

# Healthy Workplaces

Successful Strategies in the Food Processing Industry

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**Washington Department of Labor and Industries**

Safety and Health Assessment and Research for Prevention (SHARP) Program

P.O. Box 44330

Olympia, Washington 98504-4330

**June 2001**



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# Healthy Workplaces

## Successful Strategies in the Food Processing Industry

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### SUMMARY

- In the United States, nearly 50 workers are injured every minute of the 40-hour work week, and approximately 17 workers are killed on-the-job every day.
- These injuries cause tremendous pain and suffering in individuals, their families, fellow employees, and business.
- In 1997, the National Safety Council calculated that work-related injuries and deaths cost the nation 127.7 billion dollars.
- The modules in this booklet are designed to assist food processors in ways to reduce or eliminate workplace hazards. Through the sharing of successful strategies, employers can learn which approaches are working in their industry.
- The solutions discovered in one workplace may be practical for another workplace, and may stimulate companies to develop their own solutions.

## **Acknowledgements:**

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# Healthy Workplaces

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# Developing Healthy Workplaces

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## What is a healthy workplace?

A company's productivity and profitability goes hand-in-hand with a safe and healthy work environment. A "healthy workplace" enhances worker performance and human health through a balance of technology, organization, environment and tasks. However, achieving such a "healthy workplace" is not without its challenges. In the United States for the year 1999, there were over 1.7 million work-related injuries and illnesses involving days away from work in private industry, and 5,461 work-related fatalities.

## About SHARP's healthy workplaces project...

The Healthy Workplaces Project began in 1999 with the support of the Washington state Legislature. The goals of this project are to reduce work-related injuries and illnesses and to increase the productivity of Washington businesses. We aim to achieve these goals by identifying factors that contribute to improving workplace health and safety, and to share this knowledge throughout the industry.

Food Processing was selected as our first industry in the Healthy Workplaces study because of 1) its importance in Washington state, and 2) the variation in economic and workplace health and safety indicators among companies in this industry. This booklet describes some of the findings from the companies that we visited as part of the Healthy Workplaces project. We have included 11 modules on various topics including workplace organizational factors; ways to prevent slips, falls, and musculoskeletal disorders; and ways to reduce various exposures in the workplace. We hope you find this booklet useful and informative.



**Throughout this document, this symbol designates a company's successful strategy.**





# Module 1. Improving Workplace Organization

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## Why is improving workplace organization important?

Typically, when a company strives to improve workplace safety and health, the focus is on equipment and work practices. However, the way in which a company is organized has a major impact on the company's economic health and the well-being of the workers.

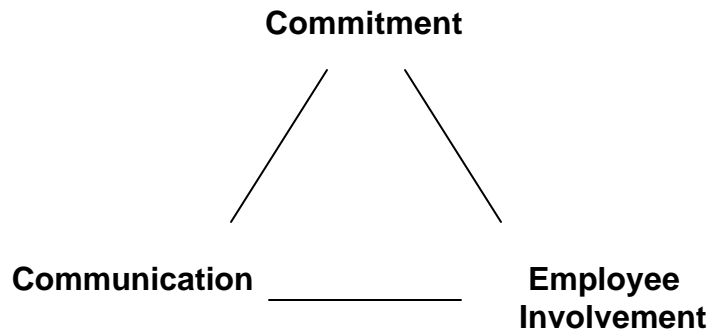
When we use the term "workplace organization," we are referring to the policies, procedures, and attitudes at the facility level. Workplace organization provides the basic problem-solving structure within the company. Creating a structure for how work is organized, how work is performed, how communication lines operate, how processes are evaluated, etc., provides the framework for interactions at all levels within the company. Within this framework, programs and activities operate according to the values of the organization.

The structure of the organization influences all aspects of the company, including safety and health. Lack of organizational structure can have major consequences. For example, between October 1998 and September 1999, there were a total of 86 Washington Industrial Safety and Health Act (WISHA) compliance inspections in food processing facilities in Washington state. These 86 inspections resulted in 381 citations, and totaled \$86,200. Of the 381 citations, 195 (51%) involved workplace organization issues (such as record keeping, training, programmatic elements, etc.). These organization-related citations, which could have been averted with minimal financial outlay, accounted for 20% of the total cost (\$17,030).

## How can I improve workplace organization?

Effective workplace organization must include management commitment to safety and health, communication, employee involvement, safety and health training, and safety committees. In this module, we focus on commitment, employee involvement, and communication (safety training and safety committees are discussed in the next two modules).

Commitment, employee involvement, and communication are important in establishing and implementing effective safety and health programs (see Figure 1.). These three elements provide a foundation not only for safety and health activities but also for the entire organization.



**Figure 1. Essential components of effective workplace organization.**

In this module, you are asked to critically evaluate your company in each of these three areas. Please take a few moments to complete the Workplace Organization Self-Assessment Tool and determine where you might improve your company's organization.

Also, it may be interesting to have your workers complete the self-assessment tool, in addition to managers, and see if there are differences in how workplace organization is perceived at your company.

After completing the Self-Assessment Tool, please read the following pages for ideas about successful strategies that other food processors used to improve their workplace organization.

# Workplace Organization Self-Assessment Tool

For each question below, think about what commonly takes place in your company. Mark “YES” or ‘NO’.

<b>Commitment</b>	<b>YES</b>	<b>NO</b>
1. Does top management allocate resources for safety and health?	<input type="checkbox"/>	<input type="checkbox"/>
2. Is there a person designated, with time allotted, for safety and health?	<input type="checkbox"/>	<input type="checkbox"/>
3. Does the company commit funds to address unsafe conditions and equipment?	<input type="checkbox"/>	<input type="checkbox"/>
4. Does management have a system to respond immediately to health and safety problems?	<input type="checkbox"/>	<input type="checkbox"/>
5. Does top management attend and participate in safety meetings?	<input type="checkbox"/>	<input type="checkbox"/>
6. Do managers/supervisors follow health and safety rules while on the production floor?	<input type="checkbox"/>	<input type="checkbox"/>
<b>Employee Involvement</b>		
7. Are employees formally included in the company’s goal setting and planning process?	<input type="checkbox"/>	<input type="checkbox"/>
8. Does management seek employee input in decisions?	<input type="checkbox"/>	<input type="checkbox"/>
9. Do employees, supervisors <b>and</b> managers receive health and safety training?	<input type="checkbox"/>	<input type="checkbox"/>
10. Do workers use protective equipment where and when indicated?	<input type="checkbox"/>	<input type="checkbox"/>
11. Are employees involved in finding solutions to production, quality, and health and safety issues?	<input type="checkbox"/>	<input type="checkbox"/>
<b>Communication</b>		
12. Do employees feel free to raise concerns or make suggestions?	<input type="checkbox"/>	<input type="checkbox"/>
13. Does the company have a formal reporting method or system for employees to communicate health and safety concerns with all levels of management?	<input type="checkbox"/>	<input type="checkbox"/>
14. Does the company discuss injury data and hazard analyses with employees?	<input type="checkbox"/>	<input type="checkbox"/>
15. Are the results of all inspections discussed with employees?	<input type="checkbox"/>	<input type="checkbox"/>
16. Is the information referred to in questions ‘14’ and ‘15’, posted or made available to employees?	<input type="checkbox"/>	<input type="checkbox"/>

If you checked ‘NO’ to any of these, please refer to the following pages for further information. Even if you checked ‘YES’ to each item, we recommend reading the following pages.

## Why is commitment important?

Management commitment to safety and health is an important factor in organizational health. Allocating money, positions, and time demonstrates company commitment to the safety and health of everyone involved. Commitment also serves to establish lines of communication, not only between workers and management, but also among all persons that interact with the company.



Several companies we visited indicated that, “*Commitment for safety and health has to come from the ‘top’ down, or it doesn’t do any good*”, and that “*Safety is a philosophy of the company, not just a high priority.*” In addition, several managers we interviewed indicated that, “*Having top management participate in safety meetings was important in demonstrating commitment and helpful in keeping informed.*” In addition, management can demonstrate its commitment to safety and health by following health and safety rules throughout the facility. Demonstrating commitment builds trust among workers and managers.

## How do I improve commitment and build trust?

- Designate a responsible person to be in charge of the safety program. Provide a point of contact for workers, all levels of management, owners, customers, and visitors to the facility.
- Allocate time and money for safety and health activities. Demonstrate management commitment to company health and safety.




- Act quickly to address health and safety problems. One company indicated, “*Management needs to respond to problems with a sense of urgency...fix it right away. And if it can’t be fixed, get back to the person(s) and tell them why.*” Remember that under the law, management is required to provide and maintain a safe and healthful work environment.

## Why is employee involvement important?

Including employees in planning and setting company goals helps managers identify problems. Employees have intimate knowledge of the job, the machines, and experience with the production line. In addition, providing a process for employees and management to work together formally on safety and health issues increases communication and trust within the organization.


## How do I improve employee involvement?

- Allocate time for employees to work on health and safety issues and participate in the problem-solving process.


- Use positive feedback. Positive feedback motivates people and encourages involvement with the company as a whole. This approach focuses on what people are doing right, rather than what they are doing wrong.
-  • Ask employees for their help identifying health and safety problems, issues, and solutions. Providing a forum for exchange of ideas can help lead to creative solutions. For example, one company manager shared that, “*Employees and managers worked together to design a new tool that would safely lift multiple containers at one time.*” The use of this tool increased productivity and affected employee involvement in a positive way.
- Include all levels of management and employees in education and training. Managers will then know what is expected of their own performance, as well as what is expected of employees. This inclusive approach also demonstrates management commitment to safety and health.

## Why is communication important?

Establishing a process for communication in your company is extremely important. Such a process allows workers to alert you to problems in the plant and allows managers to communicate important information about job hazards. Clearly communicating your company’s values and policies benefits workers, supervisors, and managers at all levels of the organization. Lack of communication can lead to a decrease in motivation, less pride in the product, and possibly unsafe work practices.

 Several companies we visited indicated they had created an “*open communication system*” or “*open door policy*”, and felt that this was, “*Hugely successful in their company.*” “*Workers need to feel free to come in anytime with any problem.*” In order to foster open communication, another company established a neutral location in the plant for discussions about productivity and safety issues. This facilitated more open discussion between employees and managers and demonstrated management’s commitment. One manager noted that, “*People want to be listened to, so you need to act immediately to let them know you were listening to them.*”

Posting information about job hazard analyses, results from inspections or analyses of injuries is a good idea. However, regular discussions about inspections, investigations, productivity, or injury records ensure that everyone is informed about what happened and what is expected.

 For companies with workers for whom English is a second language, translating information is crucial (both written and verbal). However, to improve communication, one company we visited had a program that paid production workers to take English classes. In addition, it may be beneficial for managers/safety personnel to be bilingual.

## How can I improve communication?

- Use an open communication style. An open door policy allows opportunities for employees to voice their concerns freely with management.
- Develop a system for reporting and responding to health and safety problems. Systems should include a way for both managers and employees to **discuss and exchange** ideas.
- Translate materials and use interpreters when communicating safety and health information to non-English speaking workers.

## Where can I get more information?

The following book may be helpful for improving workplace organization: Karasek, Robert and Theorell, Tores. (1990). *“Healthy work: Stress, productivity, and the reconstruction of working life.”* New York: Basic Books, Inc.

A book titled, “Safety by Objectives” has information on safety management and includes ways to determine ‘what works’ in an organization. The full citation is: Petersen, Dan. (1996). *“Safety by objectives: What gets measured and rewarded gets done.”* 2<sup>nd</sup> Edition. New York: Van Nostrand Reinhold.

Washington Manufacturing Services (WMS) provides information on management and workplace organization. Contact WMS at their web site: [www.wamfg.org](http://www.wamfg.org), or call (425) 438-1146.

## Module 2. Developing a Health and Safety Committee

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### Why is having a health and safety committee so important?

An effective health and safety committee will help prevent injuries and illnesses in your workplace! By reducing the risk of injury and illness you can:

- Provide a safe place for you and your employees.
- Lower injury and illness-related costs and the number of workers' compensation claims.
- Improve employee morale.
- Reduce absenteeism.
- Increase the productivity and quality of your operation.
- Improve communication and employee-management relationships.


A health and safety committee is an integral part of an organization's overall health and safety process. The health and safety committee is a forum for managers, supervisors, and all levels of the work force to meet in a cooperative manner to identify and solve health and safety issues. A health and safety committee also can help you remain in compliance with food industry and safety regulations.

#### **REMEMBER !**

A health and safety committee provides multiple returns for your organization.  
Put a health and safety committee to work at your organization!

Health and safety committee requirements vary according to the size of the company. The Washington Administrative Code (WAC) describes the obligations for companies with 11 or more employees, as well as for companies with 10 or fewer employees.

## Tips for developing a health and safety committee:

- All workplaces **should** have a health and safety committee, regardless of the size of the organization and the number of employees. Workplaces that fall under the Washington Industrial Safety and Health Act (WISHA) jurisdiction and have 11 or more employees **must** have health and safety committee.
- Senior management must be a part of the health and safety committee membership.
- To be effective, the health and safety committee must interact in an open and proactive environment. This approach creates a shared vision and defines the goals and objectives necessary for “healthy workplaces.”
-  Hold meetings at least once per month. These meetings should define health and safety issues that need attention and monitor follow-up activities. If conditions require, hold weekly or biweekly meetings to discuss and resolve health and safety issues as they arise. Several companies we visited had safety committees that met at least once a month, with some meeting twice a month when needed.
- Keep minutes for all health and safety committee meetings. Minutes are required for those organizations that fall under WISHA jurisdiction.
- The health and safety committee can recommend and help implement programs to protect the health and safety of all employees at the facility and help meet regulatory requirements.

The health and safety committee should:

- Review and respond to employee concerns, complaints, and suggestions regarding workplace hazards.
- Promote and participate in health and safety training and education processes.
- Inspect the facility to detect and find ways to resolve unsafe conditions and practices within the organization.
- Review illness and injury records to analyze incident trends.
- Investigate injury and non-injury incidents for the “root cause” and develop preventive processes to reduce or eliminate these incidents.
- Publicize achievements and employee suggestions.
- Provide timely feedback to employees about plans for improvement.



Organizations that are required to have health and safety committees must address the following items as part of their committee functions:

- Review recent safety and health inspections.
- Review accident investigation reports.
- Discuss recommendations to improve the accident prevention program.

**REMEMBER !**

Health and safety committee = Organization value

A health and safety committee can help the organization prevent injuries and illnesses. Health and safety committees can provide resources for the organization to address regulatory requirements. The health and safety committee can also establish best practices to help meet the organization's goals and objectives of being a cost-effective business in the food processing industry.

### **Where can I get more information?**

Washington state's workplace safety and health regulations can be accessed from the Department of Labor and Industries web site at: [www.LNI.wa.gov/wisha](http://www.LNI.wa.gov/wisha).

The following regulations address Safety and Health Committees:

- WAC 296-800-130 Safety Committees and Safety Meetings.
- WAC 296-800-13005 Establish a Safety Committee.
- WAC 296-800-13010 Make sure that Established Safety Topics are Discussed at each Safety Committee Meeting.
- WAC 296-800-13015 Make sure that Safety Committee Meeting Minutes are recorded and preserved.

The Department of Labor and Industries operates a Safety and Health Video Library with more than 600 videos on a wide range of topics. Visit the WISHA web site: [www.LNI.wa.gov/wisha/videocat/index.htm](http://www.LNI.wa.gov/wisha/videocat/index.htm). To book a video by telephone, call (360) 902-5444, or toll free 1-800-574-9881. Videos on safety committees include:

- V0130 How To Conduct A Safety Meeting
- V0470 Safety Committee: A Safety Carol
- V0532 Safety Committee: Problem or Solution



# Module 3. Implementing Safety Training

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## How can an effective safety training program benefit my company?

Effective safety training provides the foundation for preventing occupational injury and illness. Workers, supervisors, and managers must be prepared to perform their jobs productively, ensure product quality, and practice safe behavior. These goals are only accomplished through systematic and focused training.

### **REMEMBER !**

Safety training is most effective when top management is actively involved and holds itself accountable for its success.

Implementing a safety training program can assist with the following:

- Increase safe behaviors among workers.
- Increase early reporting of potential hazards before injuries occur.
- Reduce absenteeism.
- Improve employee morale.
- Enhance relations between employees and management.
- Decrease time loss claims and injuries on the job (when combined with organizational improvements).

## How do I get started?

- Identify the hazards in the workplace and the appropriate training to address each hazard.
- Identify the regulations that apply to your workplace.
- Determine who will do the training. Numerous consulting companies are available to provide training services and organize training programs. While using a consultant may help you satisfy regulatory requirements, often a “home grown” safety training program with professional consultation is more effective. A combination of both of these approaches may be beneficial.
- Determine when and where training will occur. This is an organizational decision that demonstrates commitment of the organization to safety and health. The most effective programs involve dedicating time at the beginning or the end of the work shift. Training conducted at the site of a potential hazard can be effective, especially if the training incorporates demonstrations of safe behavior or safety procedures.



- Set up an organized system for tracking the training workers receive. One company we visited implemented a computerized training and tracking system for managers and supervisors. This system allowed for managers to complete the computerized training. Once the training was complete, it was automatically tracked in the computer system. This company plans to expand their computerized training program to all employees.
- Assess the effectiveness of your training program. Some outcomes you can measure include:
  - Improvement in safe behavior (e.g., greater use of personal protective equipment)
  - Increased knowledge following safety training
  - Increased number of hazards identified
  - Reduction in hazard levels (e.g., monitoring noise levels)
  - Fewer injured workers or claims
  - Fewer 'near misses'

## Safety and Health Training Do's and Don'ts

<u>DO's</u>	<u>DON'TS</u>
<p><b>DO</b> ensure that supervisors and managers attend training sessions. This is essential for building an organizational commitment to safety and health training.</p>	<p><b>DON'T</b> preach what you don't practice. Consider the message sent to a worker if management says "We don't have time or money for safety training."</p>
<p><b>DO</b> ensure that employees are actively involved in the training. Real-life experiences can significantly improve understanding of the training, and employees can incorporate the behavior into day-to-day work practices.</p>	<p><b>DON'T</b> forget that training without the connection to practical experience is rarely helpful. Did you learn how to drive a car from a driver's manual?</p>
<p><b>DO</b> ensure that training reinforces safe behavior. This is often the most effective way to change behavior.</p>	<p><b>DON'T</b> provide training that focuses on avoiding unsafe acts. Focusing on what to avoid does not necessarily convey the correct action to take.</p>
<p><b>DO</b> offer training that targets the workers and their specific job tasks.</p>	<p><b>DON'T</b> provide training with low practicality. This demonstrates a confused organizational focus.</p>
<p><b>DO</b> evaluate your training program regularly to ensure that it's clear and understandable and results in safer behaviors. Seek feedback from employees to evaluate the effectiveness of your programs. Use results from the evaluation to modify and enhance your training program.</p>	<p><b>DON'T</b> assume that all training is effective. Often, a careful evaluation will reveal flaws in the training.</p>
<p><b>DO</b> provide training with repetition. To change behavior, training must be repeated.</p>	<p><b>DON'T</b> assume that you'll see immediate results. One-time training is unlikely to change behavior. Practice makes perfect!</p>

## **Where can I get more information?**

A guide for safety and health programs in small business is available through the National Institute for Occupational Safety and Health (NIOSH). It is entitled "Safety and Health Resource Guide for Small Business" (Document number 2000-148) and is available by calling 1-800-35-NIOSH.

Other training materials such as videos are loaned free of charge at [www.LNI.wa.gov/wisha/videocat/index.htm](http://www.LNI.wa.gov/wisha/videocat/index.htm).

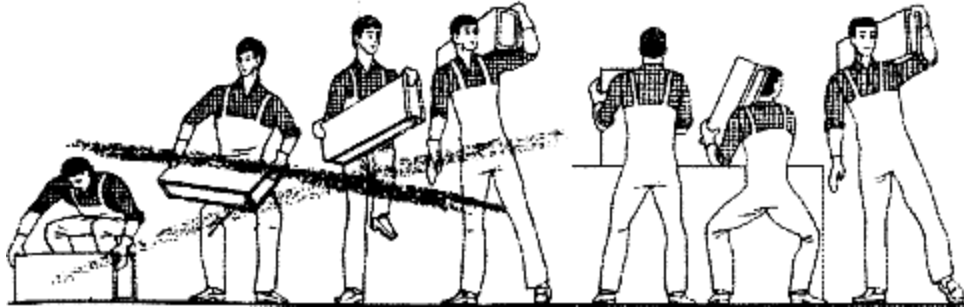
The following is a helpful website for learning about available training courses. Included is a lending library for training videos: [www.wa.gov/LNI/home/training.htm](http://www.wa.gov/LNI/home/training.htm).

A simple way to identify the hazards and get guidance on the minimum safety and health needs for your workplace is to call a Washington Industrial Safety and Health Act (WISHA) Consultant. Consultants work with employers to improve safety and health in the workplace. Call WISHA at 1-800-4-BE-SAFE for more information.

Your trade association may also have health and safety consultants who can help you find and fix hazards in your workplace.



## Module 4. Preventing Injuries from Manual Handling and Repetitive Motion



### What are “manual handling” and “repetitive motion” activities?

“**Manual handling**” is any activity that requires the use of force to lift, lower, push, pull, carry or otherwise move or hold an object or load.

“**Repetitive motion**” is any movement that is repeated with little or no variation every few seconds.

### Why are injuries related to manual handling and repetitive motion so important?

Injuries related to manual handling result from overexertion or frequent physical effort when handling loads. Injuries related to repetitive motion are influenced by how often the movement is repeated, the speed of the movement, the muscles involved, and the force required to perform the movement. Injuries from manual handling and repetitive motion can increase the rate of absenteeism among workers, increase workers’ compensation claims and costs, and negatively affect productivity.

In 1999, there were 696 accepted Washington state fund (workers’ compensation) claims in the food processing industry for work-related musculoskeletal disorders (non-traumatic) of the neck, back and upper extremity. These injuries resulted in over \$3 million in direct costs and involved a total of 19,643 lost work days.

### What causes injuries related to manual handling and repetitive motion?

The most common injuries to the back and neck may be caused by:

- handling heavy loads

- frequent and repetitive lifting
- handling loads that are difficult or awkward to grip because of their size and shape
- awkward postures while lifting, such as twisting, bending, or reaching
- slipping on greasy or wet floors
- extreme bending of the neck or back for long duration

The most common injuries to the hands, wrists, arms and shoulders may be caused by:

- repetitive movements with the arms raised above shoulder height
- over-reaching and awkward shoulder movements combined with load handling or forceful movements
- static postures (i.e., holding an object in a fixed position for a long time)
- forceful twisting motions
- highly repetitive hand movements performed for long periods of time
- repetitive hand motions with awkward wrist postures or significant grip force

## **How can I prevent injuries related to manual handling and repetitive motion?**

You can take the following steps to prevent these injuries:

- Reduce physical exertion of the hands, arms, and shoulders.
- Reduce excessive gripping force.
- Design and organize the workplace to make manual handling easier.
- Provide lifting and handling equipment.
- Use safe techniques when handling loads.
- Provide training in manual handling skills.

### **...Reduce physical exertion**

- Provide powered tools whenever possible. For example, replace manual screwdrivers with powered models.
- Organize workstation layout to eliminate or minimize unnecessary hand and arm motions, as well as awkward postures. With neutral postures and low hand force, the hand and arm can tolerate more repetitive work.
- Reduce the speed of the movement required for the job. Allow self-pacing as much as possible and allow for frequent rest pauses.
- Rotate job tasks so workers use different movements and muscle groups.



### **...Reduce excessive gripping force**

- Use fixtures or jigs to hold products, parts, or tools.
- Use a 'power grip' when handling tools or parts (i.e., grip with the whole hand, or grip with all four fingers instead of one or two fingers).
- Minimize the use of a 'pinch grip' (i.e., gripping with the fingertips).
- Reduce the weight handled in each hand by using two hands or equipment such as slides or rollers.

### **...Design and organize the workplace**

- Store loads at an appropriate height. Keep loads off the floor. If possible, store the load below shoulder height and at a height near the worker's center of gravity to make the object easier to pick up. Heavier objects should be stored between chest and knuckle height. Lighter objects can be stored above chest height and medium weight objects can be stored below knuckle height.
- Reduce the weight of the load. Share the load between two or more persons, split the load into two or more smaller boxes, or make more than one trip.
- Keep the work area free of clutter. Cluttered workspaces can cause awkward postures that make handling tasks more difficult. Remove trip hazards from the area, and eliminate obstacles that workers must reach over to handle a load.
- Rotate job tasks. Whenever possible, avoid situations where workers must perform manual handling for an entire day. Rotate job tasks so workers use different movements and muscle groups.
- Design work areas and tools to accommodate the size of the worker. Adjust work heights to:
  - promote neutral wrist postures (i.e., straighter wrists)
  - reduce working with the back bent
  - keep the elbows close to the body

### **...Provide lifting and handling equipment**

- Use lifting tables to raise a heavy load to an appropriate height.



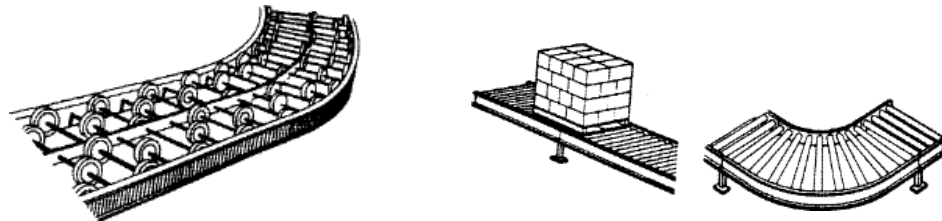


One company we visited implemented a new processing line. The new line allowed workers to adjust their workstation height and to rotate between tasks while staying at their workstation. According to the manager, the employee turnover on this line “*Dropped incredibly.*”

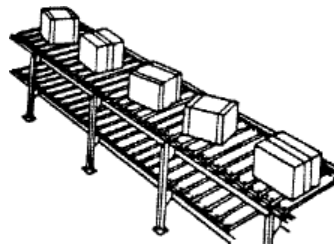


Another company we visited used scissors lifts for raising product that was on pallets to workers who were loading a processing line. This greatly reduced lifting exposures to the back and shoulder.

- Use conveyor belts and rollers to ease the task of moving heavy or bulky loads. Place conveyors at an appropriate height for the worker.



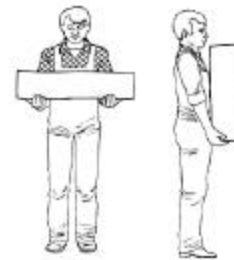
- Inclined conveyors work well in one direction of movement and allow gravity to do the work.



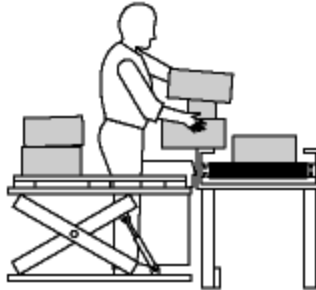
- Use forklifts to move extremely heavy loads, or when moving loads to different heights.

### **...Use safe techniques when handling loads**

- Keep the load close to the body and between shoulder and knuckle height.
- Whenever possible, put handles on loads to provide better gripping. Handles should be placed to minimize bending of the wrists.



- Avoid twisting. Back injuries frequently occur when someone is lifting a load while twisting.



- Reduce the bending needed to lift objects. Use a pneumatic lift or lift table to raise the height of a load on a pallet to the height of a conveyor or work surface. Move the pallet higher and closer to the load destination.

### **...Provide training in manual handling skills**

- Reinforce the importance of proper handling techniques.
- Provide reminders or refresher training periodically.
- Have workers demonstrate proper manual handling techniques.

## **Where can I get more information?**

Washington State Department of Labor and Industries' WISHA Ergonomics web site:  
[www.LNI.wa.gov/wisha/ergo/](http://www.LNI.wa.gov/wisha/ergo/)

The European Agency for Safety and Health at Work's Good Practice web site:  
[http://europe.osha.eu.int/good\\_practice/](http://europe.osha.eu.int/good_practice/)

The Occupational Safety and Health Administration's (OSHA) Ergonomics web site:  
[www.osha-slc.gov/SLTC/ergonomics/](http://www.osha-slc.gov/SLTC/ergonomics/)

Ergo Web: [www.ergoweb.com/](http://www.ergoweb.com/)

The National Institute for Occupational Safety and Health's (NIOSH) Ergonomics and Musculoskeletal Disorders web site: [www.cdc.gov/niosh/ergopage.html](http://www.cdc.gov/niosh/ergopage.html)



## Module 5. Preventing Slips in Your Workplace



**This worker didn't *stand* a chance against the banana peel.**

### Why should I be concerned about slips?

Slips in the food processing industry are a serious problem. In Washington state, there are approximately 340 workers' compensation claims accepted each year for slip and trip injuries in the food processing industry. On average, each claim costs \$4,600. The average work-time lost for each of these injuries is 35 days. Can you or your workers afford this?

### How do I control slips in the workplace?

There are three important ways to prevent these types of incidents:

- Keep walking surfaces free of slippery materials (water, grease, flour, debris, etc.).
- Ensure that walking surfaces provide enough friction for the slippery materials in your workplace.
- Encourage workers to wear slip-resistant shoes or boots.

#### **...Keep slippery materials off floors**

Many materials used in the processing of food are inherently slippery. Some of the materials are water, oil/grease, animal parts, and flour. Keeping them off the floor is of primary importance in the prevention of slips. Tips include:

- Provide properly placed waste containers.
- Place catch basins beneath processes that are periodically cleaned out or have operating drains.
- Routinely hose, sweep, mop or "squeegee" floors to remove materials.

### Keep in mind...

- Wet floors can be slippery and could temporarily pose a hazard to your workers.

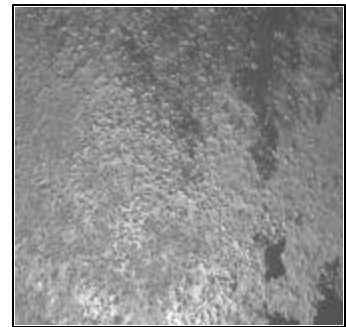
### ...Improve walking surfaces



One food processing facility used to have smooth floors throughout their lines, but because of worker safety concerns, they changed their floors to a rough concrete surface. A manager at the plant said, *"Our workers' safety is number one for us. Yes, we do pay a price for sanitizing those floors, but for us, it's worth it."*



There are several different types of flooring material that can be used to increase the amount of friction between workers' feet and the floor. One company that processes animal parts commented on their textured epoxy pour-down floor (pictured on the right) that it is, *"Totally cool and awesome, it's incredibly slip-resistant, really durable, and a snap to sanitize."*

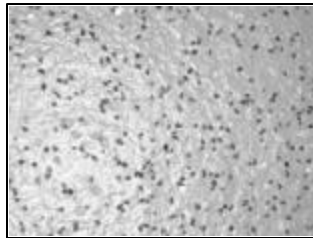


Careful thought should be put into decisions to alter walking and working surfaces. A balance should be found between providing enough friction to prevent slipping and the floors' ability to be sanitized.

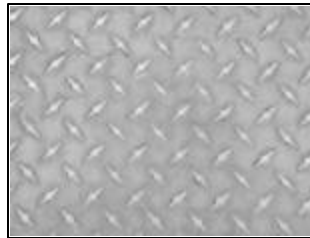
Some popular walking/working surface options include slip-resistant quarry tiles, painted epoxy floors with grit, slip-resistant sheet vinyl flooring, steel deck panels, metal and plastic grates, and slip-resistant floor mats. Examples of some of these are shown below.



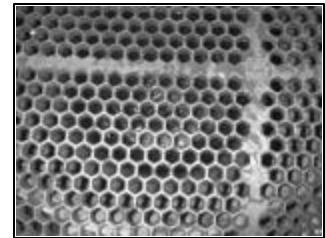
**Quarry tiles**



**Sheet vinyl**



**Steel deck panel**



**Rubber mat**

### Keep in mind:

- Some of these floor surfaces may be more difficult to sanitize and may require more physically or chemically rigorous methods to keep them free of dirt, grease and microorganisms.
- The permanent flooring solutions (tile, epoxy, and sheet vinyl) may be expensive up-front, but could pay back in a reduction in pay-outs from workers' compensation claims.
- Some flooring materials may lose their slip-resistance over time due to grease build-up or breakdown of the surface grit.



### ...Use slip-resistant footwear

Using a shoe or boot with a slip-resistant sole may reduce the likelihood of slipping. One employer co-paid employees for slip-resistant shoes and boots and was able to eliminate injuries from slips. This type of footwear can be a “quick and easy” fix, but should **not** be used in place of proper housekeeping and appropriate working surfaces.

#### Keep in mind:

- If shoes or boots are not kept clean, grease or other material may build up on the tread and reduce the shoes' effectiveness.
- Slip-resistant soles may not be effective when the slip hazard is due to solid materials such as banana peels, thick layers of flour, etc.
- By only relying on slip-resistant footwear, the hazard still exists. In addition, if people (employees, contractors, or visitors) do not use the footwear, they may slip and cost the company money.

## Hierarchy of controls

You may have noticed that in the not-so-funny comic strip on the front of this module, if the worker had been wearing slip-resistant shoes, he would have still slipped. He also may have slipped if the flooring material was slip-resistant. The only way to prevent that slip would have been to prevent the banana peel from hitting the floor or by removing it before he slipped on it. The first goal in preventing slips is to eliminate the hazard (i.e., keep the peel off the floor). If that can't be done, then try to reduce the hazard in a way that doesn't require much human effort (e.g., use slip-resistant flooring). If this can't be done, then the last line of defense is to give the worker something that can help them prevent an incident from occurring (e.g., slip-resistant shoes/boots).

## Where can I get more information?

Local commercial and industrial flooring suppliers and installers.

Safety supply companies (shoes, mats, grates, etc).

"Preventing Injuries from Slips, Trips and Falls", National Institute for Occupational Safety and Health at [www.cdc.gov/niosh/nasd/docs/as04200.html](http://www.cdc.gov/niosh/nasd/docs/as04200.html), or call 1-800-35-NIOSH.

"Slips and trips: Guidance for the food processing industry", Health and Safety Executive, HS(G) 156, ISBN 0 7176 0832 8, or at [www.hsebooks.co.uk/homepage.html](http://www.hsebooks.co.uk/homepage.html). Telephone: 011-44-1787-881165, fax: 011-44-1787-313995, or contact SHARP at 1-888-66-SHARP (1-888-667-4277).





# Module 6. Controlling Noise

Occupational hearing loss is common in workers, managers and supervisors or anyone exposed to significant noise in the workplace. Occupational hearing loss is preventable by controlling the intensity and/or duration of noise exposure in the workplace. If any of your workers are exposed to noise at an average of 85 decibels (dBA) or more, over the course of the workday, you need a hearing loss prevention program. A simple rule of thumb is that: If you have to shout to a co-worker standing a foot away from you in order to be heard, then you may need a hearing loss prevention program.

## Why is occupational hearing loss so important?

Excessive noise is a common problem in the food processing industry. Noise can originate from machinery (e.g., conveyor belts, vibrating tables, pneumatic systems and trucks), product, and other workers. Most hearing loss is due to exposures during the first five years of employment. From 1994 to 1999, the food processing industry had over 200 workers' compensation claims for occupational hearing loss. The average cost was \$10,000 per claim.

## How can I prevent occupational hearing loss?

Decrease the amount of noise reaching the workers' ears by using:

- Engineering controls
- Administrative controls
- Personal protective equipment

### ...Engineering controls

The use of engineering controls may reduce noise levels enough so that expensive and time consuming hearing conservation programs may not be required.

Tips for generating less noise include:



- Turn off noisy machinery when not in use. One company decreased the amount of time a vibrating table was used by using a sensor that detected when product was on the table. This simple fix decreased the workers' duration of noise exposure.
- Place vibrating equipment on mounts to decrease noise exposure.
- Replace metal or glass components with plastic. Glass containers or cans striking each other or metal surfaces create a lot of noise.

Some suggestions for interrupting the path of noise include:



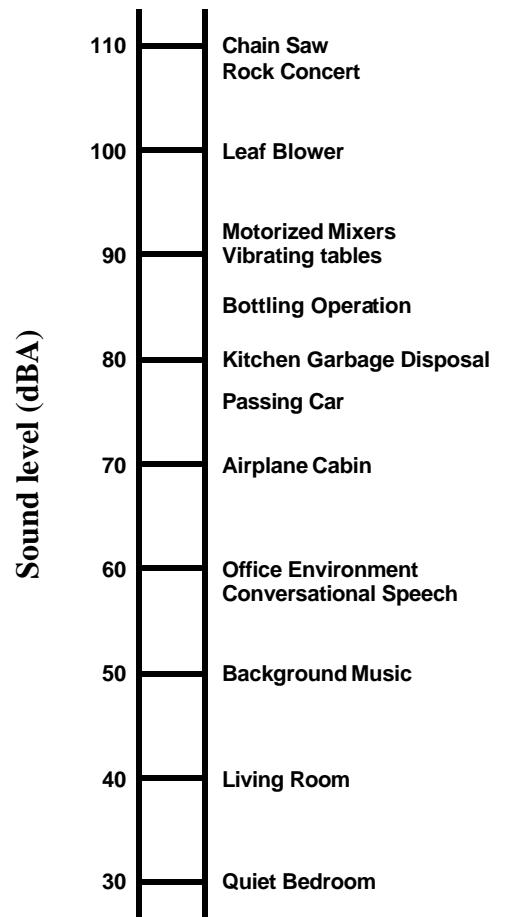
- Isolate or enclose the part of the machine generating the noise. Some food processors are able to partially enclose bottling lines to create an acoustic barrier for noise exposure.
- Utilize enclosed booths designed to reduce exposure to noise.
- Cover walls with sound absorbing materials to dampen the reverberation of noise.

### ...Administrative controls

- Change the work schedule or operations to reduce noise exposure.
- Schedule workers to minimize their time in a noisy environment.
- Limit the number of workers assigned to noisy tasks.
- Implement a “buy quiet policy”, where limiting noise exposure is considered in the purchase of new equipment or facility redesign.
- Evaluate your hearing conservation program’s effectiveness. Review and track audiometric data, the location of workers in the facility, and noise levels in the facility.
- Lead by example. Managers and supervisors should wear hearing protection along with production workers.

### ...Personal protective equipment

- Supply workers with the correct hearing protection.
- Ensure that workers wear their hearing protection, and wear it correctly.



## Where can I get more information?

### Hearing protection:

The National Institute of Occupational Safety and Health's (NIOSH) website has a dedicated section on noise. This is available at [www.cdc.gov/niosh/noise/pg.html](http://www.cdc.gov/niosh/noise/pg.html). This web site provides information regarding hearing protection programs as well as engineering and administrative controls.

The ‘NIOSH Compendium of Hearing Protection Devices’ describes the types of hearing protection used and needed for protection. It is available at the NIOSH web site at [www.cdc.gov/niosh](http://www.cdc.gov/niosh), or by calling 1-800-35-NIOSH.

Often companies that perform hearing tests also provide individual worker training and have a wide range of hearing protection devices. Remember, the best hearing protection is the one that the worker will wear.

**Noise exposure:**

Washington State Regulations regarding noise exposure are at [www.LNI.wa.gov/wisha/p-ts/NoiseHearing/default.htm](http://www.LNI.wa.gov/wisha/p-ts/NoiseHearing/default.htm).

The National Hearing Conservation Association is an organization dedicated to preventing hearing loss. The web page is [www.hearingconservation.org/](http://www.hearingconservation.org/).

**Controlling noise:**

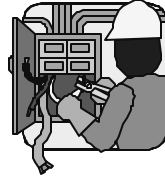
Specific information on engineering controls is available at [www.cdc.gov/niosh/noise/pg.html](http://www.cdc.gov/niosh/noise/pg.html) under "Industrial Noise Control Manual."

The criteria for the Occupational Noise Exposure Standard, including a workplace hearing protection program is at [www.cdc.gov/niosh/98-126.html](http://www.cdc.gov/niosh/98-126.html). "A Practical Guide to Preventing Hearing Loss" is also available at this site.



# Module 7. Developing a Lock-Out/Tag-Out Program

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Lock-out/tag-out refers to the placement of locks and/or tags on machinery or machinery controls to prevent the machine from operating. By locking-out the energy source(s) to the machine or controls, workers can safely complete job tasks without being exposed to a hazard due to inadvertent starting of equipment. Locking-out a piece of equipment is generally more effective at protecting workers from unexpected machine operation than is tagging it out. A lock physically prevents the machine from being turned-on, whereas a tag is tied on with a string.

## Why is lock-out/tag-out so important?

Between 1982 and 1997, the National Institute for Occupational Safety and Health (NIOSH) investigated 152 work-related fatalities involving the installation, maintenance, or repair of machines or equipment. These fatalities could have been prevented if comprehensive lock-out/tag-out procedures had been implemented and followed. Packaging and wrapping equipment and conveyors account for a high proportion of the accidents. Typical non-fatal injuries include fractures, lacerations, contusions, amputations, and puncture wounds. For that same time period, the average lost-time for these injuries was 24 days.

## Successful strategies observed in food processing facilities:

Lock-out/tag-out is the key to preventing traumatic injury. All companies **must** ensure that effective lock-out/tag-out procedures are implemented at their facility.



- At one food processing plant, the senior manager stated that, “*The maintenance supervisor is almost fanatical in his demands to have all their equipment properly locked before anyone works on the machines.*” A worker at this company had an amputation injury in the past.



- One company had a very good written lock-out procedure that was continuously reviewed and updated. The facility had written lock-out descriptions on each piece of equipment that included where and how to lock-out the system.



- Another company had a unique lock-out process. The first person to lock-out the device became the custodian of the lock-out. It was this person's responsibility to ensure that all ways to start the machine were locked out. Each additional worker added their own lock to the lock-out process. This technique provided a second 'check point' before work started.



- One company that used bandsaws to cut their frozen product had purchased saws without lock-out features. Recognizing this as a hazard, the company's engineering department drilled a hole in the casing of each saw so a lock could be used to prevent accidental operation of the unit.



- Another company placed laminated labels on each piece of equipment that required lock-out. This strategy not only protects the labels from damage but is also less expensive than buying individual painted labels.

The examples described above are excellent approaches to implementing effective lock-out procedures.

## How do I develop a lock-out/tag-out program?

Several steps are important in developing a lock-out/tag-out program. Some suggestions include:

- Identify and label all sources of energy to the machine.
- Make sure that there are processes in place to de-energize, isolate, block, and/or dissipate all forms of energy to the machine.
- Verify that all energy sources are de-energized. **Verification should be part of the process and can be done by test and/or observation.**
- Establish lockout/tag-out protocols that:
  - Require workers to secure the controls that start the machine with their own individually assigned locks and keys—**there must be only one key per lock!**
  - Require that each **lock** is clearly labeled with durable tags to identify the worker assigned to the lock.
  - Ensure that the worker who installs a lock also removes it when the work has been completed.
  - If work is not completed by the end of a shift, the workers arriving on the next shift should apply their locks 1) before the departing workers remove their locks, and 2) before work begins.
- Inspect repair work before reactivating the equipment.
- Make sure that all workers are clear of danger points before activating the machine.
- Train **all** workers in the basic concepts of your lock-out/tag-out system.

## Where can I get more information?

Washington state's workplace safety and health regulations can be accessed from the Department of Labor and Industries' web site at [www.LNI.wa.gov](http://www.LNI.wa.gov). See the Washington Administrative Codes (WAC):

- WAC 296-24-110 The control of hazardous energy (lockout/tagout).

The Department of Labor and Industries has a video library. Videos are available at the WISHA web site: [www.LNI.wa.gov/wisha/videocat/index.htm](http://www.LNI.wa.gov/wisha/videocat/index.htm). To book a video by telephone, call (360) 902-5444, or toll free 1-800-574-9881. There are many videos available for loan, including:

- V0733 Lockout For Life!
- V0315 Lockout Tagout
- V0094 Lockout Tagout Procedures
- V0843 Lockout Tagout Safety
- V0502 Lockout/Tagout: A Life Is On The Line
- V0448 Lockout/Tagout: Controlling Hazardous Energy
- V0734 Lockout/Tagout: Controlling The Beast (closed captioned)
- V0455 Lockout/Tagout: Just Do It
- V0370 Lockout/Tagout: The Basics





# Module 8. Using Machine Guarding

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## Why is machine guarding important?

Any moving machine part that may cause injury **must** be safeguarded. The hazard must be either controlled or eliminated. Machinery-related injuries are often severe, causing crushed hands and arms, severed fingers, blindness, and death. Proper guarding from machine hazards is essential to protect workers from needless and preventable injuries.

Dangerous moving parts that need safeguarding fall into three basic categories:





- Point of operation: The point at which work is performed on the material, such as cutting, shaping, boring, or forming of stock.
- Power transmission: Any system that transmits energy to the machine part performing the work. These components include flywheels, pulleys, belts, connecting rods, couplings, cams, spindles, chains, cranks, and gears.
- Moving parts: Parts of a machine that move while the machine is working. These can include reciprocating, rotating, and transverse moving parts, as well as feed mechanisms and auxiliary parts.

In order to protect workers from mechanical hazards, safeguards must meet the following minimum general requirements:

- Prevent contact between the worker and the machine. Safeguards must minimize the possibility of workers placing their hands or other body parts into the moving parts of the machine.
- Ensure all guarding is secure. Guards should be designed so that they are not easily tampered with or removed.
- Protect moving parts from falling objects. Safeguards should ensure that no objects can fall into machinery.
- Create no new hazard. A safeguard defeats its purpose if it creates a hazard of its own.

- Create no interference. A safeguard should not create an unacceptable impediment for the worker.
- Allow safe lubrication of the machine. It should be possible to lubricate the machine without removing the safeguard.

## Successful strategies observed in food processing facilities:

-  While visiting various work sites, the best machine guarding applications were attached to new equipment, in which the guarding was developed and applied by the manufacturer.
-  One company's 50 year-old food processing equipment originally had no guarding. Consequently, the company fabricated their own guards after reviewing current equipment designs and regulations.
-  Another company was continually searching for improved guarding. They looked at interlock features to prevent access to the machine while it was running. They also built guards at the feed-end of the machine to prevent hands from entering.
-  One company recently replaced one of three identical processing lines with a new line. The new unit has a cover over much of the moving mechanisms. This solution not only provides machine guarding, but also reduces the noise emitted by the equipment.

## How can I prevent machine-related hazards?

- Learn how various methods of machine guarding protect employees.
- Learn the regulatory requirements for machine safeguarding.
- Identify and categorize the mechanical hazards at your facility. Develop a list of those hazards and their locations.
- Match the hazards with the safeguards that your facility uses.
- If the safeguards do not meet the minimum general requirements listed in this module, upgrade your machine guarding systems as soon as possible. If the hazard is severe enough, you may need to shut down the machine until appropriate safeguards can be put into place.
- When purchasing new equipment, ensure that the manufacturer provides appropriate machine guards.
- Contact the manufacturer when purchasing or retrofitting used equipment. The manufacturer should visit your operation to review machine-guarding needs.
- Train and educate all employees about machine guarding. Specific and detailed training is a crucial part of any effort to protect workers from machine-related hazards. This training should:
  - Describe and identify the hazards associated with particular machines.
  - Describe how the safeguards provide protection.
  - Demonstrate how to use the safeguards.

- Indicate how and under what circumstances safeguards can be removed, and by whom (in most cases, repair or maintenance personnel only).
- Describe what to do (e.g., contact the supervisor) if a safeguard is damaged, missing, or unable to provide adequate protection.

## **Where can I get more information?**

Washington state's workplace safety and health regulations can be accessed from the Department of Labor and Industries' web site [www.LNI.wa.gov](http://www.LNI.wa.gov). See the Washington Administrative Code (WAC):

- WAC 296-24-150 Machinery and Machine Guarding -- General Requirements

The Department of Labor and Industries has a video library. Videos are available at the WISHA web site: [www.LNI.wa.gov/wisha/videocat/index.htm](http://www.LNI.wa.gov/wisha/videocat/index.htm). To book a video by telephone, call (360) 902-5444, or toll free 1-800-574-9881. Videos available for loan include:

- V0252 Machine Guarding
- V0402 Machine Guarding

Contact the machine manufacturer for information about guards and retrofitting.



# Module 9. Developing a Confined Space Program

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## Why should I be concerned about confined space entry?

There are many confined spaces in the food processing industry. Typical examples are silos, tanks, mixing vats, and storage bins. Fatalities in confined spaces constitute a recurring occupational tragedy. According to the National Institute for Occupational Safety and Health (NIOSH), approximately 70 workers die in confined spaces each year. Many of these deaths occurred during a rescue attempt. All could have been prevented if appropriate procedures had been used.

## How do I know if I have confined space hazards?

Recognition is the first step in preventing fatalities. Review the spaces in your facility. Does the space have the following three features? If you answer yes, then it is a confined space.

- Limited means of entry or exit (e.g., only one way out).
- Large enough that a person can enter.
- Not designed to have people continuously in the space (e.g., elevator shaft, pit).

Next, ask yourself if the space has any of these potential hazards:

- Hazardous atmospheres (lack of oxygen, hazardous air contaminants, etc.).
- Unexpected power sources (inadvertent ways for equipment to be started).
- Physical barriers or limitations to movement (including exit and entry).
- Instability of stored product.
- Mechanical or electrical hazards.
- Other recognized serious safety or health hazards.

There are three types of confined spaces:

- Permit-required confined space.
- Alternative procedures permit-required confined space.
- Non-permit required confined space.



Each type of confined space has different safety and regulatory requirements. Consult the Washington Industrial Safety and Health Act (WISHA) standards for the regulatory requirements.

Examples of Permit Required Confined Spaces include tanks filled with product, a vat with an unlocked agitator, a storage bin filled with granular product, or an empty silo that may have stagnant or hazardous air inside. Most confined space entries occur during clean-up and maintenance procedures.

**TAKE NOTE !**

**With careful planning, a Permit Required Confined Space can be converted to an Alternative Permit Confined Space or to a Non-Permit Confined Space (see WISHA rules).**

### **Successful strategies observed at food processing facilities:**

-  • One company had a very comprehensive confined space program. An individual was assigned to manage the confined spaces in the operation. All confined spaces were identified and an entry process was written for each space. The company kept a manual for each of their confined space entry requirements, rescue equipment was available, and periodic rescue drills were conducted. The company demonstrated that they could effectively manage confined space entries.
-  • Another company purchased a computer program for confined space management. The program defines the requirements of each confined space, provides photographic capability to clearly identify each space and its characteristics, and lists the people qualified and trained to enter those spaces. The program also integrates other requirements into the entry process including lock-out, hot-work permits, and testing of air quality. The program generates a detailed entry permit only if all requirements are met.

### **How can I prevent confined space problems?**

- Evaluate the workplace to determine if you have confined spaces.
- Take measures to prevent workers from entering confined spaces.
- Label all confined spaces with a sign or other notation.
- Write a detailed entry process for employees who need to enter a confined space.
- Train workers to recognize what constitutes a confined space, and the hazards they may encounter while entering or working in a confined space.
- **Test all confined spaces before entry** to determine whether the atmosphere is safe. Testing should be performed by a trained and knowledgeable person.
- Evaluate confined spaces for the following:
  - Oxygen level, flammability and known or suspected toxic substances.
  - Methods for isolating the space - either by mechanical or electrical means (i.e., double block and bleed, lock-out, etc.).

- Ventilation of the space.
- Work procedures, including use of safety lines attached to the person working in the confined space.
- Personal protective equipment required (clothing, respirator, boots, etc.).
- Assign a person to remain outside of the confined space. This person's role is to monitor conditions, tell entrants to leave whenever unsafe conditions arise, prevent unauthorized entry, and call rescue when needed. The assigned person stays outside of the confined space and is equipped with rescue equipment including a safety line attached to the worker in the confined space, self-contained breathing apparatus, protective clothing, boots, etc.
- Define rescue procedures **before** entry. The best plan is to rescue a worker without entering the confined space. A rescue team or service is needed for all Permit Required Confined Space Entries. The rescue team or service must practice frequently to become efficient and remain calm during an emergency.
- Continuously monitor the space to determine whether the conditions have changed due to the work being performed.

## Where can I get more information?

Washington State Administrative Codes (WAC) can be obtained from the Department of Labor and Industries' web site: [www.LNI.wa.gov](http://www.LNI.wa.gov).

- WAC 296-62-141 Permit-required confined spaces.

Worker Deaths in Confined Spaces: A Summary of NIOSH Surveillance and Investigative Findings. DHHS (NIOSH) Publication No. 94-103. January, 1994. Call 1-800-35-NIOSH to order a publication.

Occupational Safety and Health Administration (OSHA) web site:  
[www.osha-slc.gov/SLTC/confinedspaces/index.html](http://www.osha-slc.gov/SLTC/confinedspaces/index.html).

The Department of Labor and Industries has a video library. Videos are available at the WISHA web site: [www.LNI.wa.gov/wisha/videocat/index.htm](http://www.LNI.wa.gov/wisha/videocat/index.htm). To book a video by telephone, call (360) 902-5444, or toll free 1-800-574-9881. Many videos are available for loan, including:

- V0473 Confined Space: Air Monitoring
- V0495 Confined Space Case Histories
- V0190 Confined Space Entry (Final Rule)
- V0640 Confined Space: Non-Entry Rescue (Closed Captioned)
- V0698 Confined Space Hotwork: Checklist To Safety
- V0189 Confined Space Safety
- V0415 Confined Space: Using Chemicals
- V0177 Confined Spaces Deadly Spaces
- V0395 Confined Spaces: Your Training





# Module 10. Implementing Fall Prevention



## Why is fall prevention so important?

Each year, over 100,000 injuries and deaths are attributable to work-related falls in the United States. According to the National Safety Council, falls are one of the most common causes of death in the workplace. In addition to the lost lives and injuries caused by falls, businesses lose millions of dollars each year from significant increases in insurance premiums, workers' compensation claims, product liability costs, and other related expenses.

### **REMEMBER !**

A comprehensive fall prevention program not only saves lives and reduces injuries, but also saves money and makes good business sense!

The employer is responsible for developing a fall prevention program that complies with mandated regulations. The most effective programs are those in which employers work closely with their workers to identify fall hazards.

## How do I develop and implement a fall prevention program?

- Identify all fall hazards in the workplace. In general, a fall hazard exists any time a worker is at a height greater than four feet.
- Identify control options. There are two acceptable control options for fall hazards:
  - Eliminate the hazard (the best solution).
  - Provide protection against the hazard (such as using fall protection equipment).




- Develop a written program that specifies how to deal with each fall hazard.
- Develop a written fall prevention/protection plan that outlines all fall hazards and identifies the steps needed to eliminate or reduce each hazard.
- Identify each step involved with each task for each job.
- Train all workers on the proper use of fall protection equipment. Workers must be trained so they can:
  - Identify potential fall hazards.
  - Determine which fall protection methods are needed for the specific work environments.
  - Demonstrate knowledge of proper anchoring procedures, if needed.
  - Inspect and maintain fall protection equipment.
  - Wear fall protection equipment properly.

A fall prevention program must be viewed as a system that begins with hazard identification and ends with ongoing management review. Ideally, the choice of a prevention system will be one that removes the risk of falling entirely.

**REMEMBER !**

It is preferable to provide a fixed barrier to prevent a worker from falling, rather than relying on personal protective equipment (e.g., safety harness and lifeline)!

### Successful strategies observed at food processing facilities:

- 
  - At one company, there was a large opening in the side of the wall on the second floor level of a box-making operation. The opening allowed for a forklift (located on the first floor) to deliver and receive box materials to the second floor. The opening created a fall hazard for the workers on the second floor level (an open-sided fall hazard). To prevent falls, the company installed a rolling gate that could be closed by either the forklift operators or by the workers on the second floor. They used a simple rope mechanism that the operators could pull to close the gate. The Healthy Workplace site visit team suggested that a simple electronic gate-opening and closing device would ensure that the gate was closed. The manual method could remain in place in case of a power failure or mechanical failure.
- 
  - In another company, the maintenance workers had both conventional ladders and rolling ladders available. Rolling ladders had handrails on the sides and the top. The top had a platform for standing. The rolling ladder had become the ladder of choice by the maintenance staff. By providing a selection of ladders, the workers could choose the best and safest tool for the job.
- 
  - Several companies had good fall prevention/fall protection programs and written plans in place. One company had a fall protection kit that contained the required personal protection equipment for work or maintenance situations with potential fall hazards.

## Types of fall prevention/fall protection systems:

Most fall prevention systems can be categorized as follows:

- Hazard elimination, including:
  - Surface protection (non-slip flooring).
  - Fixed barriers (handrails, guardrails).
  - Surface opening protection (removable covers, guardrails).
- Hazard protection, including:
  - Travel restraint systems (safety line and belt).
  - Fall arrest systems (safety line, a full body harness and anchor point).
  - Fall containment systems (safety nets).
  - Anchorage points (tie-off points). Anchorage points are one of the most important but least understood part of a fall protection system. Anchorage points have well-defined criteria that should be followed. See the Washington Administrative Codes (WAC) for more information about anchorage points.

## Where can I get more information?

Washington state's workplace safety and health regulations can be accessed from the Department of Labor and Industries' web site at [www.LNI.wa.gov/wisha](http://www.LNI.wa.gov/wisha). See the Washington Administrative Codes (WAC):

- WAC 296-24-75007(1) Fall Protection in General Industry.
- WAC 296-24-07501(1)(a). General Requirements/personal protective equipment.
- WAC 296-24-14513 Anchor Installations.
- WAC 296-24-75003 Floor openings.
- WAC 296-24-75011 Specifications for guardrails.

See the Washington Regional Directive (WRD):

- WRD84-11 Fall Protection General Industry.

The Department of Labor and Industries has a video library. Videos are available at the WISHA web site: [www.LNI.wa.gov/wisha/videocat/index.htm](http://www.LNI.wa.gov/wisha/videocat/index.htm). To book a video by telephone, call (360) 902-5444, or toll free 1-800-574-9881. Videos available for loan include:

- V0348 Fall Arrest Systems
- V0561 Fall Protection
- V0764 Fall Protection and Prevention
- V0562 Fall Protection Taking Control
- V0157 Fall Protection Training
- V0409 Fall Protection: The Basics



# Module 11. Working Safely with Forklifts

## Why should I be concerned about forklift safety?

Forklifts are widely used in the food processing industry. They are used to receive and transport raw materials, transfer products to different locations within the facility, and to load trucks. However, incorrectly operated and maintained forklifts can pose a serious hazard to both the operator and other workers in the facility. There are two main types of hazard associated with forklifts:

- Physical hazards
- Carbon monoxide poisoning

### ...Physical hazards

According to the National Institute for Occupational Safety and Health (NIOSH), each year in the United States nearly 100 workers are killed and another 20,000 are seriously injured in forklift-related incidents. The three most common forklift-related fatalities involve: 1) forklift overturns, 2) workers on foot being struck by forklifts, and 3) workers falling from forklifts.

## How can forklift-related accidents and injuries be prevented?

It is your responsibility to ensure that your forklift operators are properly trained.

General guidelines include:

- Do not operate a forklift unless you have been trained on that specific model.
- Always use seatbelts; preferably those that have been installed or provided by the manufacturer.
- Set the parking brake, lower the forks or lifting carriage, and neutralize the controls when dismounting from a forklift.
- Report any damage or problems that occur to a forklift immediately.

Tips for driving safely include:

- Use extreme caution on grades or ramps.
- Operate forklifts at a speed that will permit it to be stopped safely.
- Slow down and sound the horn at all cross aisles and other locations where vision is obstructed.



- Look toward the travel path and keep a clear view of it. Travel in reverse if the load blocks your vision.
- Do not allow passengers to ride on forklifts unless a manufacturer-installed seat is provided.
- Do not drive forklifts up to anyone standing in front of a bench or other fixed object (the worker may not be able to get out of the way).



Load issues to consider include:

- Tilt the load back when on a grade and raise it only as far as needed to clear the road surface.
- Do not raise or lower forks while the forklift is moving.
- Do not handle loads that are heavier than the weight capacity of the forklift.

Personnel lift considerations include:

- Position the forklift beneath the overhead work area before raising workers to the work area.
- Secure the elevating platform to the lifting carriage whenever a forklift is used to elevate personnel. Secure all workers on the platform with a harness.
- Do not elevate workers who are standing on the forks.
- Do not drive the forklift to another location with the work platform elevated.

### **...Carbon monoxide (CO) poisoning**

Forklifts powered by fuels such as propane, natural gas, or gasoline produce exhaust emissions that can contain harmful levels of carbon monoxide (CO) and other substances (like nitrogen oxides). In Washington state, numerous near-fatal exposures to CO have been reported in food processing companies using forklifts in warehouses and freezers.

CO is a colorless, odorless, tasteless gas that decreases the blood's ability to carry oxygen to the tissues. Inhalation of CO may cause headache, nausea, dizziness, weakness, unconsciousness, and death. High concentrations may be rapidly fatal without producing significant warning symptoms.

### **How can I avoid CO poisoning?**

The most effective way to keep CO below harmful levels is to utilize one or more of the following controls:

- Where possible, substitute equipment that doesn't produce CO (e.g., electric forklifts).

- Ensure proper maintenance of forklifts to reduce emissions.
- Use and maintain catalytic converters on forklifts where applicable (the tuning of engines and installation of catalytic converters can reduce CO emissions).
- Install feedback fuel control systems to reduce emissions.
- Do not allow forklifts to idle while waiting to resume operations.
- Ensure proper ventilation of work areas.
- Use CO sensors or alarms and conduct periodic sampling of the work area for CO. Place the sensors or alarms where people are working and potentially exposed (i.e., not next to truck bays or doors that are open to outside air).
- Provide training to employees on the symptoms, sources, and prevention of CO poisoning.
- Do not use propane, gasoline, or natural gas fueled forklift trucks in enclosed areas, such as small unventilated rooms, cold storage units, truck trailers, or shipping containers.

**REMEMBER !**

Propane and natural gas-powered forklifts can produce hazardous CO levels --  
just like gasoline-powered models!

## Where can I get more information?

### Carbon monoxide issues:

“Carbon monoxide and nitrogen oxides from forklifts and other fueled equipment can create dangerous conditions”. WISHA Hazard Alert 96-2. October 1996. Available at [www.LNI.wa.gov/wisha/hazalerts/carbon.htm](http://www.LNI.wa.gov/wisha/hazalerts/carbon.htm), or call WISHA at 1-800-4-BE-SAFE.

### Physical hazards:

“Preventing Injuries and Deaths of Workers Who Operate or Work Near Forklifts”. NIOSH Alert [DHHS (NIOSH) Publication No. 2000–112a]. August 2000. Available at [www.cdc.gov/niosh/2000112a.html](http://www.cdc.gov/niosh/2000112a.html), or call 1-800-35-NIOSH (1-800-356-4674).

### Training and regulatory requirements:

WISHA has information on training and the Powered Industrial Truck Standard. Available at [www.LNI.wa.gov/wisha/topics/forklift.htm](http://www.LNI.wa.gov/wisha/topics/forklift.htm), or call WISHA at 1-800-4-BE-SAFE.

### Forklift maintenance:

Contact your forklift manufacturer for more information on maintenance and safe usage of your machine.





# General Resources

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## **State:**

### **Safety and Health Assessment and Research for Prevention (SHARP) Program**

Washington Department of Labor and Industries  
P.O. Box 44330  
Olympia, Washington 98504-4330  
1-888-66-SHARP (7-4266)  
(360) 902-5672 fax  
*web: [www.LNI.wa.gov/sharp](http://www.LNI.wa.gov/sharp)*

### **WISHA Services Division**

Washington Department of Labor and Industries  
P.O. Box 44600  
Olympia, Washington 98504-4600  
1-800-4 BE SAFE  
*web: [www.LNI.wa.gov/wisha](http://www.LNI.wa.gov/wisha)*

## **University:**

### **Field Research and Consultation Group**

University of Washington  
Department of Environmental Health  
4225 Roosevelt Way NE, Suite 100  
Seattle, Washington 98105-6099  
(206) 543-9711  
(206) 616-6241 fax  
*web: [depts.washington.edu/frcg](http://depts.washington.edu/frcg)*

### **Northwest Center for Occupational Health and Safety**

University of Washington  
Department of Environmental Health  
Box 357234  
Seattle, Washington 98195-7234  
(206) 685-3250  
(206) 616-0477 fax  
*web: [depts.washington.edu/envhlth](http://depts.washington.edu/envhlth)*

## **Federal:**

### **National Institute for Occupational Safety and Health (NIOSH)**

4676 Columbia Parkway  
Cincinnati, Ohio 45226-1998  
1-800-35-NIOSH (6-4674)  
(513) 533-8573 fax  
*web: [www.cdc.gov/niosh](http://www.cdc.gov/niosh)*

### **U.S. Department of Labor Occupational Safety and Health Administration (OSHA)**

200 Constitution Avenue, N.W.  
Washington, D.C. 20210  
*web: [www.osha.gov](http://www.osha.gov)*

### **OSHA Regional Office**

1111 Third Avenue, Suite 715  
Seattle, Washington 98101-3212  
(206) 553-5930  
(206) 553-6499 fax



# Associations and Additional Resources

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## **American Frozen Food Institute**

2000 Corporate Ridge, Suite 1000  
McLean, Virginia 22102  
Phone: (703) 821-0770  
Fax: (703) 821-1350  
Email: 5ADay@healthyfood.org  
Web: www.affi.com

## **American Industrial Hygiene Association**

2700 Prosperity Avenue, Suite 250  
Fairfax, Virginia 22031  
Phone: (703) 849-8888  
Fax: (703) 207-3561  
Web: www.aiha.org

## **American Institute of Baking**

1213 Bakers Way  
P.O. Box 3999  
Manhattan, Kansas 66505-3999  
Phone: (785) 537-4750  
1-800-633-5137  
Fax: (785) 537-1493  
Web: www.aibonline.org

## **American Meat Institute**

1700 North Moore Street  
Suite 1600  
Arlington, Virginia 22209  
Phone: (703) 841-2400  
Fax: (703) 527-0938  
Web: www.meatami.com

## **American Society of Safety Engineers**

1800 East Oakton Street  
Des Plaines, Illinois 60018  
Phone: (847) 699-2929  
Fax: (847) 768-3434  
Email: customerservice@asse.org

## **Evergreen Safety Council**

401 Pontius Avenue  
Seattle, Washington 98109  
Phone: (206) 382-4090  
1-800-521-0778  
Fax: (206) 382-0878  
Web: www.esc.org

## **Grocery Manufacturers of America**

1010 Wisconsin Avenue, N.W.  
Ninth Floor  
Washington, D.C. 20007  
Phone: (202) 337-9400  
Fax: (202) 337-4508  
Email: info@gmabrands.com  
Web: www.gmabrands.com

## **International Dairy-Deli-Bakery Association (IDDBA)**

P.O. Box 5528  
Madison, Wisconsin 53705-0528  
Phone: (608) 238-7908  
Fax: (608) 238-6330  
Email: IDDBA@iddba.org

## **National Meat Association (West)**

1970 Broadway, Suite 825  
Oakland, California 94612  
Phone: (510) 763-1533  
Fax: (510) 763-6186  
Web: www.nmaonline.org

## **National Safety Council**

1121 Spring Lake Drive  
Itasca, Illinois 60134-3201  
Phone: (630) 285-1121  
Fax: (630) 285-1315  
Web: www.nsc.org

## **Northwest Food Processing Association**

6950 SW Hampton Street, #340  
Portland, Oregon 97223  
Phone: (503) 639-7676  
Fax: (503) 639-7007  
Email: nwfpa@nwfpa.org

## **Washington Manufacturing Services (WMS)**

8227 West 44<sup>th</sup> Avenue, Suite D  
Mukilteo, Washington 98275  
Phone: (425) 438-1146  
Fax: (425) 438-2755  
Email: nmoore@wamfg.org