

## CONVEYER SAFETY IN THE WORKPLACE

This easy-to-use Leader's Guide is provided to assist in conducting a successful presentation. Featured are:

**INTRODUCTION:** A brief description of the program and the subject that it addresses.

**PROGRAM OUTLINE:** Summarizes the program content. If the program outline is discussed before the program is presented, the entire program will be more meaningful and successful.

**PREPARING FOR AND CONDUCTING THE PRESENTATION:** These sections will help you set up the training environment, help you relate the program to site-specific incidents, and provide program objectives for focusing your presentation.

**REVIEW QUESTIONS AND ANSWERS:** Questions may be copied and given to participants to document how well they understood the information that was presented. Answers to the review questions are provided separately.

**ATTENDANCE RECORD:** Document the date of your presentation as well as identify the program participants. The attendance record may be copied as needed.

### INTRODUCTION

In today's advanced work environments, conveyors allow us to handle packages, transfer huge amounts of raw material and move large objects with relative ease. Just as we cannot deny the usefulness of conveyor systems, we also cannot deny their hazards. Conveyors have many unique hazards that are not found on other pieces of equipment, but employees sometimes forget about these dangers because conveyor systems have become so common in the workplace.

This program discusses the various hazards posed by conveyor systems and the safe work practices that employees must follow to prevent injuries related to these hazards. Also featured are testimonials from workers who have suffered conveyor-related injuries due to complacency, taking shortcuts and failure to perform lockout/tagout procedures. Topics include shear, pinch and nip points, types of conveyor guarding, employee contact with conveyors and crossing over and under conveyors. Requirements of conveyor operators, conveyor maintenance and repair procedures, safety signs, housekeeping and emergency stop devices are also covered in the program.

### PROGRAM OUTLINE

#### SHEAR POINTS, PINCH POINTS & NIP POINTS

- Shear points, sometimes called shear lines, are areas where a moving part on a conveyor meets or passes close to a stationary object.
- Shear points can also be created when the conveyor is located or positioned near buildings or other stationary equipment.
- Pinch points are the points between two moving parts. They generally do not have forward motion or rotation.
- Most conveyor pinch points are found on oscillating, reciprocating or vibrating conveyors. In these cases, the pinch points do useful work in the handling or processing of material.
- Nip points occur where two rotating parts meet. These areas can nip, pinch, squeeze or entrap any object or body part that contacts them.

- Nip points on conveyors are usually found where belts meet drive pulleys or when gears and rollers mesh together.
- Nip points that present a hazard to employees should be guarded. Report any unguarded nip points or other unsafe conditions to your supervisor right away.

### **TYPES OF GUARDING**

- Areas where power is mechanically transmitted also present hazards. Various types of guard are used to protect workers from these moving hazards.
- 1) Drive guards cover the main drive of the conveyor; 2) coupling guards guard connections between motors and gear boxes or when couplings are used to protect shafts; and 3) end shaft guards cap the protruding ends of rotating or key shafts.
- Conveyor guards are not designed as steps or supports. Never sit, stand or walk on any type of conveyor guarding.

### **AVOID UNINTENTIONAL & INTENTIONAL CONTACT WITH CONVEYORS**

- Take measures to control long hair so it doesn't become entangled in the moving parts of the conveyor.
- Also, don't wear loose clothing or jewelry around conveyors. They can easily become entangled in moving parts.
- When working on or near conveyors, pay close attention to your posture. Never lean way out over a conveyor for any reason because you can easily lose your balance and fall onto the conveyor.
- A good rule of thumb is to keep both feet on the ground to avoid becoming unbalanced when working around conveyors. This will help keep you stable while handling materials.
- Coming into contact with conveyors accidentally is a source of injury; unfortunately many injuries are also caused by intentional contact.
- Do not climb, step, sit, stand or ride on moving conveyors. They are too dangerous to be used as a shortcut or as a free ride.
- Also, don't participate in horseplay around conveyors. This type of careless action often leads to personal injury.

### **SPILL HAZARDS**

- Spill points are areas where material can fall from an overhead conveyor onto personnel below. They exist anytime an overhead conveyor crosses a walkway or populated work area.
- To protect workers below, spill points are protected by spill guards. These come in many forms, ranging from side rails to skirt boards.
- All personnel understand that this type of guarding may only be in place where conveyors cross approved walkways and work areas.
- Never cross under a conveyor unless you are in an approved walkway. Also, keep in mind that hardhats are required in many areas where overhead conveyors are in operation.
- Workers who take shortcuts by crossing under overhead conveyors place themselves at risk of being struck by falling material.

### **CROSSING OVER CONVEYORS**

- Just as there are hazards involved with crossing under a conveyor, crossing over a conveyor also presents dangers.

- Conveyors should only be crossed at approved crossing areas.
- These areas may have special sections that open to allow safe passage through the conveyor, or crosswalks that provide steps, handrails and a nonmoving walkway.

### **REQUIREMENTS OF CONVEYOR OPERATORS**

- The first conveyor safety rule is “don’t operate any conveyor system unless you are trained and authorized.”
- Conveyors may look relatively simple to operate, but they are complex systems with many things an operator must understand to operate it safely.
- Conveyor operators must be trained in the proper startup procedures for the conveyor.
- Conveyors have long stretches of belts, tracks, frames and other moving parts that may be out of the operator’s view. Operators must follow specific procedures to ensure the conveyor is clear of all foreign objects, people and packages before starting.
- Operators must also know the location and function of all emergency stop controls. They must be able to shut down a conveyor quickly in case of emergency.
- During their training, operators will learn how to respond properly to emergency situations involving conveyors.
- Depending on the complexity of the conveyor system, operators may also be required to know how material weight, conveyor speed and other factors affect the safety and performance of the conveyor system.
- Never overload a conveyor or place anything on it that it is not designed to carry. Be sure you know the design limits of the conveyors in your work area and do not exceed them.

### **CONVEYOR MAINTENANCE & REPAIR**

- Never attempt to work on, repair or clear jammed materials unless you are trained and authorized **and** the conveyor has been properly locked and tagged.
- Performing lockout/tagout operations isolates the conveyor from energy sources to ensure it will not start. Locking out must conveyor systems usually involves multiple control stations and often includes various types of energy such as electricity, gravity and compressed air.
- Only qualified maintenance personnel are permitted to service and repair conveyor systems. Never attempt to service a conveyor without locking it out first.
- Never remove safety guards and devices unless you are performing repairs on a locked and tagged conveyor. When the repair work is completed, replace all guards before reenergizing the conveyor.
- If you notice any guarding that is missing from a conveyor during normal working conditions, report it to your supervisor right away.

### **SAFETY SIGNS**

- Safety signs are used to warn employees of dangerous areas and hazards. They display needed information to keep us safe.
- Of course, signs alone will not prevent injuries; their safety messages must be followed. Always look for and obey the safety signs found in your work area.

## **HOUSEKEEPING**

- All employees who work around conveyors should be concerned about housekeeping. Keep all areas around conveyors clean and clear of clutter.
- Walking and working surfaces located near conveyors must be kept clear of materials that could become a tripping hazard. Trips and falls can cause serious injury anywhere in the facility, but they can quickly turn deadly around conveyors.
- Never allow emergency stop devices to become obscured or blocked by debris. These lifesaving devices must be accessible at all times.

## **EMERGENCY STOP DEVICES**

- All employees who work around conveyors need to understand the location and operation of emergency stop devices.
- These devices come in various types, including buttons, switches or grab lines. They can be used to replace a lockout procedure.
- Keep in mind that emergency stops are only for emergencies and should never be used to replace a lockout procedure.
- Emergency stop devices should never be used to stop a conveyor under normal conditions.

## **PROGRAM REVIEW**

- Only operate conveyors if you are trained and authorized. Conveyors are complex systems that require specific operating procedures that must be followed to ensure the safety of nearby personnel.
- Never perform maintenance on a conveyor without following your company's lockout/tagout procedures.
- Do not remove guarding unless the conveyor has been locked out and always replace guarding before the conveyor is reenergized.
- All workers should know the location of emergency stop devices and how to use them. Keep these areas accessible and clear of obstructions.
- Don't allow poor housekeeping to create slipping or tripping hazards near any conveyor.
- Only cross conveyors at approved crossing points.
- Never climb, step, sit or ride on a conveyor. Conveyors are too dangerous to be used as a shortcut or as a free ride. They demand our respect and attention to avoid personal injury.

## **PREPARE FOR THE SAFETY MEETING OR TRAINING SESSION**

Review each section of this Leader's Guide as well as the program. Here are a few suggestions for using the program:

- Make everyone aware of the importance the company places on health and safety and how each person must be an active member of the safety team.
- Introduce the program. Play the program without interruption. Review the program content by presenting the information in the program outline.
- Copy the review questions included in this Leader's Guide and ask each participant to complete them.
- Copy the attendance record as needed and have each participant sign the form. Maintain the attendance record and each participant's test paper as written documentation of the training performed.

**Here are some suggestions for preparing the equipment and room or area for your use:**

Check the room or area for quietness, adequate ventilation and temperature, lighting and unobstructed access.

Check the seating arrangement and the audiovisual equipment to ensure that all participants will be able to see and hear the program.

Place or secure extension cords to prevent them from becoming a tripping hazard.

**CONDUCTING THE PRESENTATION**

Begin the meeting by welcoming the participants. Introduce yourself and give each person the opportunity to become acquainted if there are new people joining the training session.

Explain that the primary purpose of the program is to make employees aware of the unique hazards presented by conveyors and the safe work practices that must be followed to prevent these hazards from causing serious injury or death.

Introduce the program. Play the program without interruption. Review the program content by presenting the information in the program outline.

Lead discussions about the conveyors used at your facility and what employees must do to stay safe when working with or around these systems. Use the review questions to check how well the participants understood the information.

After watching the program, the viewer will be able to explain the following:

- The various types of hazards presented by conveyor systems and the safe work practices for preventing these hazards from causing injury;
- The importance of avoiding both intentional and unintentional contact with conveyors;
- What is required of a qualified conveyor operator;
- The significance of lockout/tagout procedures during conveyor maintenance and repair;
- Why following safety signs, practicing good housekeeping and using emergency stop devices are all necessary when working with and around conveyor systems.

## CONVEYOR SAFETY IN THE WORKPLACE

### REVIEW QUESTIONS

Name \_\_\_\_\_ Date \_\_\_\_\_

*The following questions are provided to check how well you understand the information presented during this program.*

1. \_\_\_\_\_ occur where two rotating parts meet, such as belts meeting drive pulleys or gears meshing with rollers.
  - a. Shear points
  - b. Pinch points
  - c. Nip points
  - d. Spill points
2. What is the rule of thumb for keeping your body balanced when working with conveyors?
  - a. Keep one foot on a nearby conveyor guard for support
  - b. Keep both feet on the ground anytime you are around a conveyor
  - c. Make sure at least one foot maintains contact with the floor when leaning out over a conveyor
3. According to the program, the first safety rule of conveyors is “don’t operate any conveyor system unless you are trained and authorized.”
  - a. True
  - b. False
4. You should never attempt to repair a conveyor or clear jammed materials from it unless \_\_\_\_\_.
  - a. It has been properly locked and tagged
  - b. You are trained and authorized to do the work
  - c. You have a co-worker assist you with the work
  - d. Both a and b
  - e. Both a and c
5. If you see any guarding missing on a conveyor, you should attempt to locate the guard and replace it immediately.
  - a. True
  - b. False
6. All employees are responsible for which of the following?
  - a. Looking for and obeying safety signs
  - b. Keeping areas around conveyors clean and clear of clutter
  - c. Understanding the location and operation of conveyor emergency stop devices
  - d. All of the above
7. Emergency stop devices should always be used to stop a conveyor.
  - a. True
  - b. False
8. Statistics show that conveyors are the fourth most dangerous pieces of equipment in the workplace.
  - a. True
  - b. False

***ANSWERS TO THE REVIEW QUESTIONS***

1. c

2. b

3. a

4. d

5. b

6. d

7. b

8. a