



**STAY  
FARM  
SAFE**

# WORKING SAFELY WITH SLURRY



**hсени**  
CONTROLLING RISK TOGETHER

# SLURRY GASES DO KILL

## DANGER!

Six people have died in the last two years and there have been many serious incidents in Northern Ireland where others have been overcome by gas released from slurry during mixing. Hundreds of animals have also been killed in similar circumstances.

Don't let it happen on your farm.

Please take the time to read this leaflet which is based on the most up-to-date research and the experience gained from many incidents and near misses.

**Failure to follow these guidelines will put you, your family and your animals at risk.**

## WHAT GASES?

Slurry gas is a mixture of gases including methane, carbon dioxide, ammonia and hydrogen sulphide.

## WHERE DO THEY COME FROM?

The gases are produced by bacteria during the decomposition of slurry.

## WHAT DO THE GASES DO?

All the gases are unpleasant, some are a fire risk and by displacing air will create an atmosphere unable to support life. The most dangerous is hydrogen sulphide. It is extremely poisonous to people and animals. A high concentration knocks out your sense of smell. It also causes difficulty in breathing, then disorientation. Collapse and death can occur after only a few breaths because it displaces air from your lungs and also affects the nervous system. This leaflet will concentrate on hydrogen sulphide.

## HOW MUCH IS PRODUCED?

Hydrogen sulphide gas is formed within the slurry in the tank. Some gas may bubble to the surface but most remains dissolved in the liquid in a similar way to gas held within a bottle of fizzy drink. When the slurry is mixed, the gas is released very quickly. The addition of other materials such as silage effluent may increase the quantity of gas produced.

## GAS CONCENTRATION AND ITS EFFECTS

Gas concentration is measured, using special equipment, in parts per million of the atmosphere. This is written as **ppm**.

**20 to 150 ppm** causes irritation of the eyes and respiratory tract.

Exposure to **200ppm** can cause headache and dizziness.

Readings **above 500ppm** are very common in livestock buildings during tank mixing. This concentration causes nausea, disorientation and collapse.



If the person remains exposed to this concentration death is possible. Drowning has also occurred where people have fallen through openings into tanks.

Levels **above 700ppm** are known to stop breathing and cause rapid death.

## WHEN IS THE GAS RELEASED?

Gas is released as soon as mixing starts. The rate is variable and difficult to predict which makes it all the more dangerous. It is generally given off in large volumes very soon after mixing starts in any area of the tank with **the first 30 minutes being the most dangerous**. The quantity of slurry gas released falls off as mixing continues.

Each time the pump is repositioned to mix another part of the tank the gas concentration normally rises again and you should stay out of the building for at least another 30 minutes or longer depending on the size of the tank.

## DOES SMELL INDICATE DANGER?

At high concentrations, it is not possible to smell hydrogen sulphide.

## CAN I BUY A METER TO TELL WHEN THE GAS CONCENTRATION IS DANGEROUS?

Hand held monitors are readily available and can, if properly maintained and calibrated, provide an additional safety precaution for farmers working with slurry. However, HSENI is of the opinion that monitors can only ever be a back-up to a safe system of work, not a substitute. Therefore, HSENI encourages





all farmers to develop and follow a safe system of work before even considering the purchase of monitors.

Pocket-sized meters are available to measure levels of hydrogen sulphide. They can be a useful guide before entering a building after slurry mixing is complete to check the gas has had time to disperse. Do not rely on a meter at the start of mixing as the slurry gas concentration rises so quickly it is dangerous to remain in the building and a meter will not give adequate warning or time to escape. Some meters need to be calibrated every time they are used and returned to the manufacturer regularly (every three to six months) to be maintained and calibrated.

## **WILL A MASK HELP?**

**A facemask will not help!** Filter type masks are not suitable. Any person who enters a slurry tank must wear breathing apparatus with its own air supply. Such work is a specialist operation and is best left to fully trained competent contractors. They must be properly trained to use the equipment. The equipment must be regularly maintained, and the person entering the tank must be connected by harness and lifeline to two people outside the tank.

## **WHAT CAN I DO IF SOMEONE IS OVERCOME BY GAS FROM SLURRY?**

If possible, stop the pump and get the person to fresh air but do not put yourself at risk in the process. If breathing is weak, or stopped, artificial respiration may be effective in saving life. Get emergency medical attention as soon as possible.



# SAFE SYSTEM OF WORK

If possible, mix on a windy day.



Keep children away from the area at all times when working with slurry.



Take all animals out of the building before starting to mix slurry.



Open all doors and windows.



Use outside mixing points first.



If slats are removed, cover exposed areas of the tank beside the pump/mixer to stop anything falling in.



Start the pump/mixer and then stay out of the building for as long as possible - **at least 30 minutes or longer** depending on the size of the tank.



If you have to go into the building make sure that another adult, who knows what you are doing, stays outside the building and can get help if needed.



If you have to re-enter the house to move the pump, or change the direction of the pump, then you need to leave the building as soon as this is done. Do not go back in for as long as possible - **at least another 30 minutes or longer** depending on the size of the tank.



Avoid naked flames, as slurry gas mixture is flammable.



Do not stand close to the pump/exhaust of a vacuum tanker when it is being filled.



## Working Safely with Slurry

Visit [www.hse ni.gov.uk/farmsafe](http://www.hse ni.gov.uk/farmsafe) for questions that you should ask suppliers and manufacturers regarding personal gas detection monitors before you purchase or hire them.

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**ALWAYS FOLLOW THE  
SAFETY INSTRUCTIONS  
IN THIS LEAFLET**

# SLURRY GAS CAN KILL PEOPLE AND ANIMALS

The risk is variable and difficult to predict. You may not have noticed any problems until now but the gas is always there during mixing. There is no safe tank. A combination of conditions can easily result in you and your animals suddenly being in serious danger. Follow our safe system of work to stay out of trouble.

