

MANURE PIT HAZARDS

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Manure Pit Hazards is one of the chapters from *Lessons in Farm Safety*, an interactive curriculum used to teach children about farm safety. *Lessons in Farm Safety* was developed by the Farm Safety & Health Program team at the University of Minnesota.

BACKGROUND

Farm workers risk 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 12 lives in Minnesota since 1994. Unfortunately, this is not just an “adult” problem; three of the twelve fatalities in Minnesota were of children under six years of age. This lesson reviews the reasons farmers use manure pits, common and dangerous gases found in manure pits, and how a person can be safe when working in and around manure pits.

LEARNING OBJECTIVES

By the end of this lesson the learner will:

- Recognize the specific hazards associated with manure pits.
- Describe and name the four gases found in the highest concentration in manure pits.
- Correctly state the procedure to follow if someone has fallen into a manure pit.
- Identify proper protective equipment to use when entering a manure pit.

ACTIVITIES

Tell students the purpose of manure pits. Manure pit systems, used primarily on swine and dairy farms, allow for the easy cleaning of animal confinement buildings and efficient underground storage of large amounts of raw manure. Because the dangerous pit gases may not always be present, farm workers may have successfully entered these pits in the past.

Invide a respiratory therapist to speak to the group about how the lungs function and the symptoms of respiratory disease. Good visual aids include respiratory protection devices, Use Manure Pit slide set (see resources) or review the properties of gases that may be found in manure pits.

Set up manure pit display (directions follow). Demonstrate displacement of oxygen by toxic gases by lighting match and slowly lowering it into the tank (wrap a coated wire bread twisty around the match to lower it through the slats). The flame will quit burning within a few inches, well above the visible layer of gas. If you allow a few minutes for the gases to accumulate the flame will burn out just beneath the slatted floor. This will reinforce the concept that gases necessary to breath (or allow a flame to burn) are invisible and can fill a manure pit. Be sure to emphasize that a person should NEVER enter a manure pit with a lit match.

HOW TO MAKE A MANURE PIT DISPLAY

WARNING!

DRY ICE IS EXTREMEY COLD AND MAYCAUSE SEVERE BURNS IN CONTACT WITH SKIN. TALSOBERATES HEAVY GAS WHICH MAY CAUSE SUFFICATION. **D**O NOT PUT IN STOPPERED GLASS JARS OR OTHER SEALED CONTAINERS. **H**ANDLE WITH CLOVES. KEEP OUT OF CHILDREN'S REACH.

You will need one of each of the following items: 2½ gallon aquarium; toy cow, pig, and bull (1/32 scale); one pound of dry composted manure or dark soil; screen trim (any other thin wood will also work); grey spray paint; glue; Manure Pit posters (see resources); water; matches; and dry ice (pellets, not blocks); gloves to handle dry ice; and chocolate stars or kisses to simulate manure on top of floor (optional).

Make a slatted top for the “manure pit.” Cut two pieces of screen trim the length of the pit . Cut thirteen pieces of screen trim the width of the pit. Glue the short pieces onto the long pieces being careful to space them evenly apart from each other. Make one of the center spaces ½” wide to make it easier to put a match between the slats. Paint the slatted “floor” grey.

Put manure or dirt into pit. Add water; stir until completely mixed and resembles pancake batter.

While wearing gloves, add two or three pellets of dry ice; stir.

Put slatted floor on top of tank and put animals on top of floor.

ADDITIONAL RESOURCES



WHAT ARE MANURE PITS AND WHY ARE THEY DANGEROUS? (PowerPoint slide set) **D**escription: Interactive slide set that can be made into any size posters from a disk or used with a slide projector. Covers reasons for using manure pits, common gases present in pits, reasons some Minnesota farmers have entered pits (and died), correct way to enter pit, and what to do if someone has fallen into a pit.

PC compatible disk in .ppt format available for \$3.00. You will need to have Microsoft PowerPoint software on your computer to use the disk. Photographic slides available for \$15.00. Order from: Farm Safety and Health Program, Biosystems & Agricultural Engineering Department, University of Minnesota, 1390 Eckles Ave., St. Paul, MN 55108-6005. Make check payable to the University of Minnesota.