

MO FACE Investigation 95MO078

Subject: Machine Operator Struck By Rubber Injection Molding Machine

Summary:

A 23-year-old male operator (victim) of a rotary injection molding machine was crushed by the machine he was operating. This press, known as the DESMA II, consists of six separate molds or stations. Every 32 seconds the press rotates a station to the molten rubber injection port. The mold is then filled with the rubber product and cycles to the next station. Just before the station rotates to the injection port, the operator releases and removes the rubber product from the mold and places it to the side to cool. After the part has cooled sufficiently, the operator trims excess rubber product from the part and places it on a conveyor belt, which moves the part to another process.

The molding press is secured to the concrete floor of the facility, and an operating platform is built around one side of the machine. The operator works from the platform, removing the rubber parts from the mold and placing them on the conveyor. There is an open section of the platform where the round press intersects the square platform. This area is termed “no man’s land” by the workers (see Diagram 1.). The victim may have dropped a tool or a part down to the concrete floor and was lying on his stomach reaching down under the machine when the machine rotated to the next station. The machine caught the victim at the head and neck causing instantaneous death.

The MO FACE Investigator concluded that, in order to prevent similar occurrences, **ALL** employers should incorporate the following recommendations into their safety and health plans:

- ◆ **provide machine guarding to prevent machine operators from entering any zone identified as hazardous or from having any part of the body in such a zone during operation of the machinery;**

- ◆ **develop, implement and enforce a comprehensive safety program that includes, but is not limited to, training of employees in hazard recognition and avoidance, and safe work practices.**

Introduction:

On September 19, 1995, a 23-year-old male operator (victim) of a rotary injection molding machine was crushed by the machine he was operating. The same day officials from the Occupational Safety and Health Administration (OSHA) notified the MO FACE Program of the workplace fatality. On September 22, 1995, the MO FACE investigator traveled to the incident site and met with company officials and the OSHA investigator. The company representatives, witnesses and employees of the company were interviewed, and an incident site investigation was conducted and photographed.

The employer produces industrial rubber products using rubber-injection molding machinery. The company was established in 1913, and this facility was established in 1977. It is now owned by a larger corporation employing approximately 1,500 workers. This facility employed 201 workers at the time of the incident. The employer had a written comprehensive safety program and a lock-out tag-out program in place at the time of the incident. The company also has an active safety committee consisting of labor and management representatives. The victim had received safety and health training. The press operators are routinely rotated to the various presses in this facility. He was trained to operate this machinery, and had operated this press in the past. The incident occurred on the second day of his rotation for this press. He had been employed by this company for approximately 18 months.

Investigation:

The employer is an industrial rubber product producer specializing in producing rubber-injection molded parts. The company operates three shifts a day, five to six days a week.

On the day of the incident, the victim arrived for his usual work shift at 7:00 a.m. According to the employer and the machine log sheet, the equipment had been and was operating normally at the time of the incident. At

approximately 11:30 a.m. a co-worker was returning from a scheduled break and noticed that there were no parts leaving the machine area on the conveyor belt. He looked to see if the conveyor belt was on and saw the machine rotate. He then saw the victim under the machine on his back, trapped by the machine as it rotated to the next station. The co-worker hit the emergency stop bar and went to get help. Another co-worker was nearby and was told there had been an accident on DESMA II, and that the victim was trapped. This co-worker went to the machine and also hit the emergency stop bar and the stop button on the machine's control panel. He checked to see if the victim was breathing and had a pulse, but found none. Another co-worker called 911 and emergency personnel were summoned to the scene. The victim was lifeless when emergency personnel arrived. Several attempts to extricate the victim by lifting the machinery were unsuccessful. The platform was then cut out from under the machine and the victim was extracted. He was pronounced dead at the scene.

Cause of Death:

The death certificate listed the cause of death as massive head injuries.

Recommendations/Discussion:

The following recommendations are intended to educate all employers and employees on how occurrences, similar to the one described above, can be avoided.

Recommendation #1: Employers should provide machine guarding to prevent machine operators from entering any zone identified as hazardous or from having any part of the body in such a zone during operation of the machinery.

Discussion: The employees of the facility referred to the area where the victim was initially trapped as "no man's land." It is an open area where the machine and its stations intersect and rotate over the working platform. There is an open area between the stations on the machine, and when the machine rotates the

stations, this area of the working platform is covered by the machine. When the machine is not rotating, the open area between the stations is where workers can lie down on their stomach and reach for dropped parts or tools that are on the floor and under the machine. Because there are 32 seconds between cycles, operators may believe that this allows enough time to reach down and retrieve dropped articles. Normal operation of this machine does not require the operator to assume this position and reach under the machine. According to the employer, workers fully understand the hazards of reaching under the machine. And, if they must retrieve articles from under the machine, they are to stop the rotation of the machine, dismount the work platform, and approach the machine from the floor level. Some of the workers interviewed reported that they would use a broom or other device from the floor level to reach dropped articles from under the machine. They would not go under the machine themselves.

Recommendation #2: Employers should develop, implement and enforce a comprehensive safety program that includes, but is not limited to, training of employees in hazard recognition and avoidance, and safe work practices.

Discussion: Although the employer had implemented a comprehensive safety training program, it appears that the victim may not have fully understood the hazards of reaching under the machine while it was in its normal cycling mode. The workers and those who train other employees on the machinery were aware that this is a dangerous area by deeming it “no man’s land.” Perhaps the 32-second cycling time on this machine may have provided a comfort factor for the workers. They may have felt they were not at risk if they could retrieve dropped articles and return to the normal working station before the machine would cycle.

Employers should always be alert to areas that employees identify as potentially hazardous. They are usually right. Sometimes employees will not notify management because it

may cause management to impose more or new restrictions on the employee.

Employers should incorporate their employees into the company's comprehensive safety and health plan and safety committees. This form of empowerment can increase worker participation and worker hazard recognition and avoidance. It may also invite more open positive feedback on how the facility could operate more safely and efficiently.

The Missouri Department of Health, in co-operation with the National Institute for Occupational Safety and Health (NIOSH), is conducting a research project on work-related fatalities in Missouri. The goal of this project, known as the Missouri Occupational Fatality Assessment and Control Evaluation (**MO FACE**), is to show a measurable reduction in traumatic occupational fatalities in the State of Missouri. This goal is being met by identifying causal and risk factors that contribute to work-related fatalities. Identifying these factors will enable more effective intervention strategies to be developed and implemented by employers and employees. This project does not determine fault or legal liability associated with a fatal incident or with current regulations. All **MO FACE** data will be reported to **NIOSH** for trend analysis on a national basis. This will help **NIOSH** provide employers with effective recommendations for injury prevention. All personal/company identifiers are removed from all reports sent to **NIOSH** to protect the confidentiality of those who voluntarily participate with the program.

SIGNATURES:

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