The invisible killer

Electrical safety in the food and drink industry

GUIDANCE FOR MANAGERS

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Introduction

Electricity has been used commercially for over 100 years and has transformed our workplaces. It's difficult to imagine modern life without it. Used properly, electricity is both safe and extremely useful. However, we can't see, hear, taste or smell electricity and we tend to take it for granted.

HSE-sponsored research in 2010 revealed that electrical fitters in the electrical wiring installation industries suffer the largest number of accidents involving electricity. This means that it is electricians who are most at risk from electricity-related accidents.

But it's not only electricians who might be affected by an electrical accident – it can be users of equipment too. Have you ever found a plug with water in it after cleaning? Have you ever cleaned equipment and slopped water over it? Have you, or someone working for you, ever had a shock from equipment such as scales or conveyors? Did you report the shock or did you just brush it off as a 'bit of static'?

This training package is aimed at managers, supervisors, employees and electricians working in the food and drink industry, where there are particular issues such as pressure to keep machines operating and using water to clean equipment.

It will explain the hazards and controls that must be put in place to protect electricians and users of equipment working in these environments.

It will also give you some background information about electrical hazards and controls and will outline your responsibilities in relation to electrical safety.

The training package aims to help you ensure that people working for you, including electricians and electrical contractors, are safe.

Hazards

Electricity can be dangerous if not well controlled, particularly in the food and drink industry, which has lots of equipment and machinery, often in wet areas.

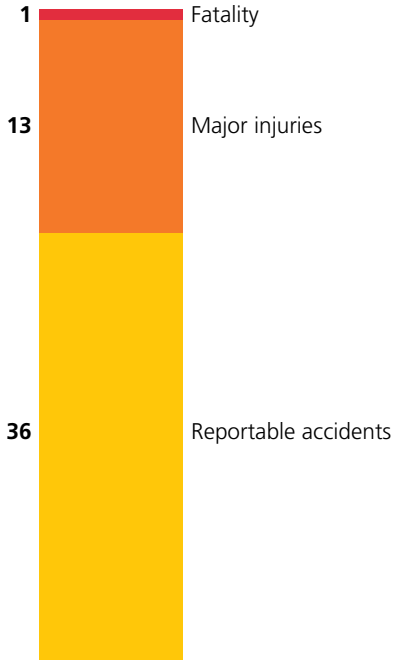
Electricity can cause:

- shocks
- burns
- fires.

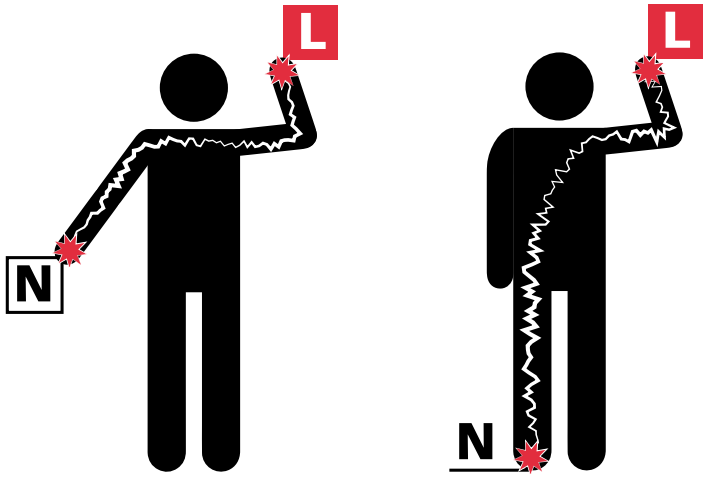
DID YOU KNOW?
Electrical burns can take an extremely long time to heal – sufferers often have to remain in hospital for weeks or even months.

Injuries caused by electrical accidents can be horrific. In the UK, you're 10 times more likely to die from an electrical accident than accidents due to other causes.

The ratio of fatal to major and reportable injuries from electrical causes is illustrated below.



Many people may have had an electric shock with no ill effects. Shocks can occur in a number of ways, but perhaps the most common is hand-to-hand or hand-to-foot contact, as shown below.



Hand-to-hand contact

Hand-to-foot contact

The effect of a shock depends on the:

- current path
- amount of current
- duration.

The effect of current on the human body is shown below.

Current (mA)*	Effect
0.2 to 1.0	Threshold of perception
10 to 16	Limit of 'let go'; muscles contract
30	Breathing difficult; 'safe' limit
50	Irregular heartbeat
60	Breathing problems
more than 60	Heart fibrillation, electric burns

*mA = milliamps or thousandths of an amp

By way of comparison, a domestic cooker typically has a 30,000 mA (30 amp) supply, which is more than enough energy or current to cause a significant electric shock.

Your responsibilities

You're in charge of your department and team. That includes controlling the risks from electricity.

Your responsibilities include:

- ensuring that pre-start checks are completed properly
- ensuring defects are dealt with
- checking and signing off that actions are done
- creating a culture which encourages people to work safely and to report defects
- ensuring that the people you're responsible for are safe and understand electrical hazards and controls
- giving electricians working in your area sufficient time to risk assess jobs and take the appropriate precautions
- taking care of everyone in your area.

Pre-start checks and defect reporting

To make sure equipment is safe, machine operators or supervisors must carry out checks at the start of the shift. This includes checks on electrical parts of the equipment such as plugs, cables and control cabinets.

There should be a pre-start check sheet that details the checks to be made. Any defects should be reported and repaired. It's the supervisor's and manager's responsibility to ensure that any defects are corrected.

Creating a positive safety culture

Most people come to work to do a good job and expect to return home safe and healthy. You're responsible for the safety of those under your care and for creating a culture where staff keep themselves and their colleagues safe.

Often electrical equipment is taken for granted and can be misused. It's your responsibility to ensure that workers are aware of the risks and don't misuse equipment such as plugs and sockets.

Cable damage can be prevented if plugs are removed carefully following use. Only competent and authorised electrical workers should hold keys for electrical cabinets.

Cleaning issues

To prevent the danger of electric shock during cleaning, electrical equipment must be switched off and isolated, unless the risk assessment states otherwise.

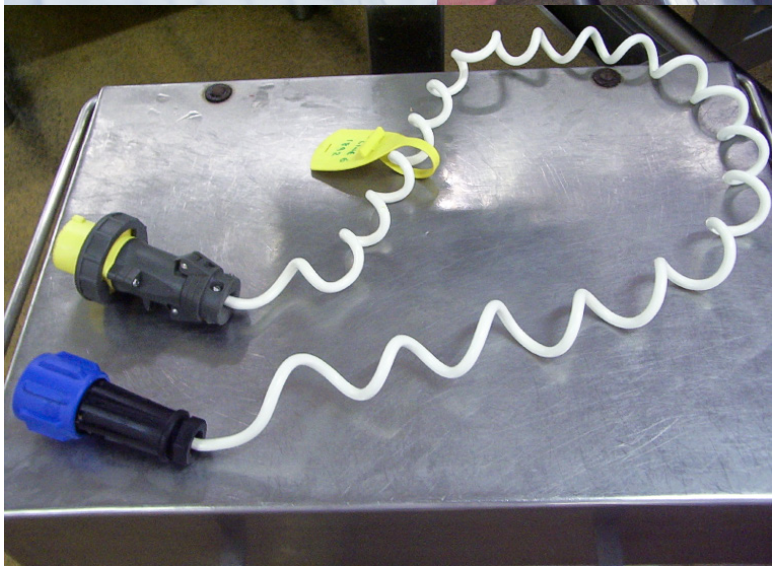
Water in electrical equipment can be extremely hazardous, so before cleaning equipment, electrical cabinets and plugs must be protected.

Remember: you wouldn't allow your television set to be hosed down at home, so don't permit the hosing down of electrical equipment at work.

Moveable equipment (including scales)

Pulled earth cables, where the earth lead is detached from the terminal, can be a problem. It's particularly likely to happen on equipment that can be moved around. Report any damage to plugs and leads, and always carefully plug and unplug equipment such as scales.

Also, make sure that you inspect equipment before use.



Own equipment and DIY repairs

Most sites don't allow people to bring their own electrical equipment, such as radios and kettles, on site. This is because all such equipment must be properly maintained. If such equipment is allowed on site, it should be inspected and tested.

Also, operatives shouldn't fix electrical equipment unless they're competent and authorised to do so – call a qualified person to 'get it going'.

Electrical maintenance

Electricians are the competent people in terms of electrical safety. They must be authorised by the site electrical duty holder to carry out work.

The electrical regulations require work to be undertaken *dead* in most circumstances. When electricians have to do *live* work, such as testing, it needs to be in controlled circumstances, and an assessment of the risks must be undertaken. Barriers, the correct tools, a clean, dry environment and appropriate personal protective equipment (PPE) are all important in keeping electricians safe.

Production pressure shouldn't be used as an excuse for working unsafely. When electricians are working in your area, you're responsible for their safety and you should ensure they're working correctly.

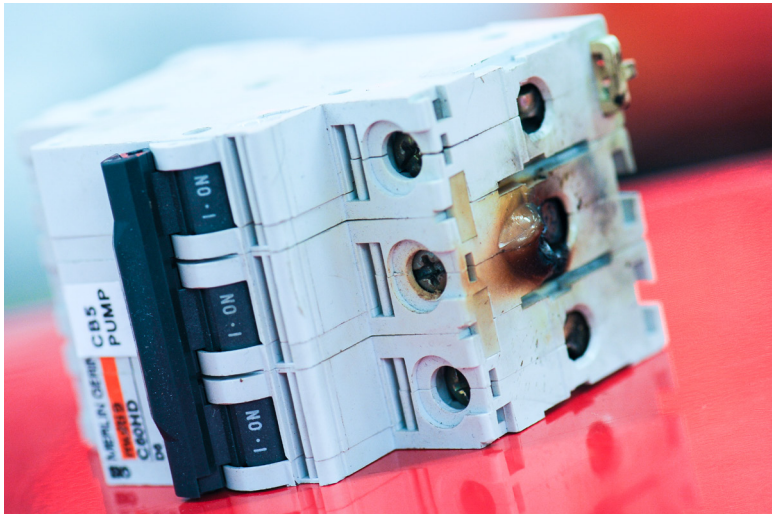
Summary

DID YOU KNOW?
In the UK, one in 50 electrical accidents at work results in a fatality, compared with one in 600 from other causes.

You're 10 times more likely to die from an electrical incident than from an incident due to another cause.

- Electricity can be dangerous if it's not well controlled.
- Electricity can cause shocks, as well as burns and fires.
- To prevent shocks, electrical equipment must be well maintained and you must make sure any damage is put right.
- You should create a safety culture where people working in your department treat electrical equipment with respect.
- Remember: if you do this, people in your department will go home safely.

This training package explains some of the principles of working safely with electricity, which are underpinned by the Electricity at Work Regulations 1989 and supporting guidance. This guidance is listed in the next section and is recommended for further reading.



Guidance and further reading

1 The Electricity at Work Regulations 1989.

2 Memorandum of Guidance on the Electricity at Work Regulations 1989. Guidance on Regulations. HSR25. 2007.

3 Electricity at work: safe working practices. HSG85. 2013.

4 Electrical Safety Council. Guidance on the management of electrical safety and safe isolation procedures for low voltage installations. Best Practice Guide no. 2 issue 2. 2009.

5 Institution of Engineering and Technology. IET Wiring Regulations. 17th edition. BS 7671:2008, incorporating amendment no. 1, 2011.

The IOSH Food and Drink Group has nearly 1,000 members working in the food and drink manufacturing, bottling and canning industries.

As part of our work to share good practice, we run an awards scheme, support the national 'Recipe for safety' initiative, organise networking events and produce good practice guidance on issues specific to our industries.

For more information contact **networks@iosh.com**

Free videos and guidance are at **www.iosh.com/electricalsafety**

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