockets
- █ Internal organs affected by injuries
- █ Skeletal elements with fractures (comminuted fractures are displayed in block colour; for clarity, we have omitted to show the bilateral serial segmental rib fractures)

#### 4. Hazard Risk Map:

1. First, you should **list all the hazards present in your workplace**. This could include physical hazards (e.g., noise, fire), chemical hazards (e.g., hazardous chemicals), and ergonomic hazards (e.g., repetitive tasks),...
2. Next, you should **assess the likelihood and severity of each hazard**. You can use a risk matrix to categorize hazards based on their risk level.
3. To **create the Map**: Use software like Microsoft Excel, PowerPoint, or specialized diagramming tools to create a hazard risk map. List each hazard and assign a color or symbol to represent its risk level. You can use a matrix format with likelihood on one axis and severity on the other.

**Example:** Chlorine Dioxide Generator(One Small Area of the Workplace)



- Remember to label each hazard and provide a brief explanation of the risks associated with it. You can include information on how these hazards can be controlled or mitigated for extra points.

#### **Tips:**

1. Try to replicate the model of the workplace you choose. Include symbols so readers can easily distinguish the hazardous elements.
2. Add photos you have gathered at the place of research for more credibility and easier visualization

#### **5. Recommendations with the Hierarchy of Controls:**

- ❖ **The hierarchy of controls** is a **way** of determining which actions will **best control exposures**. The hierarchy of controls **has five levels of actions** to reduce or remove hazards. The preferred **order of action based on general effectiveness** is:
  - Elimination
  - Substitution
  - Engineering controls
  - Administrative controls
  - Personal protective equipment (PPE)

- Using this hierarchy can lower worker exposures and reduce risk of illness or injury.
- For each identified hazard, you should recommend appropriate control measures based on the hierarchy. Describe how these measures will reduce or eliminate the risk.

**Examples:** Control Measures for Risks in Convenience Store

- Hazard: Slips, Trips, and Falls
    - Engineering Controls: Install non-slip floor mats in areas prone to spills.
    - Administrative Controls: Implement regular floor inspection and cleaning schedules.
    - PPE: Provide footwear with enhanced grip for employees.
  - Hazard: Repetitive Strain Injuries (Cashiers)
    - Engineering Controls: Use ergonomic cashier stations with adjustable-height counters.
    - Administrative Controls: Rotate tasks to reduce repetitive motions.
    - PPE: Provide cushioned floor mats to reduce strain from standing.
  - Hazard: Cuts and Lacerations (Stock Handling)
    - Engineering Controls: Provide safety-enhanced box cutters with auto-retractable blades.
    - Administrative Controls: Train staff in safe handling and storage of sharp objects.
    - PPE: Supply cut-resistant gloves.
- You can create a table (Table 1) based on the Hierarchy of Controls (Figure 1) or you can create a map based on the Hierarchy of Controls (Figure 2)

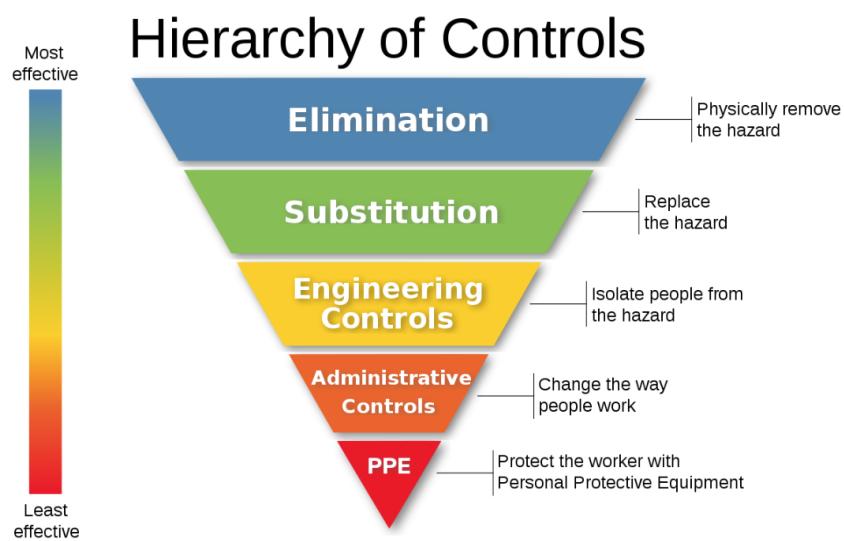


Figure 1

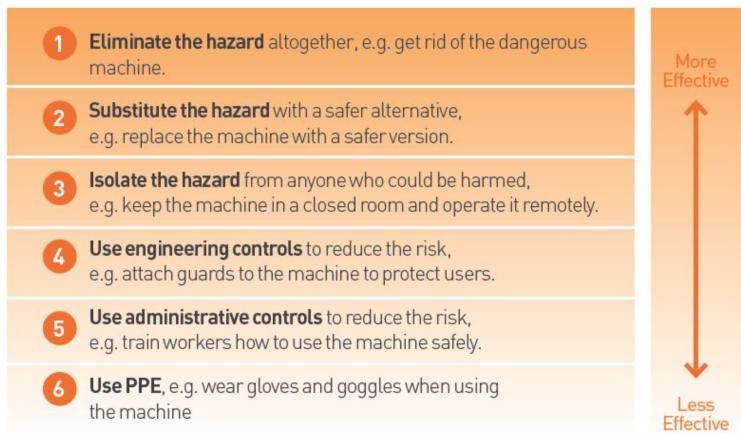


Table 1

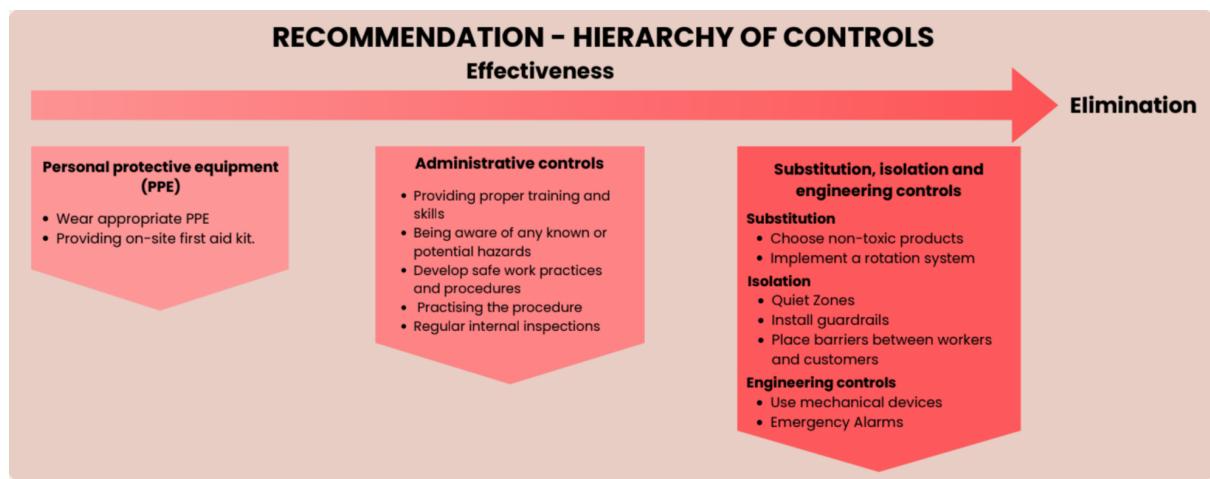


Figure 2

**Tips:** Link for graph

[Hazard Mapping](#)

[Workplace Risks & Hierarchy of Control | Pro Choice Safety Gear](#)

## D/REFERENCES

### ★ General Sources on Workplace Safety and Health

1. Occupational Safety and Health Administration (OSHA) Website
  - a. [OSHA Official Website](#)
  - b. Provides a wealth of information on workplace safety standards, guidelines, and training resources.
2. National Institute for Occupational Safety and Health (NIOSH)
  - a. [NIOSH Official Website](#)
  - b. Offers research and insights into various occupational health risks and prevention strategies.
3. World Health Organization (WHO) - Occupational Health
  - a. [WHO Occupational Health](#)
  - b. Provides global perspectives on workplace health and safety.
4. European Agency for Safety and Health at Work (EU-OSHA)

- a. [EU-OSHA Official Website](#)
- b. Offers extensive resources on workplace safety in different sectors, including case studies and risk assessment tools.

## ★ Specific Topics and Tools

- 5. Ergonomics and Repetitive Strain Injuries
  - a. "Ergonomics for Beginners: A Quick Reference Guide" by Jan Dul and Bernard Weerdmeester.
  - b. Useful for understanding ergonomic hazards and prevention methods.
- 6. Risk Assessment and Management
  - a. "Risk Assessment Tools, Techniques, and Their Applications" by Lee T. Ostrom and Cheryl A. Wilhelmsen.
  - b. Provides comprehensive coverage of various risk assessment tools and methodologies.
- 7. Workplace Safety and Health Management
  - a. "Introduction to Health and Safety at Work" by Phil Hughes and Ed Ferrett.
  - b. A guide covering the essentials of health and safety management in the workplace.
- 8. Online Risk Assessment Tools
  - a. [OSHA eTools and Electronic Products for Compliance](#)
  - b. Interactive, web-based training tools on occupational safety and health topics.
- 9. Hazard Mapping Manuals and Guides
  - a. OSHA Hazard Mapping Manual ([Link to Manual](#))
  - b. A guide to developing hazard maps for educational and training purposes.
- 10. Hierarchy of Controls
  - a. "Managing Workplace Risks and the Hierarchy of Control" ([Pro Choice Safety Gear Article](#))
  - b. Provides a practical understanding of applying the hierarchy of controls in risk management.