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**TO:** Director, National Institute for Occupational Safety and Health

**FROM:** Iowa FACE Program      **Case No.** 2004IA005      **Report Date:** 5 June 2008

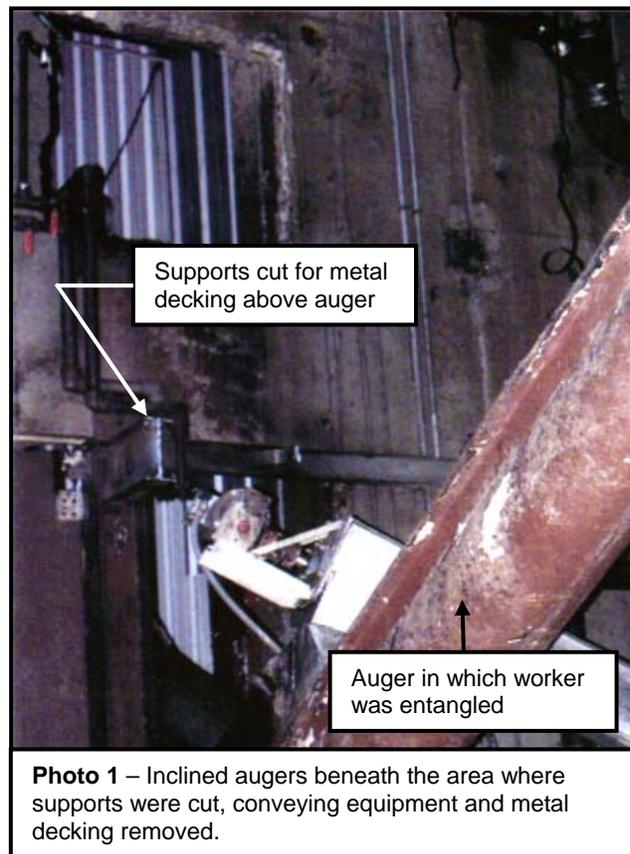
**SUBJECT:** Hispanic laborer entangled in auger at pork processing plant

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## SUMMARY

A 36-year-old, Hispanic man died at a pork processing plant in central Iowa mid-winter of 2004. The victim had his feet entangled in an inclined, auger conveyor when it started. He was retrieving hardware or pieces of metal that had fallen into the auger during dismantling of conveying equipment and metal decking above the auger earlier that day and the day before (Photo 1). In an adjacent room the supervisor, who did not believe anyone was in or above the auger but was not able to see it, removed his lockout and turned on the main circuit breaker. The auger's on/off electric switch was mounted to the wall near the auger. The switch was in the "on" position so when the main circuit breaker was turned on the auger started immediately.

A co-worker, who was also tasked with picking up metal debris from the work area, did not know how to turn the auger off so he ran outside the room calling for help. Another employee came into the rendering room where the auger was running and turned off the switch for the auger. The victim's legs were caught in the auger and he was face down, head down the incline, with his feet up the inclined auger. Rescue personnel arrived 10 minutes after the incident. Despite resuscitative efforts, the victim was pronounced dead at the scene 35 minutes later.



## RECOMMENDATIONS:

1. *Equipment lockout/tagout procedures must be fully implemented, including checking the work area to ensure that all employees have been safely positioned or removed before removing lockout and notifying employees that lockout devices have been removed from energy sources.*
2. *Training should be provided to employees to ensure that the purpose and function of hazardous energy control of machines is understood and that they have the knowledge and skills required for safe application, usage, and removal of hazardous energy controls.*
3. *All employees should strive for clear communication with each other, and be aware that in hazardous situations language differences may result in misunderstanding of instructions.*

## INTRODUCTION

A 36-year-old, Hispanic man died at a pork processing facility when both of his legs were entangled and severed in an auger. Iowa FACE personnel learned of this incident through news media accounts. Interviews with management, the supervisor, co-workers, and emergency responders, as well as documentation from investigating authorities including local police and the Medical Examiner, contributed to this report.

This pork processing facility with approximately 370 employees at the time was purchased from its previous owners by a group of investors about one month before the incident. The victim had worked at the plant for about 4 years, usually working in the hog kill area. However, on this particular weekend and day he was assisting with a special remodeling project in the rendering room of the facility to dismantle unused overhead conveying equipment and its associated metal decking and move it to another part of the facility.

The victim, when he was hired, had been shown a safety video that included instruction on the importance of staying away from moving machinery in the plant. Workers removing the conveyor and decking had not received safety training for the specific task they were assigned to do and no training had been provided to them on lockout/tagout procedures. The only co-worker with the victim at the time of the entanglement did not know how to shut off the auger. However, some awareness of lockout/tagout is evident at least at the supervisor level since he had locked out the main circuit breaker. No additional information on written safety policies, training participation, or specific safety procedures by the new owners of this pork processing facility at the time of the incident was made available.

## INVESTIGATION

The victim had a temporary assignment to help with a weekend remodeling project in the rendering area of the hog processing facility. He usually worked the hog kill floor where their carcasses were hung onto the processing line. This weekend project involved dismantling unused conveying equipment and metal decking, moving it from the rendering room to another area of the plant. The project supervisor, who was most fluent in Polish, reported that after the overhead conveying equipment and decking was removed he instructed the victim, who was most fluent in Spanish, and a coworker to scout for and pick up any metal debris that had fallen

to the floor during the dismantling process. The auger in which the victim was entangled ran beneath where the conveyor and metal decking were removed as shown in Photo 1.

The auger sloped upward to over 8 ft (2.4 m) above the floor in the area where the entanglement occurred. When in use, the auger conveyed ground pig feet from the discharge of a grinder to the rendering vat.

The victim had climbed up the incline of the 10-inch (0.25 m) diameter auger to retrieve hardware that had fallen into the auger or hopper (Photo 2). A coworker noted the victim had located the hardware and was about to climb down when he slipped into the hopper at the same time the auger started. His feet and lower legs were drawn into and up the auger.



**Photo 2** – Entanglement occurred in inclined auger beneath open hopper (above and left of ladder used by responders and behind tear in side of hopper above ladder made during extrication efforts).

The maintenance foreman, another maintenance employee, and two laborers had been working on the remodeling project but at the time of the incident only one laborer was in the room with the victim. The co-worker ran outside the rendering room and yelled for help. He did not know the location for the auger on/off switch. It was on the wall approximately 2 ft (0.6 m) from the auger, about 7 ft (2.1 m) above the floor, and it was in the up or “on” position. Another worker just outside the rendering room responded, came into the room and turned off the wall switch for the auger. One employee reported that the auger switch had been used a long time ago, indicating that the wall switch may not normally have been used to turn the auger off and on.

The maintenance foreman had locked the main breaker control during the dismantling of the overhead equipment because the employees would be working above the auger. Other involved workers had apparently not applied separate, additional locks. The foreman left the rendering room to work on another project in a different area of the plant when the dismantling was completed and after instructing the workers to clean up metal debris. On his way out he had removed his lock and activated the main breaker for the circuit serving the auger, which was located in an adjoining room. The foreman did not expect anyone would be in or near the auger but could not see the auger or observe workers in the rendering room when he removed his lock. If seldom used, the auger wall switch would be left in the “on” position explaining why the auger started when the lockout was removed and circuit breaker closed.

It is not clear how the victim got to the location along the auger where he was entangled. Most likely he walked or climbed up its incline scouting for the bolt and other metal debris. There was no ladder in the area at the time of the incident. The auger was large and rapidly pulled his legs upward, entangling and traumatically severing them both at mid-thigh.

The incident occurred at about 3:00 PM. Emergency medical services were called and arrived within 10 minutes of the incident, just 5 minutes after receiving the call. The victim was awake and aware of his surroundings. Paramedics placed him on oxygen and initiated an intravenous line, the victim rapidly lost consciousness, stopped breathing and became pulseless. He was pronounced dead at the scene 45 minutes after the incident.

## CAUSE OF DEATH

The autopsy described the cause of death as “hemorrhagic shock due to traumatic amputation of the legs”.

## RECOMMENDATIONS / DISCUSSION

**Recommendation #1** – *Equipment lockout/ tagout procedures must be fully implemented, including checking the work area to ensure that all employees have been safely positioned or removed before removing lockout and notifying employees that lockout devices have been removed from energy sources.*

**Discussion:** OSHA estimates that compliance with their lockout/tagout standard prevents an estimated 120 fatalities and 50,000 injuries each year;<sup>1</sup> it is also one of OSHA's Top 10 "Most Serious Violations" and Top 10 "Most Often Cited Violations."<sup>2</sup> OSHA lockout/tagout requirements must be followed.<sup>3</sup> This facility implemented lockout procedures while the overhead conveyor and metal decking were being removed. However, before lockout or tagout devices are removed the person removing the lock must check the work area to ensure that all workers have been safely positioned or removed and that affected workers are notified that the lockout or tagout device(s) have been removed. In many instances, multiple lockouts by involved individuals are recommended and employed as a precautionary practice. Proper training on lockout/tagout must occur, with retraining when workers are in a new situation. This training is important for those authorized to use the locks or tags as well as those who will be working in the affected area. Other FACE cases related to amputation in meat grinders have also highlighted improper lockout/tagout procedures, inadequate training, and poor communication between supervisor and worker.<sup>4,5</sup> An examination of the work area before energizing the equipment may have prevented this incident.<sup>6</sup>

**Recommendation #2** – *Training should be provided to employees to ensure that the purpose and function of hazardous energy control of machines is understood and that they have the knowledge and skills required for safe application, usage, and removal of hazardous energy controls.*

**Discussion:** The Bureau of Labor Statistics estimates that the injury and illness rate for the meat packing industry declined from an estimated 29.5 injuries and illnesses per 100 full-time workers in 1992 to 14.7 in 2001. Nevertheless, it still has one of the highest rates of injury and illness of any industry.<sup>7</sup> Overall reported workplace fatalities dropped 20 percent from 1995 to 2005 while fatalities among meat packing plant workers remained high.<sup>8</sup> The work-related death rate among Hispanic workers decreased 1992—2006 however it was “consistently higher than the rate for all US workers, and the proportion of deaths among foreign-born Hispanic workers increased over time”.<sup>9</sup>

Failure to provide required training is one of the most frequently cited violations of OSHA standards. The employer must provide training to ensure that the purpose and function of the lockout/tagout program are understood by employees and that the knowledge and skills required for the safe application, usage, and removal of the hazardous energy controls are acquired by employees and retraining must be provided for all affected employees whenever there is a change in their job assignments. All facility employees should be trained to know the location of switches and how to de-energize the equipment in the area where they are working. To facilitate this, all switches should be clearly marked, in good working order, and be easily accessible.

In addition, training must be conducted in such a manner that employees learn important safety principles, be interactive, practical, and task-specific in order to facilitate adoption of appropriate safety behaviors by workers. Safety talks among all employees and safety refresher courses must be an integral part of an ongoing, rigorous safety program to address new situations, new hazards, or to simply keep workers constantly aware of safety. In this incident, knowledge about the switch may have allowed the conveyor to be de-energized more quickly, potentially reducing the severity of the injury.

**Recommendation #3** – *All employees should strive for clear communication with each other, and be aware that in hazardous situations language differences may result in misunderstanding of instructions.*

**Discussion:** Supervisors may give what they think are clear instructions to a worker, but the worker may understand those instructions differently. Accordingly, it is essential that all workers ensure that their message is understood by the receiver. This is important in all cases and especially where employees may be communicating with each other in languages other than their first language.

In this incident language difficulties may have been a complicating factor since parties involved were fluent in different languages and English was first language for neither the foreman nor the worker. Many agencies have recognized the need for specialized training for Hispanic workers, are working to make more information available in Spanish, and to provide training that is culturally sensitive, relevant, and effective for Hispanic workers.<sup>8</sup>

Many resources are becoming available to train supervisors and workers in cross-cultural communication. Such resources should be utilized within each facility to ensure that its workers are properly trained to communicate effectively in the context of their work situation.

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<sup>3</sup>29 CFR 1910.147 The control of hazardous energy (lockout/tagout). Available at: [www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_id=9804&p\\_table=STANDARDS](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=9804&p_table=STANDARDS) Accessed 12 Nov 2006.

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<sup>8</sup>OSHA. 2005. Hispanic outreach fact sheet. Available at: [http://www.osha-slc.gov/OshDoc/data\\_Hispanic/hispanic\\_outreach.pdf](http://www.osha-slc.gov/OshDoc/data_Hispanic/hispanic_outreach.pdf). Accessed 12 Nov 2006.

<sup>9</sup>CDC. 2008. Work-related injury deaths among Hispanics – United States, 1992—2006. Available at <http://www.cdc.gov/mmwr>. Accessed 5 Jun 2008.

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# Fatality Assessment and Control Evaluation FACE

Fatality Assessment and Control Evaluation, FACE, is a program of the *National Institute for Occupational Safety and Health* (NIOSH), which is part of the *Centers for Disease Control and Prevention* of the *U.S. Department of Health and Human Services*. Nationally, the FACE program identifies traumatic deaths at work, conducts in-depth studies of select work deaths, makes recommendations for prevention, and publishes reports and alerts. The goal is to prevent occupational fatalities across the nation.

The NIOSH head office in Morgantown, West Virginia, carries out an intramural FACE case surveillance and evaluation program and also funds state-based programs in several cooperating states. In Iowa, *The University of Iowa* through its *Injury Prevention Research Center* works in conjunction with the *Iowa Department of Public Health* and its *Office of the State Medical Examiner* to conduct the Iowa FACE program.

Nationally, NIOSH combines its internal information with that from cooperating states to provide information in a variety of forms which is disseminated widely among the industries involved. NIOSH publications are available on the web at <http://www.cdc.gov/NIOSH/FACE/> and from the NIOSH (1-800-CDC-INFO (1-800-232-4636) or email [cdcinfo@cdc.gov](mailto:cdcinfo@cdc.gov)).

Iowa FACE also publishes its case studies, issues precautionary messages, and prepares articles for trade and professional publications. In addition to postings on the national NIOSH website, this information is often posted on the Iowa FACE website at <http://www.public-health.uiowa.edu/FACE/>. Copies of FACE case studies and other publications are also available by contacting Iowa FACE directly.

The Iowa FACE team includes the following specialists from the University of Iowa: Craig Zwerling, MD, PhD, MPH, Principal Investigator; John Lundell, MA, Co-Investigator; Murray Madsen, MBA, Chief Trauma Investigator; and Co-Investigator/specialists Risto Rautiainen, PhD, and Wayne Sanderson, PhD, CIH. Additional expertise is provided from the Iowa Department of Public Health, including Rita Gergely, Principal Investigator, and John Kraemer, PA, from the Office of the State Medical Examiner.

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