MARYLAND DIVISION OF LABOR
AND INDUSTRY
MARYLAND FACE PROGRAM
CASE: 94MD058
DATE:

TO: Project Officer, State FACE Project, Division of Safety Research, NIOSH, CDC

FROM: Maryland FACE Program, Division Labor & Industry

SUBJECT: Laborer caught in chipper/shredder machine--Maryland.

SUMMARY

A 24-year-old male groundsman (the victim) died from injuries sustained when he was caught in a brush chipper. The victim was responsible for loading limbs into the chipper while a co-worker, the foreman, was removing branches from a tree. During the process of loading the machine the victim must have placed his hand(s) into the chute and his left arm was drawn into the feeder wheels and traumatically amputated. The victim also suffered head injuries as he was pulled into the machine. He died at the scene.

INTRODUCTION

On October 6, 1994 a 24-year-old white male groundsman was killed when he was pulled into a brush chipper. On October 11, 1994 the Maryland Occupational Safety and Health (MOSH) Operations Supervisor notified the FACE investigator of the event. On November 23, 1994 the FACE investigator met with the employer to discuss the event and inspect the machine involved in the fatality. The MOSH Occupational Safety and Health Inspectors who were responsible for the compliance investigation were consulted about the event and their case files and photographs were reviewed. Additionally, the Deputy Medical Examiner and the chipper manufacturer were interviewed. The autopsy report, the police report, and technical data from the manufacturer were requested and reviewed during the investigation.

The employer had been in the residential tree service business for 1 year and 4 months at the time of the incident. The company had four employees,

including the owner . No other employees had the same job title as the victim. Two employees, a foreman and the victim, were at the site when the incident occurred. The employer required that two employees be present when any tree service activities were performed. The work is seasonal in nature--inclement weather poses serious hazards to workers who climb trees, and the owner prohibited this activity in wet weather.

The company had no written safety program. Each job was staffed by at least one foreman who was responsible for the safety of the jobsite. The owner, an experienced arborist, worked all of the large jobs and did most of the estimating for new contracts. The owner was familiar with the jobsite where the incident occurred and was able to give direction to the foreman and crew assigned to this particular job.

The owner provided on-the-job training for new hires on all equipment and allowed employees use of equipment when he felt the individual was properly prepared. The employer only hired individuals with previous experience in residential tree trimming and utility right of way clearing. In addition to utilizing skilled employees, the employer also took an active roll in directing the progress of jobs. The company had no previous fatalities or serious injuries.

The victim had worked for the employer for three months at the time of the incident. He had previously been employed for at least one year by another company engaged in utility right of way clearing and other arborist activities. He reportedly had experience with a variety of equipment used in tree trimming and felling activities. The victim's major responsibility during his three months with the employer was the operation of the brush chipper involved in this fatality. The victim had been trained specifically in the operation of this machine and had been observed by the employer using it safely on many occasions.

INVESTIGATION

A two person crew, the victim and a foreman, were at a residential site removing a small evergreen tree and performing other work requested by the property owner. The foreman was limbing a tree while the victim was gathering the felled limbs and feeding them into the brush chipper. The employer provides hardhats, leather gloves, and eye protection for the crew. At the

time of the incident it is believed that the victim was wearing no head or eye protection, but was wearing a pair of gauntlet style leather gloves.

The chipper involved in this incident was a trailer mounted disk type unit powered by a four cylinder diesel engine. Power transmission was via a power-takeoff that powered the cutting disk and the mechanical in-feed system that drew materials toward the cutting surface. The feeder wheels of the in-feed system border the horizontal axes of the feeder opening. The feeder wheels are mounted on a spring tensioned mechanism that allows the in-feed mechanism to open for branches of different diameter.

The incident occurred at the last scheduled job of the day. The crew arrived in the mid-afternoon to begin taking down a small tree. The foreman was removing limbs from the tree with his back to the victim when the incident occurred. The victim had been feeding tree limbs into the chute of the chipper. The incident was not witnessed, but the victim must have placed his hands into the chute, possibly to reposition materials, when he was pulled into the feeder wheels. It is possible that as he was feeding limbs into the chute he became entangled with the materials and was drawn into the machine.

The foreman came to the aid of the victim when he heard a scream and became aware of what had happened. The foreman activated the panic bar reversing the direction of the feeder wheels, thus reversing the traction on the victim's arm, allowing him to fall/be helped out of the in-feed chute. Most of the victim's left arm and part of his shoulder had been traumatically amputated by the feeder wheels. The victim also received severe head injuries as a result of his head contacting the feeder wheels of the in-feed mechanism. The victim fell, or was pulled, out of the machine and the foreman summoned the property owner to call 911 to activate the emergency medical services. Paramedics arrived within approximately five minutes. No treatment was initiated. The victim was pronounced dead at the scene and was transported to the Office of the Chief Medical Examiner for autopsy.

CAUSE OF DEATH

The Medical Examiner's report stated that the cause of death was multiple injuries.

RECOMMENDATIONS/DISCUSSION

Recommendation #1. ***Employers should ensure that employees are provided with appropriate personal protective equipment and training specific to the correct use of all required personal protective equipment.***

Discussion: The victim in this incident had been wearing gauntlet style gloves while feeding the brush chipper. This type of glove has a flared gauntlet style cuff that poses a hazard of being caught on materials or equipment. The use of this type of glove is specifically prohibited by ANSI Z133.1-1982 (8.6.6). It is not known whether the gloves worn by the individual contributed to his entanglement with the machinery, but it is a possible explanation.

Recommendation #2: ***Employers should develop, implement, and enforce a safety and health program to instruct employees in hazard recognition and to provide clear guidance on safe work procedures and safe work practices.***

Discussion: The company involved in this incident had no formal safety and health program to assure that employees were instructed in safe and appropriate work practices. The employer did take an active part in the training and demonstration of work procedures and the use of equipment. The victim had been taught the correct way to use the machine, but had erred in some way on the day of the incident.

Recommendation #3: ***Manufacturers should consider design alterations to the in-feed chute so that gravity can be used to feed small limbs and compact brush.***

Discussion: The design of heavy duty brush chippers, like the one involved in this incident, has been altered over the years in an effort to provide improved safety for the operator. The in-feed chutes have been lengthened and some models offer extended feed tables to put more space between the operator and the in-feed mechanism and cutting blades. Neither of these interventions solves the dilemma of feeding small limbs and compact brush against an inclined chute or along an extended feed table. The manufacturer's material

that accompanied the machine involved in this incident specifically warns the operator against placing the hands into the in-feed chute, and directs that small items be fed along with larger limbs. The option of using larger limbs or brush may not be available, so another way to achieve the task may be helpful. An option that would permit adjustment to the in-feed chute to allow for a gravity feed of smaller items could offer an alternative.