

Microshocks Guidance Note For Overhead Line Staff

For use as background information for conversations with members of the public but not intended for direct issue to the public

Description

Microshocks are small electric shocks, similar to the static shocks you may receive when touching a metallic or conducting object after being charged by, for example, by walking across a carpet. Microshocks occur in areas of raised power frequency electric fields and, unlike static shocks, can be repeatable. They typically occur during the dryer months of the year and in the vicinity of 400kV overhead lines.

It is worth remembering that anyone who has received a microshock and does not understand what has happened is likely to be very worried by what has happened, and any conversation about microshocks should take this into account.

When in the vicinity of an overhead power line (typically 20m either side of the overhead line) where there is a sufficient electric field, a poorly grounded object or person can become charged. If a person touches the object a discharge spark may occur. This discharge is called a microshock. More precisely, the microshock occurs immediately before contact is made with the object, when the person is close enough for a potential difference to cause a spark to occur. Once contact is made the microshock stops. The intensity of the microshock depends on the electric field, the sensitivity of the person receiving it, and the size of the object being charged. Generally, an increase in electric field will increase the chance of experiencing and feeling a microshock.

The significant difference between microshocks and static shocks is the repeatability of microshocks. For a static shock the discharge occurs only once, being repeated only after the person has walked across the carpet again. With microshocks, the alternating electric field enables persons or objects to become re-charged. This enables the microshock to be repeated during slow or brushing contact between the person and the object, resulting in additional discomfort.

Microshocks are not considered harmful, but can be annoying at times. The microshock is felt, and sometimes painfully, because it is concentrated on a small area of the skin. Whilst most microshocks are merely annoying (exacerbated by their unfamiliar nature), we acknowledge that in severe cases they are indeed painful.

Common occurrences of microshocks are from metallic umbrellas, fences, bicycles, ladders and vehicles.

Mitigation

There is no requirement on National Grid to eliminate all microshocks.

A suite of microshock mitigation measures is listed in the DECC Code of Practice on Microshocks. The chances of perceiving a microshock can be reduced by a number of methods depending on the circumstances surrounding the shock. In general, metallic objects should be properly earthed to prevent them becoming charged.

- Microshocks from umbrellas can be avoided by using a fibreglass shafted umbrella rather than the traditional metal shafted umbrellas.
- Cyclists should make a good firm contact with a metal part of the cycle such as the brake leavers for c 20m either side of the overhead line.
- A good connection to earth from a metallic ladder should be established when near overhead lines.
- Metal clad buildings and metallic fences under and near overhead lines should be bonded to earth to prevent them becoming charged.

To avoid microshocks occurring due to a person becoming charged, it is advisable to avoid wearing insulating footwear while working within the vicinity of an overhead line. This will ensure a sufficiently good contact between the person and earth, reducing the possibility of the person becoming charged.

All microshock occurrences involving the public should be reported to the EMF Helpline. If a microshock needs further investigation or someone needs further information this should also be reported to the EMF Helpline. The EMF Helpline can be contacted on 0845 702 3270 or emfhelpline@nationalgrid.com.

More information on microshocks, accessible to the public, is at www.emfs.info/microshocks