



NIOSH Warns: Manure Pits Continue to Claim Lives¹

National Institute for Occupational Safety and Health²

According to the National Institute for Occupational Safety and Health (NIOSH), farm workers are risking their lives every time they enter a manure pit. The oxygen-deficient, toxic, and/or explosive atmosphere which can develop in a manure pit has claimed many lives. NIOSH believes that warning farmers of this hazard will help end the continued devastation it is inflicting upon the American farm family.

"It is outrageous that we are losing virtually entire fatalities in manure pit tragedies," said NIOSH Director, Dr. J. Donald Millar. "While we know we cannot prevent a father from entering a pit to save his son, we can and will continue to do everything in our power to prevent farm workers from jeopardizing their lives by entering manure pits in the first place," stressed Millar.

It is not uncommon for manure pit incidents to result in multiple fatalities. As the following case demonstrates, persons attempting to rescue others in these confined spaces frequently become victims themselves. On a late summer afternoon, a farm worker entered a 10-foot-deep manure pit on his family's farm to make a repair. While attempting to climb out of the pit, he was overcome and fell to the bottom. His 15-year-old nephew then entered the pit to attempt a rescue. He too was overcome and collapsed. The boy's father, his cousin, and his grandfather, the farm owner, then entered the pit one by one, attempting to rescue him and his uncle. Tragically all five family members died.

Manure pit systems, used primarily on livestock farms (especially dairy and swine operations), allow for the easy cleaning of animal confinement buildings and the efficient underground storage of large amounts of raw manure. The hazards of manure pits, as well as the proper prevention measures, have been recognized by researchers for several years. However, many farm workers remain unaware of the dangers associated with

manure pits. Because the dangerous manure pit gases may not always be present, farm workers may have successfully entered these pits in the past. "It is hard to convince a worker who has entered a manure pit on several occasions without complications, that the potential for death exists," said Millar.

Although the potential for death always exists, farm workers should be particularly aware of the hazards of entering manure pits during the summer months. Changing conditions, such as warmer or more humid weather and increasing barometric pressure, can accelerate the production and accumulation of hazardous gases. Manure pits that had been entered without incident in the past, can quickly become filled with lethal concentrations of gases.

In order to prevent future deaths, farm workers must be informed of the dangers of manure pits. While NIOSH is currently working to develop practical prevention measures, current engineering controls are often expensive and impractical. Until more efficient prevention measures are developed, NIOSH urges farmers not to enter manure pits. If a pit must be serviced from the inside, farmers should consult the contacts listed on the following page for safe entry procedures. NIOSH urgently requests your assistance in disseminating the recommendations in this Update. Because manure pit fatalities increase in the summer months, we must act now to ensure the safety of our farm workers and their families.

PREVENTABLE DEATHS

- On August 8, 1992, a 27-year-old employee of a hog farm and his 46-year-old uncle, who co-owned the farm, died after entering an outdoor manure pit. The employee entered the pit to repair a pump when he was overcome and fell off the ladder into the pit.

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2. National Institute of Occupational Safety and Health, Department of Health and Human Services, 200 Independence Avenue, SW, Washington, DC, 20201. Phone: (800) 356-4674.

When the man's uncle descended the ladder in an attempt to rescue his nephew, he was also overcome and fell into the manure pit. Both men were removed from the pit by rescue personnel equipped with appropriate respiratory protection. They were pronounced dead on arrival at the hospital of hydrogen sulfide poisoning.

- On August 11, 1992, a 43-year-old dairy farm owner and his 23-year-old son died from asphyxiation after entering a manure pit. The father descended a ladder into the pit to attempt to clear a tunnel obstruction. His son was found lying on top of him, apparently overcome during a rescue attempt. The men were removed from the manure pit by rescue personnel equipped with appropriate respiratory protection. Both men were pronounced dead at the scene from asphyxiation due to lack of oxygen.

WHAT ARE THE HAZARDS?

There are several hazards associated with manure pits. Dangerous concentrations of gases such as hydrogen sulfide, ammonia, carbon dioxide, and methane can be produced when waste products break down. Since manure pits are confined spaces that are usually poorly ventilated, concentrations of these gases can quickly rise to levels that are immediately dangerous to life and health. These gases may also displace the oxygen in the pit, which may cause workers in the pit to suffocate due to a lack of oxygen.

STEPS FOR PREVENTION

To protect workers, the following precautions should be taken if a manure pit is in use on your farm:

- **NEVER ENTER A MANURE PIT!** If emergency entry into a pit is necessary for rescue, call your local fire department or 911. If it is absolutely necessary to enter a pit for maintenance or repair, contact your local extension agent or NIOSH for the recommendations necessary for safe entry. To contact NIOSH, call 1-800-35-NIOSH.
- **Post hazard signs on all manure pits.** The signs should be understandable to workers who cannot speak English or read. They should convey the messages DO NOT ENTER and DEADLY GASES POSSIBLE.
- **Provide access to all serviceable parts from outside the manure pit.** This should eliminate the need for entry into the pit.
- **Fit all openings to manure pits with substantial metal grill covers.** These grills provide natural ventilation and prevent accidental falls or entries into the pits.

MORE INFORMATION

Your state agriculture safety specialists, county extension office, and your local fire department can also provide valuable information.

For more information about this or other occupational safety and health concerns, call toll-free: 1-800-35 NIOSH