AgriLIFE EXTENSION
Texas A&M System

# FUEL SAFETY ON THE FARM

David W. Smith, Extension Safety Program

**November 15, 1993.** An 82-year-old farmer died from severe burn injuries after he caught fire as he was removing the sediment bowl housing from a tractor. The gasoline tractor began missing as it was used to move large round bales. The victim stopped the tractor, dismounted, and removed the tractor's glass sediment bowl for cleaning. Gasoline spilled on the tractor, ground, and the victim when he removed the bowl. As he used a wrench to remove the bowl's housing, it contacted the battery cable at the point where it was connected to the starter, sparked, and he and the tractor caught fire. *Source: Minnesota FACE Report.*

Visit any farm or ranch and you will likely find a wide assortment of flammable fuels, solvents, and other chemicals. While these materials are essential, mishandling and improper storage can increase the risk of serious fires and explosions. Given the amount of combustible materials found on a farm (hay, old wood structures, etc.), even a small fire may cause significant property damage and loss of life. This fact sheet will discuss what steps farmers can take to reduce the risk of farm fuel accidents.

## FUEL STORAGE

Gasoline, diesel fuel, liquid petroleum (LP) gas, degreasing solvents, and paint solvents are common flammable materials found on farms. The gases released by these substances can be ignited by open flames, and sparks can be caused by electric motors, static electricity, and friction. The key to fuel safety is to separate the fuel source from the ignition source.

- Store fuels and fuel handling equipment away from machinery and combustible materials such as hay bales.
- Keep fuel storage areas well ventilated.
- Never store fuel in food or drink containers.
- Clearly label all fuel containers and flammable liquids according to their content.
- Read and follow storage and safety procedures for flammable substances.
- Inspect fuel storage containers for leaks and other damage.
- Never store fuel inside the home.
- Never transport fuel in the trucks of automobiles.

## FUELING MACHINERY AND EQUIPMENT

Fueling tractors and machinery should be done with caution, because all three ingredients of a fire are present (flammable material, ignition source, and oxygen). To minimize the risk of fire, shut down the engine on vehicles and turn off equipment when fueling. If the engine is hot, allow it to cool before fueling. When fueling:

- Position yourself so you can fuel without slipping or becoming fatigued.
- Remove the fuel cap slowly to allow any inside pressure to dissipate.
- Use a funnel to prevent splashes and spills.
- Avoid overfilling. Wipe any spills immediately and allow the excess to evaporate before starting the engine.
- Fuel vehicles and equipment outdoors to prevent accumulation of gases that could occur in an enclosed area.
- Store all empty containers as if they were full. Empty containers may still hold flammable vapors.
- Dispose of rags used to wipe up fuels in an approved container away from heat sources and sparks.

## SAFETY CANS

Gasoline and gasoline-mixed fuels should be stored in special spill-resistant safety cans. A safety can is constructed of heavy-gauge metal and is equipped with a cap that automatically closes to prevent a spill if the can is dropped or tipped over. These short, round-shaped contains are difficult to tip over. Safety cans are also equipped with a pressure-relief valve that opens when vapor pressure inside the can reaches three to five pounds per square inch. A flash arresting screen in the filler opening and pouring spout reduces the possibility of a spark, which could cause a fire or explosion.

## ABOVEGROUND FUEL STORAGE TANKS

For many farmers, aboveground fuel storage tanks are convenient and cost effective. Many storage tanks are also mobile, and can be set up in large fields or other strategic locations. Unlike belowground storage tanks, aboveground tanks can be monitored for leaks and regularly maintained. However, aboveground fuel tanks are susceptible to damage by vehicles, lightning, and vandalism, posing a considerable fire risk. To reduce the risk of fire, farmers should:

- Make sure tank support structures are stable and designed to safely handle the weight.
- Position aboveground fuel tanks at least 40 feet from buildings.
- Mount a tank elevated for gravity discharge on sturdy supports placed on a firm, level surface.
- Keep the area around the tank free of high weeds and trash to reduce the risk of fire.
- Ground the tank to direct electrical current and lightning strikes away from the fuel tank.
- Install a barrier around the tank to prevent vehicles from bumping into the support structure.
- Never allow smoking near the fuel tank.
- Shut off engines while fueling.
- Periodically check for fuel leaks in hoses, discharge handle, and fittings.
- Keep the discharge handle locked when not in use.
- Never allow children to climb on a fuel tank or play with the discharge handle.

Unless tanks are located in the shade or have overhead canopies to shield the sun, evaporation losses can be sizable. Install a pressure-relief valve, rather than a standard vent cap, on tanks placed in full sun.

## LP GAS

The fire and explosion hazard with LP gas usually involves system failures or leaks, improper transfer of liquid gas from one tank to another, or accidents where the tank or gas lines are ruptured. LP tanks can also greatly intensify a fire or explode if they are involved in a grassfire. To reduce the risk of LP tank fires and explosions:

- Place large LP gas storage tanks at least 50 feet from the nearest building and at least 20 feet from other above ground fuel tanks.
- Provide and maintain solid foundations to support LP gas tanks so they do not settle or tip and damage gas lines and connections.
- Keep the area around the tank free of high weeds and trash that might hide gas lines that could possibly be contacted by machinery or other equipment.
- Equip the storage tank with a liquid-fill hose and a vapor return hose to prevent the gas from escaping to the atmosphere.
- Protect all gauges and regulators from the weather.
- Never allow children to play on LP gas tanks. They could damage gas lines, gauges, and regulators, releasing gas to the atmosphere.

## ADDITIONAL SAFETY REMINDERS

- Keep tank vent caps and pressure-relief valves clean and free of debris
- If fuel is spilled on your clothing, go outdoors, away from any ignition source, and allow the clothing to dry. If more than a little fuel was spilled, removed the garment and wash the fuel from your skin to avoid skin irritation.
- Use a pump to siphon fuel. Never use your mouth. A mouthful of gasoline or diesel fuel could be fatal, especially if it gets into your lungs.
- Avoid excessive inhalation of gasoline vapor.
- Protect your fuel facilities so children cannot draw out any fuel. Keep gas cans out of their reach, and never store fuel in food or drink containers.
- When servicing machinery, check the fuel system for leaks.

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