

Slurry gases

can
KILL



SLURRY GASES DO KILL

DANGER



Several people have died and there have been many serious incidents in Northern Ireland where others have been overcome by gas released from slurry during tank agitation.

Hundreds of animals have also been killed in similar circumstances.

Don't let it happen on your farm.

This leaflet explains which gases are involved and how to control the risk. Please take the time to read and follow the recommendations, which are based on the most up-to-date research information and the investigations of actual incidents.

Failure to do will put the lives of your animals, your family and yourself at risk.

WHAT GASES?

The gases generated within slurry include methane, carbon dioxide, ammonia and hydrogen sulphide.

WHERE DO THEY COME FROM?

Slurry, a biologically active mixture, is subject to bacterial decomposition to generate gases.

WHAT DO THE GASES DO?

All are unpleasant, some are a fire risk and by displacing air will create an atmosphere unable to support life. In particular, hydrogen sulphide is extremely poisonous to people and animals. Depending on the concentration and exposure it affects the nervous system causing a range of symptoms through discomfort, disorientation, collapse or sudden death. This leaflet will concentrate on hydrogen sulphide.

HOW MUCH IS PRODUCED?

A very large amount of hydrogen sulphide is produced within the slurry in a tank. Some 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 liquid is agitated, the gas is released very quickly. Addition of other materials such as silage effluent will also lead to gas release.

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 at uncovered tanks.

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

WHEN ARE THE GASES RELEASED?

Gas is given off as soon as the slurry is disturbed. 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 commences in any area of the tank with the first 30 minutes being the most dangerous. Gas release falls off gradually as mixing continues.

Each time the pump is repositioned to mix another part of the tank the gas concentration normally rises again.

DOES SMELL INDICATE DANGER?

Smell is not a reliable guide because exposure to hydrogen sulphide, at anything other than the lower levels, inactivates the sense of smell.

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

Pocket-sized meters are available to measure hydrogen sulphide concentration. They are normally set to alarm at lower levels and can be a useful guide before entering a building **after mixing is complete** and the gas has had time to disperse. However, because the gas concentration rises so quickly at the start of mixing it is dangerous to remain in the building and a meter will not give adequate warning or time to escape. **The best option is always to assume that dangerous levels of hydrogen sulphide are always produced.**

WILL A MASK HELP?

Only proper breathing apparatus with its own air supply is recommended. Filter type masks are not suitable.

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.

SAFETY RECOMMENDATIONS

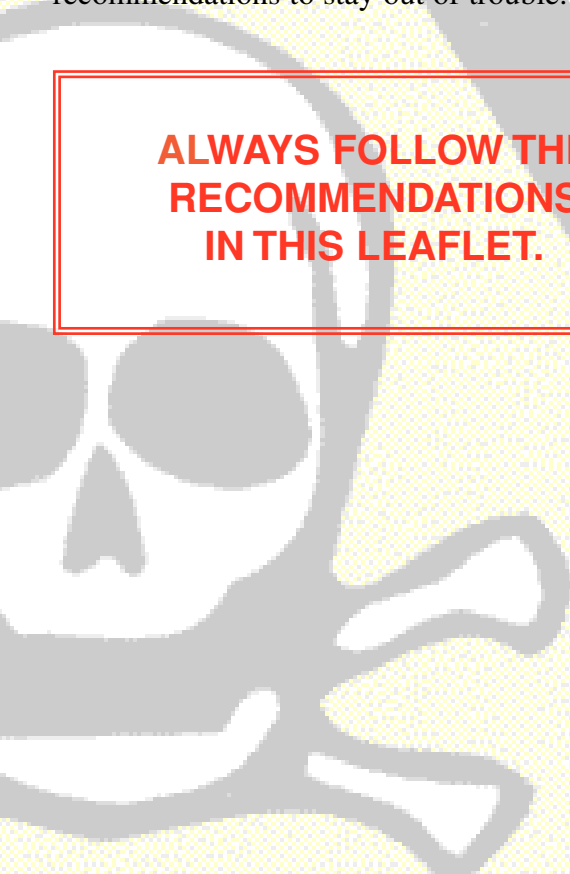
- ✓ *Take all the animals out of the building before the start of mixing.*
- ✓ *Open all available ventilation to provide a through draught at floor level.*
- ✓ *Avoid mixing in very still air conditions.*
- ✓ *Make sure that another adult, who knows what you are doing; stays outside the building and can summon help if needed.*
- ✓ *Start the mixer and stay out of the building for at least 30 minutes.*
- ✓ *Because of high gas concentrations, do not stand over any mixing point inside or outside of the building when the mixer is running. Cover any openings into which a person could fall.*
- ✓ *Use outside mixing points first and always keep out of the building when the pump is working.*
- ✓ *Do not stand close to the pump exhaust of a vacuum tanker when it is being loaded.*
- ✓ *Have tanks emptied before the slurry gets up to within 300mm of the slats.*
- ✓ *Avoid naked lights, as the gas mixture is inflammable.*
- ✓ *Never enter a slurry tank unless you are wearing breathing apparatus with its own air supply and you are connected by harness and lifeline to two people outside.*

SUMMARY

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 the recommendations to stay out of trouble.

**ALWAYS FOLLOW THE
RECOMMENDATIONS
IN THIS LEAFLET.**





WARNING

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