Temporary Laborer Dies in Fish Processing Plant in Massachusetts

Investigation #: 98-MA-035-01
Release Date:

SUMMARY

On July 30, 1998, a 40 year old male temporary laborer died of injuries sustained when he was caught in a ribbon blender at a fish processing plant. The victim and a co-worker were cleaning the tank and the area around it when the incident occurred. The two men stepped into the tank of the blender, possibly to remove some plastic debris at the bottom. The victim then requested and was handed a water hose which inadvertently contacted the switch used to turn on the blender. When the blender was activated, the victim was caught, suffering severe injury to his lower body. The co-worker escaped because he had not fully entered the tank. Co-workers shut off the machine and attempted to remove the victim but failed. Police and emergency medical services personnel arrived and also attempted to extricate the victim. He died while still caught in the machine. He was removed by cutting apart the ribbon blender and pronounced dead by the medical examiner at the scene.

The MA FACE Program concluded that to prevent similar future occurrences, employers should:

- **develop and enforce a comprehensive lockout/tagout program.**
- **develop, implement, and enforce a comprehensive safety program that includes, but is not limited to, training all workers in recognizing and avoiding the hazards of machinery.**

INTRODUCTION

On July 30, 1998, the MA FACE Program learned through a call from OSHA to the fatality hotline that a man had died that day in a machine-related incident at a fish processing plant. An investigation was immediately initiated. The next day, the MA FACE Program Director and a staff person from the MA DPH who spoke Spanish traveled to the incident site. The scene of the incident was examined and pictures taken. The translator assisted with the interviews of witnesses by OSHA. The police report, death certificate, witness interviews and multiple photographs were obtained during the course of the investigation.

The company was a local fish processing plant purchased by the current owner three months before the incident. Up to 240 persons worked at the facility at any time. All but eight workers were employees of various local temporary agencies. Almost all of these workers spoke Spanish or Portuguese as their first language; for many these were their only languages.

The victim was a temporary laborer who had worked for the company for two months at the time of his death. He was one of five or six laborers who worked in that particular area, all of whom were temporary workers. He had not received any safety training from the processing plant employer or the temporary agency who had assigned him to the plant.

The plant had been cited by OSHA in 1992 for violations of the Control of Hazardous Energy and other standards. The company had no written health and safety plan in place at the time of the incident.

INVESTIGATION

The company received both fresh and frozen fish for processing, which included filleting, as well as machine cutting of frozen fish. The main fish processed were swordfish, monkfish and dogfish. The meat of the dogfish was cut off by hand leaving entrails and the skeleton. These leftovers were then processed in the rendering department into fertilizer.

The entrails were placed in vats which held approximately 1000 lbs. of material. The rectangular vats measured approximately 36 by 36 by 28 inches and had slots which enabled them to be lifted and the contents dumped by a forklift truck. The dogfish skeletons, including heads were separated into other vats. There were three horizontal double ribbon blenders in the department in which the fish parts were mixed to a consistent density. Two of the blenders were very large and could hold up to 10 vats of raw product, while the third was about half that size. The smaller blender was used for the skeletons.

The double ribbon blender in which the incident occurred was one of the larger machines, identified as number 3. A ribbon blender is a large mixing tank with blades in a spiral configuration. The blades may be vertical or horizontal. These machines are frequently used in the bakery industry for kneading bread dough. This particular machine was a large, stainless steel horizontal blender. The tank was 12 feet long by 57 inches high and 4 feet wide. It was powered by a 40 HP electric motor. Through a chain drive the shaft of the ribbon blender rotated at approximately 57 cycles per minute. The machine was built to operate at a high torque and low speed. The double ribbon blades had a turning diameter of about 24 inches around a 4 1/2 inch shaft. Therefore the top of the blades were about 10 inches below the top of the tank. The tank was lifted about 4 feet above the floor on legs. The top of the tank was open.

The tank held approximately 1375 gallons of product. The tank was filled from the top by forklift and emptied from the bottom through a drain hole. The same vats were used for filling and emptying. The forklift would raise and invert the vat of product to fill the tank. The vats that contained the finished, blended product would be pumped out into catch basins in the floor. From

there the product would be pumped into another container adding chemicals to stabilize the mixture. The finished product would again be pumped into bulk liquid tank trucks for delivery to customers.

A small switch, located at each machine, turned on the rotating blades of each blender. Laborers in the rendering area would monitor the ribbon blenders, turn them on and off as necessary and clean the equipment at the end of the shift. The daily cleaning of the equipment consisted of hosing down the inside of the tanks while standing on a portable platform ladder beside the tank.

Each blender was coupled with a heated water tank. The blenders were jacketed and hot water (steam) was pumped through the jackets to heat the product in the blender. The shutoff for the heating element was located outside the building. When cleaning the blenders, the workers would shut off the heat because it was too hot to clean the equipment with it on.

The electric power to the three machines was controlled by one switch accessed by climbing a fixed ladder to the roof of a small room in the area. A large electrical panel box was located on the wall. Nobody had ever been instructed to shut the machines off there while cleaning.

On the day of the incident, the amount of fish entrails to be processed was far less than normal. The company decided to use the opportunity to give the rendering area a thorough cleaning. The victim and his co-worker were assigned to this task, which consisted of washing down the all the machinery and the walls with soap and water.

Debris, such as plastic wrapping would accumulate at the bottom of the blenders. This debris did not interfere with the operation of the equipment, but on the day of the incident it was to be removed. Although it is not clear that the workers were directly instructed to enter the tank to clean it, they were not prevented from doing so by any supervisors in the area. Workers had been seen in the tanks prior to that day as well.

This day the two workers apparently entered the tank to either clean out the debris at the bottom or to gain better access for washing out the tank. While in the tank, one worker (the victim) asked for a hose to be handed up to him. When he pulled on the hose, it pulled on a switch on the side of the tank which activated the rotating ribbon blades. The co-worker was able to pull himself out of the tank, but the victim was caught in the slowly rotating blades. He screamed and somebody called 911. The police and fire departments responded immediately. Rescue personnel were not able to remove the victim from the equipment and he was pronounced dead on the scene. The blades had to be cut to extricate the victim who was then taken to the medical examiners office.

CAUSE OF DEATH

The medical examiner listed the cause of death as crushing injuries of the abdomen.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Employers should develop and enforce a comprehensive lockout/tagout program.

Discussion: The basis of a comprehensive program to control the release of hazardous energy is a thorough analysis of the energy-related hazards of all machinery and equipment. This analysis should include both an examination of the machinery and an examination of all the tasks performed by operators and other workers on that machinery. It is insufficient to analyze the machinery without understanding how the machine is used, serviced, cleaned or maintained and by whom.

If an operator during the course of normal production is exposed to any machine hazard, the operator should be protected by machine guarding (OSHA 1910.211 - .219). When the operator, or other person, is performing tasks for which guarding must be removed or that create a temporary exposure to machine hazards, then steps must be taken to prevent injury due the release of hazardous energy. This energy release is most likely the accidental starting of the machine. It is not sufficient in these situations to just turn off the machine at the operator station. This situation requires an energy control program.

OSHA regulation 1910.147 requires that employers establish procedures for isolating machine or equipment from the input of energy by affixing appropriate locks or tags to energy-isolating devices to prevent any unexpected energization, start-up or release of stored energy that would injure workers.

The energy control program must include: written energy control procedures; an employee training program; and periodic inspections of the procedures to assure their effectiveness. The written procedures for energy control must include specific procedures and energy-isolating devices to be used on each piece of machinery.

Employees must be trained to the level of their participation in the energy control procedures. “Authorized” employees are those who will be implementing the energy control procedures and performing the servicing or maintenance on the machinery. Authorized employees must be fully trained in:

- details about the type and magnitude of the hazardous energy sources present in the workplace, and
- the methods and means necessary to isolate and control those energy sources (i.e., the elements of the energy control procedure(s).

Detailed instructions in the implementation of an energy control program are available from OSHA. All forms of energy must be considered including electrical, hydraulic, pneumatic and mechanical.

In this incident, there was no such program in place. Employees were allowed to enter a hazardous machine without disabling the machine from accidental start-up. Had the employees shut off the machine at the main switch and prevented others, through a tag or lock, from restarting that switch, the machine would not have started when the hose contacted the local switch.

Recommendation #2: Employers should develop, implement, and enforce a comprehensive safety program that includes, but is not limited to, training all workers in recognizing and avoiding the hazards of machinery.

Discussion: The company did not have any comprehensive written safety, health and/or training programs in effect at the time of the incident. Employers, with the participation of employees, should develop, implement, and enforce a comprehensive safety program. The program should begin with an analysis of hazards associated with machinery and equipment and the implementation of controls of those hazards. It should also include training for all employees in hazard recognition and use of controls.

In the case of temporary workers, both the temporary agency and the employing facility share a responsibility in the health and safety training of workers. However, since the employing facility is in control of the hazardous exposures at the worksite, it bears the responsibility to provide specific health and safety training relevant to the tasks that workers will perform at its facility. The easiest way to assure that such training is accomplished is to integrate health and safety into the basic training that each worker receives on a new job or task.

This training should be based on an analysis of the hazards of their assigned tasks, the availability and proper use of controls and knowledge of what is expected of them during normal operations as well as in case of an emergency.

To be most effective, training and signage in the workplace should be provided in the languages spoken or read by the workforce. This may mean that a number of bi-lingual workers should be trained specifically as health and safety trainers if a facility consistently employs non-English speaking workers.

In this case, when workers were cleaning the tanks, they were made uncomfortable by the heat of the steam jackets on the tanks. Because this hazard was apparent to them, they found out on their own how to turn off the steam when cleaning. The hazard of inadvertent startup of machinery is not so apparent a hazard since these types of incidents, though serious, are rare. This is why safety programs and safety training are so important in assisting workers in recognizing and anticipating the less apparent hazards of their work.

REFERENCES

Code of Federal Regulations, Labor 29 CFR 1910.211-219 Machinery and Machine Guarding; 29 CFR 1910.147 Control of Hazardous Energy (Lockout/Tagout)

American National Standard for Bakery Equipment - Safety Requirements, ANSI Z50.1-1994. American National Standards Institute, New York.

U. S. Department of Labor, Control of Hazardous Energy (Lockout/Tagout), OSHA 3120, 1997 (Revised)