

FACE Investigation 89CO029

Introduction:

The Colorado Department of Health in co-operation with The National Institute for Occupational Safety and Health (NIOSH), Division of Safety Research, performs Fatal Accident and Circumstances and Epidemiology (FACE) investigations when a report of an occupational fatality is received. The goal of these evaluations is to prevent fatal work injuries in the future by study of: the working environment, the worker, the task the worker was performing, the tools the worker was using, and the role of management in controlling how these factors interact.

On November 7, 1989, a 42 year old mechanic in a construction firm died after becoming entrapped in a roofing tar tank truck.

Contacts/Activities:

Under the terms of a cooperative agreement the Occupational Safety and Health Administration (OSHA), Colorado Area, notified the Colorado Department of Health, and a joint investigation was initiated that day. A meeting was held with the employer and his representatives, the accident site was photographed, fellow employees and rescue workers were interviewed, the distributor for the roofing tar was contacted and co-ordination was made with the medical examiner and the fire department.

Overview of Employers Safety Program:

The employer has been in the roofing construction business for eight years. The company employs forty-five individuals, three of whom have the same occupation as the victim.

The employer did not have an active safety program or hazardous communication program. The operation being performed was the first such activity by the company or the victim. A worksite inspection by OSHA had resulted in citations for these deficiencies earlier in the year and no corrective action had been taken.

Synopsis of events:

The fatal accident occurred on a Monday morning at approximately 1000 hours. At noon on the preceding Friday the victim had driven the tank truck to the tar supplier to have the tank pumped out, at that time the temperature of the tar was 550⁰. The tank was pumped down till the tar level was 38 inches below the access cover. The victim then returned the truck to the warehouse where it was parked indoors over the week-end with access hatch left open to facilitate cooling. Monday morning the victim entered the tank through a 18 3/4 inch access port to repair a faulty valve located inside the tank. The partially cooled roofing asphalt could not support his weight and he became stuck up to his knee level. Several attempts to pull him through the access port were unsuccessful and eventually a new hole was cut in the tank from which the victim was extracted. The rescue attempt required over 2 1/2 hours during which period the victim lost consciousness. Roofing asphalt becomes pliable in the temperature range of 180 - 200 degrees F. it is estimated that the internal temperature of the asphalt was in excess of that temperature. The victim was transported to a local hospital emergency room where he was pronounced dead at 1323 hours.

Cause of Death:

The cause of death was determined by autopsy to be heat hyperpyrexia. Anatomic correlates consistent with this include. extensive third degree burns of the lower extremities, marked pulmonary edema and congestion, and multiple subendocardial hemorrhages present within the heart.

Recommendations/Discussions:

Recommendation #1: Tanks should be drained completely before entry is attempted.

Discussion: In this instance where the tanker had been taken to asphalt supplier for pumping the product out of the tank the mechanism to completely empty the tank was readily available. By so doing the residue remaining in the tank would have had sufficient time to harden before entry was attempted seventy hours later.

Recommendation #2: Employers should develop and implement comprehensive safety programs. Aspart of this written safety program, the employer should develope procedures for entry and work in or around confined spaces.

Discussion: Since the emploer does not have a written comprehensive safety program, rules and procedures addressing the hazards associated in work of this nature should be developed, implemented, and enforced. Procedures for entry and work in confined spaces should also be developed, implemented, and enforced. If proper safety extraction equipment and an observer had been in place the victim might have been extracted in time to prevent the onset of heat hyperpyrexia.

Lyle E. McKenzie
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The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces
through safety and health research



Mechanic in a Construction Firm Died After Becoming Entrapped in a Roofing Tar Tank Truck

Colorado FACE Investigation 89CO029

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OVERVIEW OF EMPLOYERS SAFETY PROGRAM:

The employer has been in the roofing construction business for eight years. The company employs forty-five individuals, three of whom have the same occupation as the victim.

The employer did not have an active safety program or hazardous communication program. The operation being performed was the first such activity by the company or the victim. A worksite inspection by OSHA had resulted in citations for these deficiencies earlier in the year and no corrective action had been taken.

SYNOPSIS OF EVENTS:

The fatal accident occurred on a Monday morning at approximately 1000 hours. At noon on the preceding Friday the victim had driven the tank truck to the tar supplier to have the tank pumped out, at that time the temperature of the tar was 550°. The tank was pumped down till the tar level was 38 inches below the access cover. The victim then returned the truck to the warehouse where it was parked indoors over the week-end with access hatch left open to facilitate cooling. Monday morning the victim entered the tank through a 18 3/4 inch access port to repair a faulty valve located inside the tank. The partially cooled roofing asphalt could not support his weight and he became stuck up to his knee level. Several attempts to pull him through the access port were unsuccessful and eventually a new hole was cut in the tank from which the victim was extracted. The rescue attempt required over 2 1/2 hours during which period the victim lost consciousness. Roofing asphalt becomes pliable in the temperature range of 180 – 200 degrees F. it is estimated that the internal temperature of the asphalt was in excess of that temperature.

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Please use information listed on the Contact Sheet on the NIOSH FACE web site to contact [In-house FACE program personnel](#) regarding In-house FACE reports and to gain assistance when State-FACE program personnel cannot be reached.

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