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TO: Director, National Institute for Occupational Safety and Health

FROM: California Fatality Assessment and Control Evaluation (FACE) Program

SUBJECT: Laborer dies after inhaling fumes and drowning in California

SUMMARY

California FACE Report #92CA001
April 15, 1993

A 20-year-old male Hispanic laborer (victim) died after inhaling trichloroethane and drowning in a tote bin. A tote bin is a fiberglass container which measures 65 inches in height and 45 inches in diameter, with an opening on top measuring 18 inches in diameter. A valve at the outside bottom of the bin allows the water and glue to flow out into the drain. This valve had not been opened and the bin was full of water when the victim was discovered and pulled out. The victim was performing his routine job cleaning out the residual glue in the bin. He was standing on the top step of a 23 inch ladder while using a high pressure steam hose to loosen the glue on the bottom of the bin. There were no co-workers in the immediate area and the victim was not discovered until an hour after the initial incident. The California FACE investigator concluded that, in order to prevent future similar occurrences, employers should:

- provide respirators and respirator training to all employees working with hazardous materials, if a respiratory exposure hazard exists.
- implement and maintain a safety plan for all employees and all work areas. Safety plans contain specific safety rules and training documentation for all jobs.
- allow safe access to all equipment and work areas.
- develop and implement a confined space safety program.
- cover the opening on the top of the tote bin with wire or other material so that employees cannot fall through or climb into it.

INTRODUCTION

On March 18, 1992, a 20-year-old male Hispanic laborer died after inhaling trichloroethane fumes and falling into a 65 inch tote bin and drowning. Notification of the fatality was obtained from the California Occupational Safety and Health Administration (Cal/OSHA) office. At 2:50 pm on March 18 the FACE investigator was notified of the fatality and responded to it. He arrived at approximately 4:35 pm that afternoon. Cal/OSHA, the District Attorney's office, and the County Coroners office had investigated the site earlier that afternoon. Their reports were obtained and reviewed by the FACE investigator. An interview was arranged with the employer for March 23, at 8:00 am. The California FACE (CaFACE) investigator was accompanied by a National Institute of Occupational Safety & Health (NIOSH) investigator during the on site interview. Photographs were also taken of the incident site by the CaFACE investigator.

The employer had been in business at this location for approximately 28 years. There were 18 employees who worked for the company. The nature of their business was primarily the storage of sealants, glues, and adhesives in tote bins. They also recycled and cleaned the bins so that they could be reused. The plant manager provided all safety training for employees. The workers were given safety training every month and also at the beginning of each new job. There were no written safety rules, and there was no documentation of any safety training. According to the manager, the victim was employed specifically for the job he was doing and had been given safety training. The victim had worked as a temporary employee through an agency for 2 months.

INVESTIGATION

The employer operates daily from 8:00 am until 4:30 pm with all employees having left by 5:00 pm. In the morning someone is usually there by 6:00 am to open the warehouse. The company is primarily involved in the distribution of and technical assistance for sealants, glues, and adhesives. The tote bins are located throughout the property and are routinely moved for pickups and deliveries. The tote bins stand 65 inches in height and are 45 inches in diameter. There is a hole in the top of the bin and a valve at the bottom of the bin. The hole on the top was 18 inches in diameter. The valve at the bottom of the bin was used to connect a hose for water and allowed the water and glue to be released to the drain. These bins arrived by delivery truck containing varying amounts of glue in them. They must then be cleaned for reuse. The bins were filled (6" from the bottom) with water and then steam cleaned with a hose. The victim was last seen alive at

10:30 am on March 18 by his supervisor. He was cleaning a tote bin (No. 488) at that time. He was discovered submerged inside this same bin, which was overflowing with water, at approximately 12:30 pm by a co-worker. The area where the victim was cleaning the bin was just outside of the warehouse in the northwest corner of the plant, the area where the bins are usually cleaned. The floor underneath the bin was made of cement with an awning located above the cleaning area at a height of approximately 15 feet.

According to his supervisor, the victim was employed for this task and had been given safety training. The supervisor noted that it was unusual for the bin to be completely filled with water as it had been when the victim was discovered. The victim had been instructed not to fill the bins completely while cleaning them. He had also been told not to climb on the top of the bin when cleaning them. If the bin had glue in the bottom which was difficult to remove, he had been instructed to turn the bin on its side and reach his arm in, in order to get a closer angle with the steam hose.

CAUSE OF DEATH

The Coroner's Report states that the cause of death was drowning as a result of acute trichloroethane intoxication.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Employers should provide respirators and respirator training for all employees working around or with hazardous materials, if a respiratory exposure hazard exists.

Discussion: The victim in this incident was working with a known hazardous material but was not provided a respirator. Under Title 8 of the California Code of Regulations (CCRs) section 5144 Respiratory Protection employers must provide respirators for employees working in confined spaces.

Recommendation #2: Employers should implement and maintain a written safety plan for all employees and all work areas. Safety plans contain specific rules and training documentation for all jobs.

Discussion: The manager in this incident stated that there was an employee safety training program, but could not provide any written documentation which showed such training. Under Title 8 of the CCRs section 3203 (a) employers must

establish, implement, and maintain an effective written Injury & Illness Prevention Plan. Documented safety training is an important part of any safety program. Employers and management could use such information (accident statistics or employees comments) to make improvements with regard to the safety and welfare of their employees and workplace.

Recommendation 3: Employers should provide a safe way for employees to do their jobs without risk of injury.

Discussion: The victim in this incident had no way to reach the top of the tote bin other than to climb onto the top step of a 23 inch ladder. He was therefore at risk of falling onto the cement below or into the tote bin. There were no devices (safety belts/lanyards, or guardrails) to keep him from falling off the top step. Under Title 8 of the CCRs section 3270 (a) employers should allow employees access to all equipment and appliances except those located on roofs of dwellings and their accessory buildings.

Recommendation 4: Employers should develop and implement a confined space safety program.

Discussion: The warehouse manager had an existing procedure for cleaning the residue which had accumulated at the bottom of the tote bins.

- the bin was to be turned over on its side so that the employee could reach in and get a closer angle, with the steam hose, in order to loosen the glue on the bottom.
- the bin was never to be filled completely with water.
- employees were not permitted to climb onto the top of the bin in order to get a better angle with the steam hose.

Although the warehouse manager realized the hazards involved in this type of job (possibilities of falling if climbing up onto the top of the bin) employees may have not recognized such hazards or may have looked for short cuts in order to complete the job. Employers should ensure that all employees are aware of the potential hazards, possible emergencies, and specific procedures to be followed prior to working in, or around, a confined space. At a minimum, as discussed in

NIOSH publications 80-106, "Working in Confined Spaces," and 87-113, "A Guide to Safety in Confined Spaces," the following should be addressed:

- training the employees in confined space entry, testing, and the use of personal protective equipment, safety harnesses, respirators, clothing, etc.
- stationing a standby attendant outside the space for communication and visual monitoring.
- developing, and training employees in, emergency rescue procedures.
- identifying and controlling the hazards associated with the confined space involved.

Recommendation 5: The employer should cover the opening on the top of the tote bin with wire or other material so that employees cannot climb or fall into the bins.

Discussion: The tote bin opening could be covered before it is cleaned if that did not interfere with the operation. The design of the cover would have to depend on recommendations made by the management so that the cleaning could be done efficiently and safely.

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April 15, 1993