



Safety focus on: Electricity

This guide aims to highlight the risk of electrocution from power lines and work equipment on farm and provides practical advice on how you can make your farm a safer place for you, your employees and any visitors.

The Law

Electricity at Work Regulations 1989 requires you to take precautions to reduce the risk of death or injury from electricity. Electrical equipment must be safe and properly maintained and the power supply must also be isolated before any repair or maintenance work is carried out.

Introduction

On average two people in agriculture are killed by electricity every year, but there are many more incidents which damage equipment and thousands of 'near-misses', any of which could have fatal consequences.

Many accidents are a result of contact with overhead power lines (OHPLs), resulting in serious or even fatal injury. These can cause distress, disruption and additional costs to you, other businesses and the community. Simple steps like knowing the location and height of OHPLs can reduce the likelihood of an accident occurring.

There are three main areas you should focus on when looking at how to make your farm a safer place as regards electricity:

1. [Safe Work](#)
2. [Safe Equipment](#)
3. [Safe Shock](#)

Safe Work

Overhead power lines

Most accidents happen when machinery or equipment directly contact OHPLs, but electricity can also jump gaps when equipment gets too close.

Many low voltage 11 and 33kV power lines have a minimum clearance height of 5.2m and with farm machinery already able to exceed those heights (telehandler booms and open combine grain lids), take extra care when operating machinery close to electricity cables.

To remain safe:

1. Check where OHPLs are on your farm
2. Measure the height of your machines with all parts raised
3. Check if your machines can safely operate near those OHPLs

It is your responsibility to make sure everyone operating on your land knows where OHPLs are. This is particularly important for people who may be less familiar with your land (e.g. new or casual workers and contractors).

Your local electricity company or District Network Operator (DNO) should be able to supply maps which will show the locations and heights of OHPLs on your land.

Case Study

An employee was moving metal pig huts from one farm to another when the boom of her telehandler hit a 33kV OHPL. She received severe burns to her scalp, hip and feet and had to have the little and big toes on both feet amputated, leaving her disfigured and permanently disabled.

Despite telling the farm manager about how close the OHPLs were, the employee received no effective supervision, training on telehandlers or instruction on the dangers of OHPLs.

The farming company and its Director were prosecuted for failing to train the employee, carry out a suitable risk assessment or adequately plan for work near OHPLs. They were fined a total of £46,250 plus £22,000 costs.

Once you have identified areas of high risk, try to ensure **none** of the following happens within a **10m** horizontal distance from OHPLs:

- Stack bales or potato boxes and erect temporary structures such as polytunnels
- Move ladders or irrigation pipes
- Fold sprayer booms
- Tip trailers or lorries
- Operate materials handlers
- Work on top of combines or other high machinery
- Tree work



If you have to work near OHPLs, check with your DNO and, if necessary, arrange temporary disconnection.

External attachments

Attachments such as CB radios, slurry guns and irrigator booms have been known to contact OHPLs, carrying the current through the machine and anyone inside or close by.

To remain safe:

- Make sure everyone knows where the OHPLs are
- Fit shorter aerials and warning devices to machines constantly working near OHPLs
- Check that attachments can operate without getting within approx. 15m of an OHPL
- When irrigating, use a jet-breaker device

What to do if you contact an OHPL

If part of a vehicle, attachment or load comes into contact with an OHPL:

1. Remain in the cab
2. Inform the DNO immediately (keep the emergency number in the cab or on your phone)
3. Try to drive free
4. If you have to leave, jump well clear and run! The machine and the ground surrounding it may still be electrified



The initial contact with the OHPL may cause it to trip out temporarily but it could re-energise automatically. Therefore if you jump clear, you need to run a safe distance away in case the line, machine in contact or surrounding ground become re-electrified.

No equipment should be reentered, disentangled or touched until the DNO has confirmed that the line has been de-energised and made safe.

Case Study

A Cornish farmer was returning to the field with his tractor and trailer to collect the grain, when he tipped the trailer to dry the floor and accidentally touched the 11kV power line above.

Unaware, he got out of the tractor and as he stepped on to the ground, holding the metal door rail, all of the electricity shot through him, sticking him to the spot.

The power was so strong that the front tyre of the tractor caught fire. He was only saved from the flames by the surge dislocating his shoulder and shattering the bone in his upper arm and freeing him. He was in hospital for a week and unable to work for a further six, relying on friends and neighbours for support around the farm.

Emergency Contact Numbers

In case of emergency, you should keep a copy of your DNO's emergency number on your mobile, in the cab of all your machines and in a visible place in the farm office/house.



Source: Energy Networks Association

Area	Company	Emergency No.
North East England	CE Electric (NEDL)	0800 668 877
North West	Electricity North West Ltd	0800 195 4141
Yorkshire	CE Electric (YEDL)	0800 375 675
East Midlands	Western Power Distribution	0800 056 8090
West Midlands	Western Power Distribution	0800 328 1111
Eastern England	UK Power Networks	0800 783 8838
South Wales	Western Power Distribution	0800 052 0400
Southern England	SSE Power Distribution	0800 072 7282
London	UK Power Networks	0800 028 0247
South East England	UK Power Networks	0800 783 8866
South West England	Western Power Distribution	0800 365 900
N.Wales, Merseyside & Cheshire	SP Manweb	0845 272 2424



Underground Cables

Before any ground work is due to start, including excavations and even just driving in fence posts, you should make sure you know if there are any underground cables close to where to propose to dig. The local electricity company or District Network Operator (DNO) should be able to supply maps of underground cable routes across your land on request, but you can also use locating equipment to confirm their presence.

If the cables are particularly close, it may be worth asking someone from the DNO to visit and accurately locate the cables. This will reduce the risk of hitting the electricity supply, causing disruption to the community and possible electrocution.

Safe Equipment

Poor electrical installations and equipment can cause injury from a shock and sparks can start fires. These can be destructive to farm buildings, equipment and livestock.

To remain safe:

- Put emergency cutoff switches in a visible and accessible place near each fixed machine
- Use the least amount of socket outlets for the task to avoid a fire risk from overloading
- Outdoor socket outlets should be of an appropriate type and protected by a residual current device (RCD) in damp or corrosive atmospheres and where steam or water jets are used
- Ensure power cables are suitably rated and protected from damage, particularly by rodents. This can be done by using armoured, thick flexible rubber, neoprene covering or by installed in conduit
- All electrical system should be checked by a competent electrician periodically and damaged cables repaired or replaced immediately

Working areas like farm workshops and yards should be free from obstructions, such as trailing cables which should be clearly marked and moved out of the way where possible e.g. placed safely overhead.

Portable equipment

If you are using electrical tools outdoors or where there is a lot of earthed metalwork, use these at a reduced voltage from a safety

isolating transformer (e.g. 110 volts centre tapped to earth) or connect through an RCD which will cut off the power quickly if there is an earth fault.

In some circumstances, non-electrical tools such as pneumatic tools may be more appropriate. However, these tools can create further issues such as excessive noise levels.

To remain safe:

- Unplug or isolate appliances before cleaning or adjusting
- Regularly inspect portable tools – including those hired or borrowed
- Faulty or damaged tools should be taken out of use until repaired by a competent person
- Regularly operate the 'test' button on RCDs to ensure they work correctly
- Provide enough socket outlets to keep the use of extension leads to a minimum
- On welding sets, only use insulated leads and undamaged electrode holders

Case Study

A 34 year old farm worker, the son of the family run mushroom farm, touched a malfunctioning conveyor belt, while a colleague went to turn the power supply to the machine off. Despite attempts to revive him, the worker died from the fatal shock he received when he touched the belt.

An inquiry later found that a pressure washer had sometimes been used to clear clumps of compost that jammed the conveyor and that water could have got into the motor, possibly causing it to spark.

The outcome of the investigation is unknown, but the death had a devastating on the family run farm.

Safe Shock

Always disconnect the power supply before attempting to assist someone who has had an electric shock, to prevent further risk to yourself or the person injured. If this is not possible, only touch the person with a non-conducting item (e.g. non-metal).

It is worth considering first aid training for you and your employees so that everyone can provide effective and safe basic resuscitation if needed in an emergency.

Further information

HSE can be contacted for specific health and safety information at www.hse.gov.uk/agriculture.