



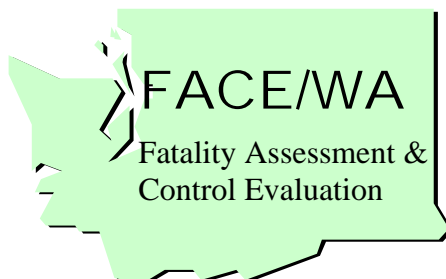
Temporary Worker Killed when Caught in Machinery at a Bottling Plant in Washington State

FATALITY INVESTIGATION REPORT



Investigation: # 00WA012
SHARP Report: # 52-12-2004

Release Date: December 27, 2004



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SUMMARY

On February 26, 2000, a 24 -year-old temporary employee died when he was caught in a piece of machinery at a soft drink bottling plant. The victim was an operator on the bottle depalletizer/bottle conveyor line. The victim was employed and placed at the bottling plant by a temporary employment service agency. He had been on the job for about two years at the time of the incident. Somehow the victim got caught in a machine called a chipboard remover, which was part of a depalletizer conveyor system that was designed to remove empty soft drink bottles from a pallet and funnel them single-file into the system to be filled and capped. There were no witnesses to the incident. Co-workers discovered the victim caught in the machine when they went to find out why the bottle line had stopped. A call was placed to 911 and first aid and CPR were given to the victim immediately after being removed from the machine. The local fire department emergency medical team continued CPR on the victim but were unsuccessful and the victim died at the scene as a result of his injuries.

To prevent similar occurrences, the Washington Fatality Assessment and Control Evaluation (FACE) investigative team has identified the following guidelines and requirements:

- **Ensure that all machinery is properly safeguarded to prevent the exposure of any part of a worker's body to hazardous aspects of the machine's operation.**
- **Equip conveyor system with an emergency stop cable or similar safety device that runs the entire length of the conveyor.**
- **The employer should work with the equipment manufacturer to address safe processes to deal with equipment jamming and other operational issues.**
- **Temporary employment service agencies should work with secondary employers to establish specific job descriptions, training criteria, and hazard analyses of each job assigned to temporary employees.**
- **Use a hand tool to help clear jammed or fallen containers, to prevent exposure of any body part to the machinery.**

INTRODUCTION

On February 28, 2000, the Washington State FACE Program was notified by WISHA*, of the death of a 24-year-old bottling plant worker in western Washington. The Washington FACE Field Investigators met with the WISHA enforcement representatives for the region in which the fatal incident occurred. The WA FACE team then traveled to the incident site with the compliance inspectors where they met with the representatives of the bottling plant involved in the incident.

The Washington FACE team also contacted the temporary employment service agency (TESA), the primary employer in this case, and met with representatives of the agency. The TESA has been in business nationally for over 50 years and has over 4,000 owned and franchised offices worldwide. The local office had been in the area for about 25 years. The total TESA office staff varied from two to five full-time and part-time employees.

The local office of the TESA does not employ a safety person to oversee their operations' health and safety processes or training, but their corporate and regional management did assign responsibilities and guidance to the local office staff. When a new employee signs with the agency, a local staff member provides a very brief, general safety orientation to the new employee. The secondary employer (the bottling plant) involved in the incident had a regular working relationship with the TESA to contract labor to work at the bottling plant and at the time, only about 5% of their employees were employed by the TESA.

The bottling plant is part of a multi-plant co-op of 10 soft drink franchise operations located throughout the northwest. The bottling plant has been in operation since 1992 and employs approximately 125 workers. The plant had both new and temporary employee orientation processes. Written orientation checklists were essentially identical for both new and temporary employees. The plant supervisors, along with the human resources manager, had the responsibility for new and temporary employee orientation. The company did not have written job descriptions that outlined the duties of each operation.

Either a plant supervisor or employee conducts "on the job" training with the new and temporary employees prior to the employee being assigned a job duty on their own. Depending on the complexity of the job and other factors, training can range from one day to one week. Once the new employee has been given the job to run on their own, there also may be a week of observation.

The facility had an accident prevention program and had conducted hazard analysis reviews on some elements of their production operations, but the analyses were limited in scope and did not address the hazard involved in the fatal incident. The plant had a safety committee that met on a monthly basis at their facility, though none of the temporary employees were on this committee.

* Washington Industrial Safety and Health Act (WISHA), which is the OSHA State Plan program in Washington State.

The bottling plant was running their “plastic container” soft drink bottling process under routine conditions at the time of the incident. The victim was a 24-year-old male (temporary employee), who was working as a depalletizer line operator at the bottling plant on the date of the incident. His primary job was to manage the depalletizer machine, which introduces empty containers (20 oz. bottles on the date of the incident) into the production process, which are then filled with the soft drink product that the line was running that day. The victim had worked at the bottling plant on and off, as a temporary employee for just under two years. Most of that time he had worked as a depalletizer operator.

The TESA records showed, via signed documents, that the victim had received the agency’s very basic health and safety training prior to entering employment at the bottling plant, approximately 2 years prior to the incident. Specific training related to the employee’s job and the bottling plant safety process were conducted at the bottling plant. The bottling plant did not have any documentation of the victim’s training, as they believe the records were purged after maintaining them for a year.

On the evening of February 26, 2000, the victim was caught in the depalletizer machine that he was operating as part of the company’s soft drink processing line. Co-workers responded after they noticed the process line had stopped and saw the victim caught in the machine. A call was placed to 911 and they began CPR prior to the arrival of a local fire department’s emergency medical rescue unit. The victim died of his injuries at the scene of the incident.

INVESTIGATION

On February 26, 2000, a Saturday evening, the victim was working the second shift at a bottling plant in western Washington State. He had reported to work at 2:30 PM, which was the normal start time for second shift.

The victim had been hired as a temporary employee via a TESA to work at the bottling plant. He had worked there on and off for about two years. His job at the time of the incident was to run the depalletizer line and he had performed that job for about a year.

A supervisor at the plant indicated that the victim was very familiar with the operation of the depalletizer. He also said that this part of the process line was one of the easier parts of the operation and required only a limited amount of training and supervision.

The depalletizer is an automated machine that transfers empty containers (bottles and cans) from stacked pallets to single-file on the processing line (see Figures 1, 2, and Photo 1). Pallets are brought by forklift from the bottling plant’s container storage area and set into the initial feed mechanism of the depalletizer.

The depalletizer raises the palletized stack of bottles up from floor level to the operator’s workstation level (approximately 12ft from the floor). The depalletizer mechanism then sweeps forward one layer of the palletized bottles that are packed in an 11 by 12 formation, and funnels them into a single file where a conveyor moves the bottles to the labeling and fill line.

Each layer of bottles on the pallet was separated by a piece of chipboard (tier sheet/slip sheet) which travels with the stack of bottles up the depalletizer hoist until it reaches the chipboard remover mechanism at the top. The chipboard remover has five vacuum suction cups which descend automatically onto the chipboard that covers each layer of bottles and lifts the chipboard off the bottles (Photo 2 and 3). An electronic sensor triggers this action when it senses the layer of bottles entering the chipboard remover area. The suction cups apply approximately 20 pounds of vacuum pressure to lift the chipboard approximately 2-1/2 ft off the layer of bottles. The chipboard remover then moves approximately 5 -1/2 ft to the right and drops the chipboard onto a stack of removed chipboards. The stack is periodically taken out of the system by one of the bottling plant workers.

Once the chipboard is placed in the stack, the chipboard remover swings back to the original position to pick up the next chipboard. Simultaneously, the new layer of bottles is moved to the left by the sweeper arm onto the conveyor that sends the bottles to the labeling and filling operations. As the bottles travel along the conveyor system, an electronic sensor sends a signal to the system to raise the next layer of bottles in place for depalletizing. According to a bottling plant supervisor, this process takes approximately 20-25 seconds to cycle each layer of bottles through the system.

Sliding plexiglass interlocked guards (doors) prevent access to the front of the chipboard remover from the operator's side of the work platform. There was a 16" x 24" opening in the guarding between the stack of bottles and the removed chipboard sheets to allow the worker access to remove the wooden stabilizing ring that is placed on top of the pallet load of bottles. Prior to the chipboard remover cycling through its process, the depalletizer operator had to reach into the opening and cut and remove two straps and a large wooden ring off the top of the pallet of empty bottles while it was in the depalletizer. This operation was done while the machine was turned off.

Once the bands are cut and the wooden ring removed, the depalletizer operator had to walk off the work platform and go down to the depalletizer control panel located on the manufacturing floor level and set the machine to the run mode. This re-activates the automatic cycle of removing the chipboard and sweeping each layer of empty plastic bottles onto the conveyor. The operator then walks back up to the operating platform and activates the system at the control panel.

On the afternoon of Saturday February 26, 2000, the victim reported to work at 2:30 PM as usual for the start of the second shift at the bottling plant. A supervisor relieved the victim at approximately 4:15 PM for his first break during the shift. Sometime between 6:00 and 6:30 PM, the supervisor noted the victim at his workstation and noticed nothing out of the ordinary. Between 7:15 PM and 7:45 PM the victim ate dinner with a co-worker in the facility break area.

The line had been running well that evening until 8:01 PM, when down time was recorded for a gap in the bottles traveling down the conveyor from the victim's work station to the fill line (i.e. the bottles weren't continuously being supplied to the processing line). At 8:05 PM the line was running again.

At 8:10 PM there was another gap in the bottles in the process line. This time the line did not resume running and the system “jam” warning light remained on. The labeler operator went to check to see why bottles were not moving. He saw a bottle jam and went to clear the line. He was about 30 feet from the depalletizer and observed the victim bent over doing something on the machine. The labeler operator went back to his work area, looked back and saw the victim caught in the chipboard remover apparatus. Then he ran up to the victim’s location and found the victim face down on a piece of the chipboard in the chipboard removing apparatus. The labeler operator yelled at the victim to see if he was all right but the victim did not respond.

The labeler operator hit the manual depalletizer control button to lift the chipboard remover mechanism off of the victim but it was already at its highest point. He noticed that the victim’s shirt was tangled around one of the chipboard remover’s suction cups. When he realized that he was not going to be able to get the victim free of the machine, he yelled to another co-worker to call 911 and get additional help using his portable radio.

Several co-workers and the operation supervisor responded to the call for help. They found the victim jammed in the machine. One of the co-workers removed the interlocked safety doors from the front of the machine in order to get to the victim. The victim was laying face down with his right arm pressed under his body. His left arm was hanging down near the depalletizer hoist. His upper body was wedged in the machine past his waist. It appears as if the victim may have reached into the machine, past the safeguarding system. His shirt and belt were tangled in the suction cups. It was noted that the victim had a gash on his forehead and he had a blue color and no pulse. The victim was eventually removed from the depalletizer by co-workers.

Co-workers started CPR as soon as they got the victim free of the machine. The local fire department arrived within 10 minutes of being summoned and continued CPR on the victim but to no avail. The victim was pronounced dead at the scene.

The incident was unwitnessed, so no one saw the victim at the point in time when he got caught in the machine. The victim’s co-workers thought that he may have been pulled into the machine while trying to reach in to align a bottle that had fallen. It was reported that sometimes a plastic bottle will fall and block the electronic eye and stop the depalletizer process until the bottle is cleared. Workers indicated that the 20 oz. bottles, that were being run, had more instability problems than other types of containers. They indicated that they often had to clear a minor jam or re-align these bottles during the depalletizer process. On average the workers indicated that they might have to deal with this 9 or 10 times a shift while working the depalletizer.

The workers all agreed that there should be no reason for anyone to get their hands or body into the system while the machine was running. The way operators were instructed to deal with a “downed” bottle was to switch the machine from automatic to manual mode at the control panel, and then open the interlocked sliding doors that are the physical machine guards for that apparatus. The interlocked doors shut the machine down. The operator can then safely reach in and take care of the fallen bottle. With the interlocked doors placed back in position, the machine would then be reactivated and placed into automatic mode and the line could proceed with the bottling process.

CAUSE OF DEATH

The medical examiner listed the cause of death due to, or as a consequence of, traumatic asphyxia or external chest compression after being caught in a machine.

RECOMMENDATIONS AND DISCUSSION

Recommendation #1: Ensure that all machinery is properly safeguarded to prevent the exposure of any part of the body to hazardous aspects of the machine's operation.

Discussion:

The victim in this incident was caught in the machine that he was operating and died from the resulting crushing pressure applied to his chest by a portion of the automated system. The victim caught his upper torso in a space between the bottle depalletizer conveyor system and the chipboard remover. The depalletizer conveyor system appears to be very innocuous at first glance, but from a systems safety approach, there are a variety of operational and physical hazards related to this process. A full description of the process is found in the investigation section of this report.

Given the fact that the bottles can get out of alignment and fall down and/or jam the conveyor line, the operator must re-align the bottles and/or un-jam the system. The point where the layer of bottles enters the chipboard remover is only partially guarded. It is guarded in the front of the operator's work platform but is open between the stack of bottles and stack of chipboard to allow the operator to remove the wooden stabilizing rings which are approximately 3ft by 4ft.

If there is a problem in the area of the chipboard remover requiring the operator to get into the system, the operator is supposed to open interlocked guards (plexiglass doors), which shuts down the automatic cycle of the chipboard remover and the conveyor system.

In this incident, the victim did not open the interlocked chipboard remover guard, but physically put his body in the opening between the conveyor and the guard and was able to access the space adjacent to the chipboard remover apparatus. He by-passed the guard and safety interlocking device that was on the equipment.

The guard on this machine allowed a person to get their arms and body into a hazardous part of the machine, which resulted in the death of the victim. The bottling plant should work closely with the equipment manufacturer and get their help to devise additional guarding and safe operational practices for employees who run and maintain the depalletizer system. It is very important, and is especially true when automated moving and reciprocating machinery is involved, that effective guarding be in place to prevent a worker from coming in contact with or be pulled into a hazardous area of the operating machinery.

Recommendation #2: Equip the conveyor system with an emergency stop cable or similar safety device that runs the entire length of the conveyor.

Discussion:

In this incident, the victim by-passed the existing interlocked machine guard system and was caught in the chipboard remover. In addition to the interlocked guard, the depalletizer system was also equipped with an E-stop (emergency stop) at the operator's control panel located at the depalletizer work platform. The E-stop, if activated would have shut down the machine. The E-stop had not been activated during the incident. Once the victim was caught and pulled into the chipboard remover, he would not be able to reach the E-stop to shut down the machine.

There are many types of safe guards available that could have been activated to stop the machine. They range from basic mechanical/electronic emergency stop systems to more sophisticated technology such as light curtains and a variety of automated sensing devices that can detect objects, other than the desired materials, entering hazard zones.

Emergency stop cables or safety trip wires are commonly used safety stop devices on conveyor systems. Safety trip controls provide for a quick method of shutting down a machine in an emergency. Safety trip wires should be situated and located around the perimeter of the machine/conveyor and be easily accessible to persons working near it, so it can be quickly shut down. If safety stop cables/trip wires had been available, the victim may have suffered a much less severe injury.

There are also a number of different types of presence sensing devices to choose from. These devices range from photoelectric sensors to radio frequency devices and electromechanical systems. Photoelectrical (e.g. light curtains) devices for example, use a light source with controls that stop or interrupt a machine's operation. If the light field is broken, a signal shuts the machine down and has to be reset in order for it to start up again. Since the incident, the company has installed light curtains around the depalletizer machine operation to provide increased protection to help prevent a similar event from occurring.

It is important that emergency stop mechanisms be tested at the start of every shift if possible, to ensure operational safety. If the safety devices are not working properly, they must be repaired prior to the operation of the machine.

Any and all safety devices that a company plans to add to their equipment should be reviewed with the equipment manufacturer.

Recommendation #3: The employer should work with the equipment manufacturer to address safe processes to deal with equipment jamming and other operational issues.

Discussion:

The depalletizer in this incident is a machine designed to function in both manual and automatic mode depending on the situation and the material being processed. Since the containers vary depending on production needs, the system is designed to be as versatile as possible without making major mechanical changes or adjustments. The system is programmable to allow for the operating parameters to be entered and machine adjusted to the size container being run.

Often times, there are problems with automated machines that are designed to be versatile. This may have been the case with this bottling line. The machines may be capable of running some of the materials/containers through the system well, but could have problems running one or two of the types of containers.

It appears that this might have been the case with the 20 oz. plastic bottles. According to the workers at the bottling plant, the 20 oz bottles gave them the most trouble when running the depalletizer. Some of the problems they experienced were that the bottles would fall and either jam the system or they would get in the way of the sensor and would keep the automated process from running. There are a number of potential factors leading to the problems associated with running the 20 oz. containers such as size, weight, center of gravity, design of the bottles, and the stacking of bottles on the pallets, that would effect how well the bottles could run on the system.

The problem with running 20 oz. bottles seemed to be well recognized by the supervisors and the workers running this equipment. It is recommended that the employer should work with the equipment manufacturer to address safe processes to deal with equipment jamming and other operational issues.

Manufacturers are often willing to help the customer address not only production and quality issues but also help them with safety concerns associated with the operation of their machinery. The manufacturer might have a solution to the problem that is already on hand or could be in the process of actively working on a solution.

The manufacturer can be an important partner in reviewing safety and operational problems and should be contacted to develop processes and procedures, help make equipment adjustments, and help establish safeguards to eliminate or minimize the risk of an injury involving the equipment.

Some depalletizer manufacturers have container stabilization capabilities designed into their systems, which might have eliminated or reduced the problems that this employer was experiencing. One company has a vacuum system that keeps the bottles in place during the depalletizing process while another has four guides that hold the bottles in place while the chipboard is removed.

Recommendation #4: Temporary employment service agencies should work with secondary employers to establish specific job descriptions, training criteria, and hazard analyses of each job assigned to temporary employees.

Discussion:

In this fatal incident, the victim, in essence was working for two employers, the TESA (the primary employer) and the bottling plant (the secondary employer). Both employers had developed and utilized safety training programs that were presented to each employee prior to beginning work.

Although there were positive elements in each of the employer's training programs, there also were weaknesses. These weaknesses failed to provide the support to the worker that was needed for him to gain the knowledge and understanding of the job tasks and the safe operational responsibilities of the machine.

It is recommended that each employer work more closely with the other to establish and develop more defined, specific job descriptions and duties for each employee assigned to the bottling plant by the TESA. This should also extend to all of the TESA's client companies.

A hazard analysis of the job should be conducted and reviewed jointly by each employer (bottling plant and TESA). Identified hazards should include appropriate controls to prevent worker injuries. Any changes to production processes and procedures should initiate a new hazard analysis of the job.

The bottling plant (secondary employer) has direct supervision over the employee and therefore is responsible for providing training specific to job requirements. The TESA (primary employer) should review training contents and have a process to assure that appropriate training is available and presented in an effective manner to employees before they begin work.

Employee training, including that for temporary workers, should not only encompass all required training, as mandated by regulatory agencies such as OSHA or WISHA, but include job specific training that incorporates the elements of the job hazard analysis and detailed safety measures that need to be applied while on the job. The training should not only include the various elements of performing the job, but should also discuss what to do when there are system upset conditions and the machine does not run correctly or jams. Training should include how to properly shut down the machine, use the emergency stop systems, safely clear a jam, safely remove and re-align downed bottles, and safely cut the bands and remove the wood rings from the bottle pallets.

The training should detail what processes or procedures should be followed and what to do in an emergency situation. The importance of training employees on safe operating procedures should be emphasized and discussed in sufficient detail that the information is understood and provides clear expectations from management on how the job is to be performed safely by the employee. Documentation of training contents, presentation and evidence of effectiveness is recommended.

Recommendation 5: Use a hand tool to help clear jammed or fallen containers to prevent exposure of any part of a worker’s body to the machinery.

Discussion:

In this automated bottle depalletizer process, there are a variety of possible ways to deal with routine upsets of equipment or material in the container processing line. As we have discussed in the earlier recommendations, improved machine guarding and mechanical process changes would help prevent serious incidents by helping engineer out the hazard and exposure to the hazards.

Another recommendation that could be explored is to find a tool that could be used to pick up or realign downed bottles and to remove bottles that are causing a jam in the process. The bottling plant should consider working with the equipment manufacturer and an industry association that can help identify a safe tool that can be used to pick up downed bottles that are causing production problems on the depalletizer line.

There are a variety of extension grabbers and reaching tools available on the market that could work with bottles and similar objects.

It is very important that the tool be used correctly and safely within acceptable operating conditions when performing the job. The tool should **not** create an additional hazard. The tool should not be used to bypass safety devices and guards designed for worker protection when the machine is in operation. Specific training and guidelines for the use of the tools should be developed and training conducted for each individual who might have a need to use the tool.

The depalletizer system should be shut down and locked-out prior to the use of any tool within the system that would expose a worker to caught-in hazards of the machinery.

Ensuring the safety of workers is a critical mission that requires a multi-faceted approach. The fatal incident described in this report highlights this fact. In combining a machine and process that periodically would allow bottles to fall and disrupt the flow of product, with machine guarding that allowed worker access to a potentially hazardous area of the machine, and possible worker incentives to keep the processing line in operation, a deadly situation developed. Only by using a systems approach that addresses the entire process, including the machine, the interface between the workers and the machine, the workers’ training, the workplace’s safety culture, and the physical work environment, can this hazard and other, unforeseen hazards be truly controlled to prevent serious injury and death. Because this incident involved the interaction of a temporary worker with two different employers, it is especially important to formalize this systems safety approach so it is carried out for the protection and benefit of all parties involved.

RESOURCES

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ACKNOWLEDGEMENTS

In conducting the investigation of the death of a worker at a bottling plant, the Washington State FACE investigation team requested that the contents of this report be reviewed by key representatives from the labor and business communities involved and Washington State and Federal worker safety agencies, prior to it's publication.

Though we are not able to acknowledge specific individuals for their invaluable input into this document, we would like to recognize the following for their help and support to the FACE process:

- The bottling plant employer involved in the incident
- The temporary employment service agency employer involved in the incident
- WISHA Enforcement
- WISHA Policy & Technical Services staff
- Federal Face Program Management (NIOSH)
- Safety & Health Assessment & Research for Prevention (SHARP)
- Washington State Labor Council
- Center for a Changing Workforce
- Washington State Attorney Generals Office

APPENDIX

Other issues for Temporary Worker Health & Safety

Temporary workers or employees of a temporary services employment agency (TESA) are only one of many types of contingent workers. Temporary workers generally have two employers: the TESA who pays their salary, benefits, and workers' compensation insurance and the employer at the worksite who controls the work environment and conditions.

This is a relatively common arrangement for a number of business reasons. Some of which are to:

- Accommodate seasonal and non-seasonal supplies of and demands for their products and services and thus employees,
- Fill in for permanent workers' vacation and sick leave,
- Evaluate and hire workers for permanent positions,
- Reduce overhead from benefits and workers' compensation costs, and
- Increase the employers' flexibility for downsizing of their workforce.

Having two employers can lead to a number of safety-related outcomes ranging from both employers being very responsible and assessing all hazards and doing all that is within their power to reduce the hazards in the workplace to one where neither employer takes responsibility for the temporary workers. In the incident that was investigated in this report, both employers took some responsibility, but neither took ultimate responsibility.

For the TESA, this mainly entails site-specific assessments, worker training, and possibly the supply of appropriate personal protective equipment. Because the TESA doesn't directly control the worksite, it can be difficult for them to change how the workers interact with the hazards, let alone, physically control the hazards. Because the TESA may control the worksite employers' source of employees, it may be possible for them to leverage that control and get the worksite employer to effectively control their exposures.

For the worksite employer, this entails site-specific assessments, worker training, and physically reducing hazards using an assortment of control strategies. It is also within the worksite employer's realm to affect the worksite's safety culture. It is not known for certain if it was a factor in this case, but temporary workers may feel pressure to be more productive than their permanent worker counterparts if there is the possibility of being hired as a permanent employee of the worksite employer. With this type of incentive, workers may ignore certain safety rules, that if broken would have a low probability of causing an injury, but a high probability of increasing their short-term productivity. By setting up a worksite safety culture that values safety more than productivity, opportunistic activities that favor productivity over worker safety can be reduced.

These activities must be accomplished with coordination between the TESA and the worksite employer. Hazards must be assessed, control schemes evaluated, and the system for rolling temporary workers into permanent positions evaluated for potential incentives to disregard

personal safety for job advancement. Both employers need to assess and alter their safety cultures if they find productivity over-rules worker safety.

APPENDIX – Applicable Regulations

In reviewing the WISHA standards, there are defined requirements that deal with manufacturing and temporary labor agency safety and health issues. Although the investigation of this incident was not regulatory in nature, we offer the following code requirements for information and reference purposes. This is not intended to be a complete list of regulatory guidelines that address these issues but are representative of requirements established under the Washington Administrative Codes:

Machine guarding:

Types of guarding. One or more methods of machine guarding shall be provided to protect the operator and other employees in the machine area from hazards such as those created by point of operation, ingoing nip points, rotating parts, flying chips, and sparks. Examples of guarding methods are - barrier guards, two-hand tripping devices, electronic safety devices, etc. **WAC 296-24-15001 (1)**

Point of operation guarding:

The point of operation of machines whose operation exposes an employee to injury, shall be guarded. The guarding device shall be in conformity with any appropriate standards therefore, or, in the absence of applicable specific standards, shall be so designed and constructed as to prevent the operator from having any part of the employee's body in the danger zone during the operating cycle. **WAC 296-24-15001 (3) (b)**

Special hand tools for placing and removing material shall be such as to permit easy handling of material without the operator placing a hand in the danger zone. Such tools shall not be in lieu of other guarding required by this section, but can only be used to supplement protection provided. **WAC 296-24-15001 (3) (d)**

Programmatic:

Establish, supervise, and enforce rules that lead to a safe and healthy work environment that are effective in practice. **WAC 296-800-11035**

Develop, supervise, implement, and enforce safety and health training programs that are effective in practice. **WAC 296-800-14020**

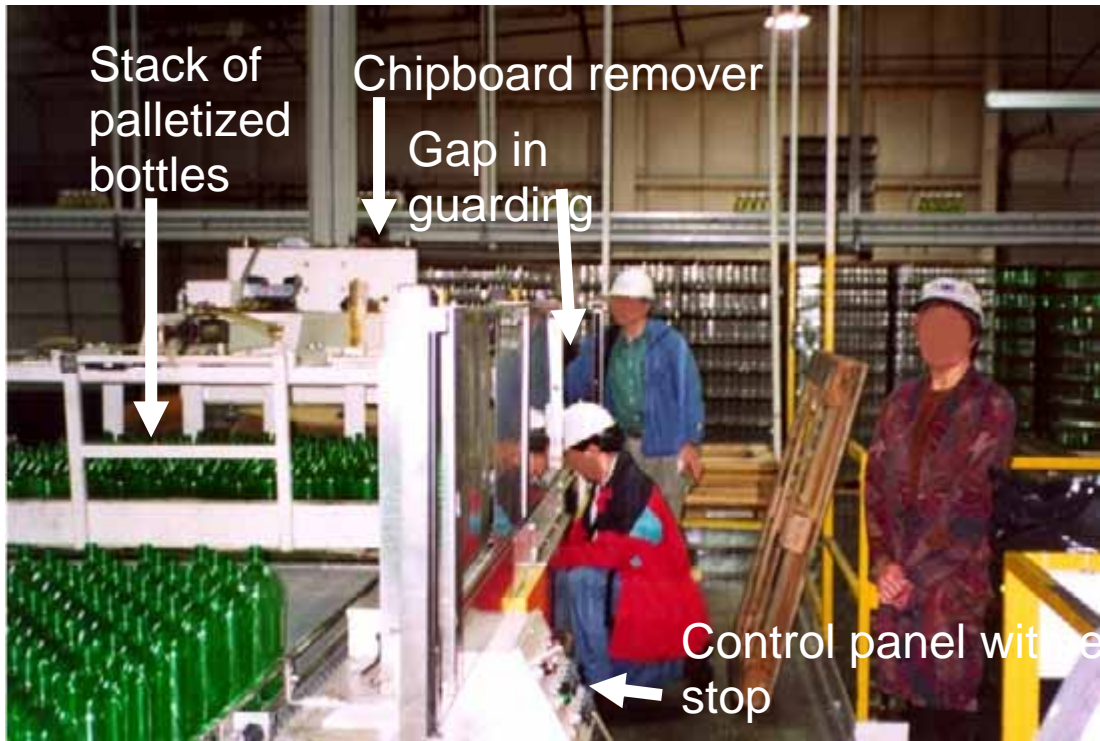


Photo 1 View of depalletizer from operator's platform.

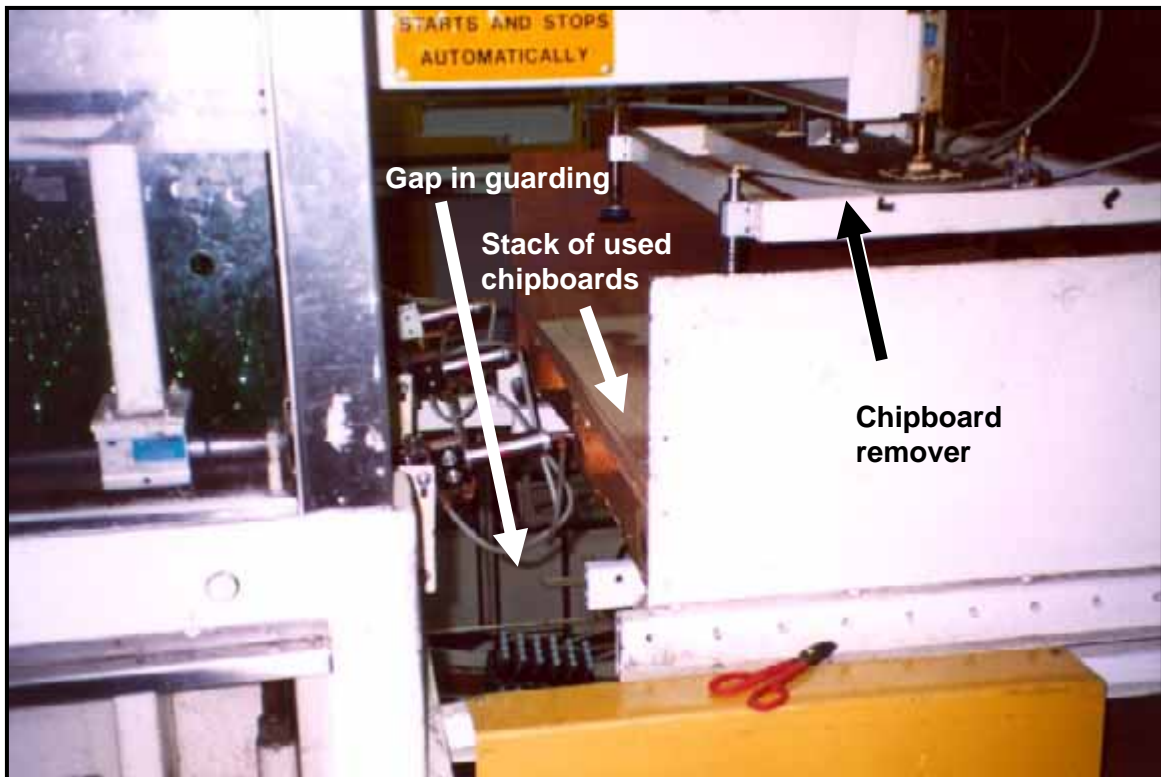


Photo 2 Gap in guarding showing chipboard remover.

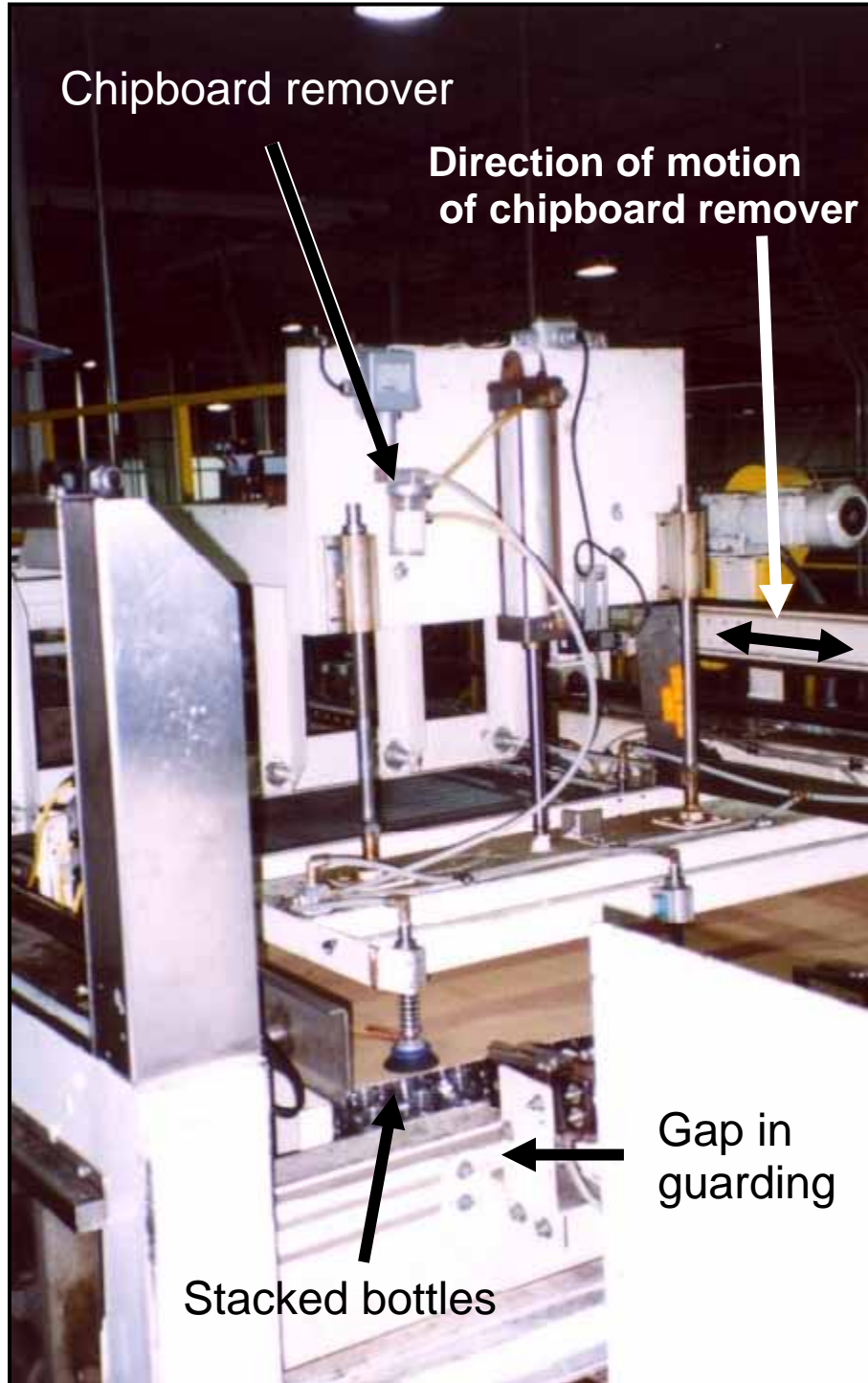


Photo 3 Bottles and chipboard remover.

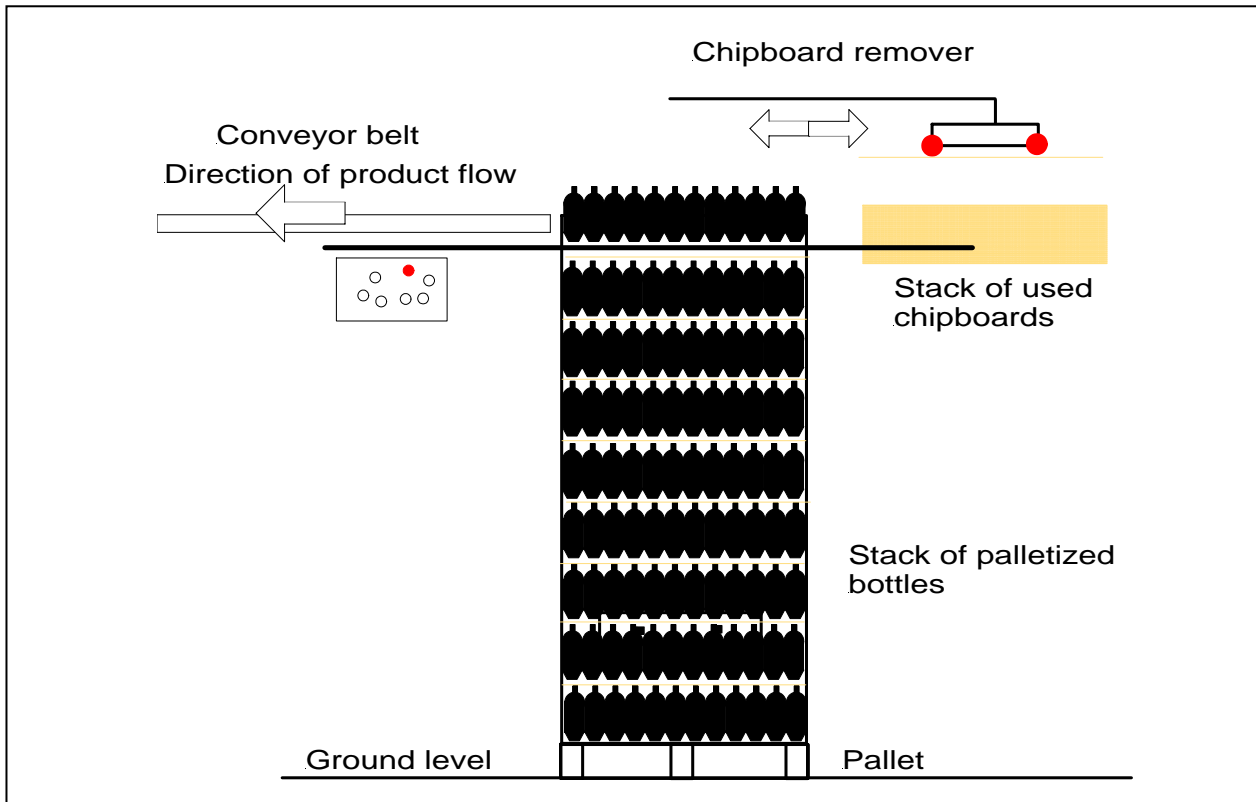


Figure 1 Side view of depalletizing operation.

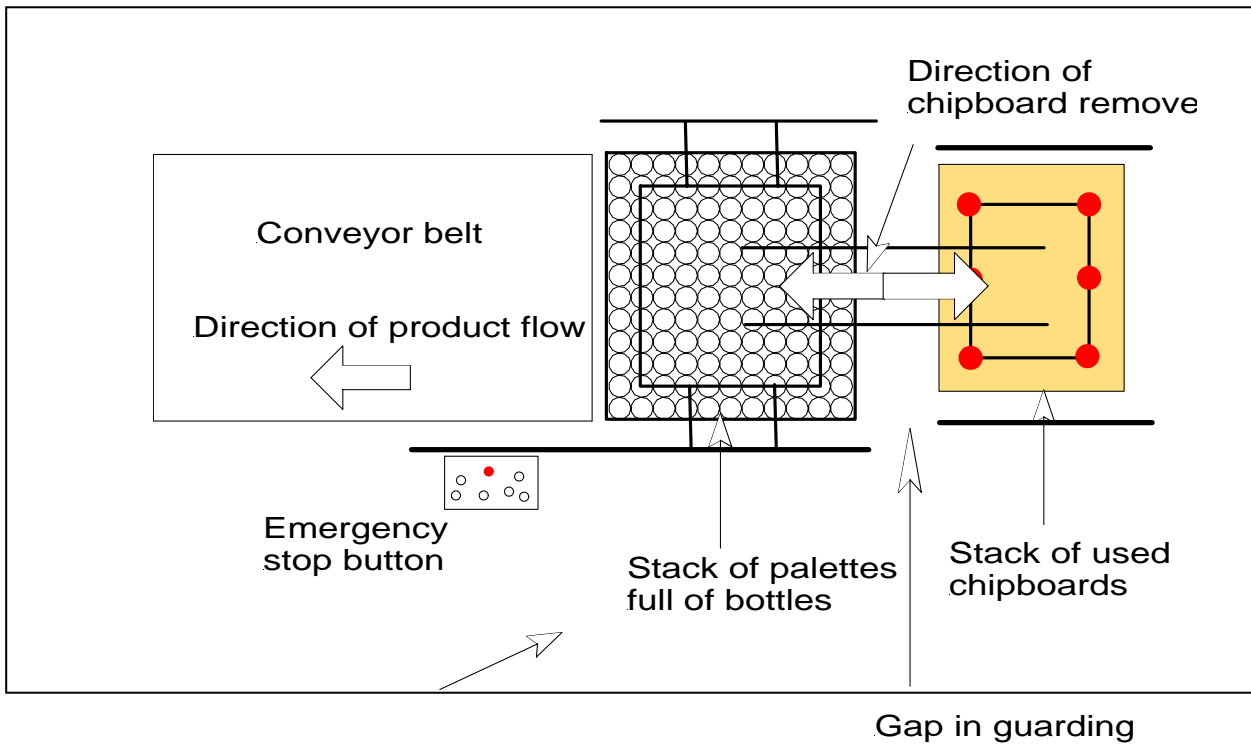


Figure 2 Plan view of depalletizing operation.