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NIOSH Reports on the Preventability of Tractor Rollovers

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Each year, an average of 132 American farm workers are crushed to death as tractors overturn during operation. Nearly all of these fatalities can be prevented, according to a report released this week by the National Institute for Occupational safety and Health (NIOSH). NIOSH Director J. Donald Millar calls tractor rollovers an "occupational obscenity." According to Millar, "There is no scientific excuse for the persistence of this problem. This is something we know how to prevent." The key to prevention is the presence of a rollover protective structure (ROPS) on every tractor in use. A ROPS is a structural component attached to vehicles (like a roll-bar) which is designed to protect the operator if the vehicle overturns during operation. ROPS can be either unenclosed, as shown in the picture below, or enclosed, as part of a tractor cab. Safety restraints, such as seat belts, should be used in conjunction with the ROPS to keep the operator within the space protected by the device.

NIOSH urges all tractor owners to install ROPS on their tractors.

This picture illustrates a tractor with a ROPS. The use of ROPS could substantially reduce the national toll o occupational fatalities associated with tractors. To encourage the use of ROPS, at least one manufacturer has reduced the price of ROPS and is selling them at manufacturer's cost.

An article in this week's edition of the Centers for Disease Control and Prevention's (CDC) Morbidity and Mortality Weekly Report (MMWR) describes the magnitude of this problem and explores the effectiveness of ROPS in preventing these tragic injuries. Agriculture remains one of this nation's most hazardous industries, ranking fourth among industries in the United Sates at highest risk for work-related fatalities. One of the biggest killers on the farm today is the tractor, and by far the leading cause of tractor-related deaths is the tractor rollover.

"A tractor without a ROPS is a fatality waiting to happen," said Melvin L. Myers, coordinator for the agricultural safety and health program at NIOSH. NIOSH estimates that more than half of the 4.61 million tractors in use in the United States lack ROPS and safety belts. Of these, 61% were manufactured before 1971, the year ROPS first became available as optional equipment on farm tractors. Tractors manufactured before 1971 generally were not designed to accommodate the addition of ROPS. If tractors without ROPS are not retrofitted, NIOSH estimates that 2,800 rollover-related deaths could occur during the period that these tractors remain in use (an estimated 31 years). The potential public health benefit of retrofitting tractors with ROPS could be substantial.

Preventable Injuries

Each day preventable rollover injuries are reported across the country. Tragically, incidents such as these are neither unusual nor unique:

September 30, 1992, a 35-year-old man was crushed to death on a family farm in Winslow, Arkansas. He was bush hogging when his tractor overturned and pinned him underneath.

On October 9, 1992, a 69-year-old man was killed beneath a tractor in Russellville, Arkansas. It overturned while he was backing it off a trailer.

On November 13, 1992, a 45-year-old woman was crushed beneath a tractor in Belgrade, Minnesota. She was unloading corn with a tractor and wagon, when the wagon hit an elevator, tipping the tractor over on top of her.

On December 5, 1992, a 65-year-old man lost his life when his tractor overturned in Holman, Texas. He was pushing a round bale of hay with his tractor, when the tractor apparently went up the bale, causing the tractor to overturn on top of him.

ROPS: A Recognized Solution

Since 1967, a series of tractor rollover incidents has been investigated in Nebraska. Forty percent of the 250 persons involved in unprotected tractor rollover incidents died. In contrast, the study found that only 2%, or one person died, of the 61 persons operating ROPS-equipped tractors that rolled over. The one fatal victim was not personally restrained and was thrown from the ROPS protective zone during rollover. This incident emphasizes the need to use safety restraints, such as seat belts, in conjunction with ROPS in order to keep the operator within the space protected by the ROPS.

Between 1961 and 1983, a 92% reduction in tractor rollover fatalities followed a requirement to install ROPS on all tractors in Sweden.

Steps for Prevention

National and community-based injury-prevention programs should include plans for retrofitting or refurbishing farm tractors with ROPS to prevent fatalities associated with tractor rollover. These programs may include:

A buy-back of older, unprotected tractors.

Interventions tailored to the needs of specific farming regions (e.g., dairy, grain, and orchard).

Effectiveness studies of community-and demonstration-project intervention initiatives.

In addition, guidelines should be developed for design of ROPS for tractors manufactured before 1971.

Surgeon General's Conference on Agricultural Safety and Health

The NIOSH Agricultural Health and Safety Initiative is supporting surveillance, research, and intervention efforts directed at farmers, farm families, and farm workers nationwide. As part of this initiative, NIOSH convened the "Surgeon General's Conference on Agricultural Safety and Health" in 1991.

The proceedings of that conference, which brought together experts in agricultural safety and health from across the country, have just been released. Not surprisingly, the results confirm that tractor rollovers are a serious problem which continues to plague the agricultural population. Twenty-seven speakers at the conference referred to this preventable problem.

"Amidst expression of anguish and pleas for reason, there was an overwhelming interest in a particular issue, namely the need to reduce the risk of fatalities related to tractor rollovers," said NIOSH Director Dr. J. Donald Millar, summarizing the conference.

To request copies of the "Papers and Proceedings of the Surgeon General's Conference on Agricultural Safety and health," write or fax requests to:

NIOSH Publications 4676 Columbia Parkway Cincinnati, Ohio 45226 FAX: 513-533-8573

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