

Caution: Manure Pits¹

Prepared by Kerri Ebert and Michael Dennis²

Working on the manure pit's mechanical agitator was not one of Jay Anderson's favorite jobs, however it was necessary from time to time, and it was a job he had done many times. Today, as the July sun beat down on the parched ground, the 28-year-old, found himself entering the pit to replace a shear pin on the agitator shaft.

As he finished the job and started to climb out of the shaft, he was overcome by the toxic fumes and fell to the bottom of the 10-foot-deep pit. His 15-year-old nephew saw what had happened and quickly climbed down to rescue his uncle. Unaware of the potentially fatal fumes that had affected his uncle, he too was overcome and collapsed.

Realizing there was a problem, a 63-year-old cousin of Jay Anderson's climbed into the pit to rescue the two. He was followed by Jay Anderson's 37-year-old brother, and finally his 65-year-old father. Each entered the pit separately in an attempt to rescue the others. Each was overcome by the toxic fumes, which were more intense because of the heat, and collapsed.

Rescue workers arrived on the scene within 20 minutes of the last victim's collapse. All five men died within six hours after exposure to the manure pit gases. Reports of the medical examiner cite methane gas asphyxiation for the cause of death for each of the victims.

Awareness of the dangers of manure pit gasses and adequate ventilation in the pit area could have prevented these tragic deaths.

Manure pits, which are commonplace on American farms, serve a very useful purpose by allowing easy clean-up of animal confinement buildings and the efficient underground storage of large amounts of raw manure.

Inside the pit the manure decays and ferments. This process generates four potentially lethal gasses: methane, hydrogen sulfide, carbon dioxide, and ammonia. Creation of these gases during the decaying process leads to a deadly, and possibly explosive, oxygen-deficient atmosphere.

As with the case described earlier, fatalities often involve more than one victim, as co-workers or others attempt to rescue the initial victim. Farmers and farm workers appear to be unaware of the immediate danger posed by entry into manure pits. The victims of this accident, as is most often the case, had entered the manure pit many times before without problems. This is because the dangerous atmospheric conditions may exist intermittently. Being able to enter the pit numerous times without harmful effects, creates a false sense of safety for the farmer or farm worker.

Because of the potential for toxic gas build up, manure pits should be well ventilated. A standby person should be in constant contact with the worker in the pit. That standby person should be prepared and physically capable of lifting the worker to safety with mechanical lifting equipment (winch, hoist, or pulley) should the need arise. Anyone entering a manure pit should wear a safety belt or harness with a lifeline tied to mechanical lifting equipment.

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It is important to note that the highest number of manure pit deaths occur in the summer. Hot weather results in increased gas accumulation in manure pits. A motor-powered, continuous fresh air ventilation system for each manure pit is not only important, it is essential, especially when pit agitation is initiated. There should be a minimum of two vent openings and the system should have an explosion-proof design, since methane and hydrogen sulfide gas can be explosive. Exhaust should be directed outside and away from workers and livestock.

Another necessary piece of equipment to be kept near the manure pit is a positive-pressure, self-contained, breathing apparatus (SCBA). It should be used by anyone entering the pit. This is specialized equipment and special training is required for its use, therefore, it is not likely to be found on the average farmstead. For that reason farmers should never enter the manure pit unless absolutely necessary and only when proper safeguards have been taken.

Farmers are urged to eliminate the need for entry into the manure pit by providing access to all serviceable parts (shear pins, cleanouts, etc.) from the outside by either modifying existing systems to relocate serviceable parts or building a new pit system with access to serviceable parts on the outside.

If someone does collapse in the pit, never enter the pit to attempt a rescue without using a breathing apparatus. Without this protection, would-be rescuers are almost certain to become victims. Instead of attempting the rescue yourself, call the local fire department or rescue squad. They have the training and equipment to perform such a rescue without endangering other lives.