

Dirty Electricity (DE)

What is dirty electricity?

Dirty electricity is high-frequency voltage transients on the mains supply. These transients are largely by-products of modern energy-efficient electronics and appliances, such as computers, refrigerators, plasma TVs, Sky boxes, DVD players, video (hard disk) recorders, compact fluorescent light bulbs (CFLs) and dimmer switches, which tamp down the electricity they use. They can also enter the home through wiring from nearby sources including wireless telecommunication antennas connected to the power grid. When the capacity of the primary neutral on distribution lines is exceeded, current runs along the ground and enters homes via grounded water pipes.

Transients are created when current is repeatedly interrupted. This manipulation of current creates a wildly fluctuating and potentially dangerous electromagnetic field that not only radiates into the immediate environment but also can back up along home or office wiring.

Two of its biggest creators are switch mode power supplies (AC adaptors) and energy efficient (particularly lighting) products such as low energy light bulbs (CFLs) and dimmer switches. These cause high-frequency signals to be created and then carried by your house wiring.

All mobile phone base stations operate on DC power, which is changed from the electricity supply AC current by switching power supplies. These interrupt the AC current and create high voltage transients which get back into the grid and travel through the electrical service wires in the neighbourhood of the mast.

What effect does it have?

Research shows that this pollution could be partly responsible for the rise in some modern health problems diseases such as: cancer, diabetes, insomnia, headaches, neurological disorders, arrhythmia, autism, amongst others.

A school in which the transients caused the measurement meters to go off scale had a cancer incidence in teachers nearly 3 times higher than expected. A single year of working in the building raised the risk of developing cancer by 21%. The risk of developing thyroid cancer was increased over 13 times, and only took 3 years to develop, unlike the 10 years for other cancers. Pupils were not spared either, and some of them also had contracted cancer, even fatally (Milham & Morgan [2008](#)). There are 3, possibly 4, former students now in their 20s who have thyroid cancer.

Other schools found that when dirty electricity was reduced by more than 90% teacher health improved as did student behaviour in the middle/elementary schools (Havas & Olstad [2008](#)). Headaches, general weakness, dry eyes/mouth, facial flushing, asthma, skin irritations, overall mood including depression and anxiety improved significantly among staff. However, 30% of staff felt worse, so the interaction with human biological systems is clearly quite complicated.

The number of students needing inhalers for asthma was reduced in one school and blood sugar levels for some diabetics respond to the amount of dirty electricity in their environment. Type 1 diabetics require less insulin and Type 2 diabetics have lower blood sugar levels in an electromagnetically clean environment (Havas [2008](#)). Individuals diagnosed with multiple sclerosis have better balance and fewer tremors (Havas [2006](#)).

What sort of levels are you likely to have?

Generally levels on a DE meter are between 100 to 1500 without filters. The readings are generally higher in towns, especially in densely populated areas and terraced housing. Flats, especially in high-rise blocks, are usually worst.

The local DNO (electricity company that is responsible for the supply cables in that area) don't take any notice of DE.

If you suspect you may have transient spikes on your electricity supply as a result of your appliances, you can hire a meter (together with 2 filters) from www.emfields.org and see what your levels are.

What you can do if you have high levels of DE

Firstly turn off (at the socket, not the equipment switch) and unplug EVERYTHING in the house.

See what the reading is with, and without, the DE filters. You need at least one DE filter as close as possible to the electricity meter/consumer (fuse) box. Test the reading there, with and without those fitted. If it is still highish (200+), then it is DE coming into the house.

DE coming into the house

This is not easy to deal with. You can get sophisticated HF filter units that connect across the supply between the meter and the consumer box, but they are expensive (£500 - £2,000 depending on their specification) and need proper permanent installation on the wall. Alternatively, you could try plugging in a few DE filters as close as possible to the main consumer unit and see how low you can get the reading.

DE generated within the house

It is most likely that DE comes from equipment inside the house. TV/Sky boxes/DVD players are amongst the worst culprits. Plasma TVs are usually terrible. Followed by all types of computer equipment, not forgetting the broadband modem/router.

We suggest that all the TV units and all computer equipment are connected via a high quality multi-way filter-strip, see <http://emfields.org/misc/filter.asp>. It must be a high-spec RF filter strip – that is not the same as a surge-protected strip which are much cheaper, but which do not filter HF and RF. That will keep the TV/computer, etc. generated noise away from the rest of the house wiring.

Next are any plug-top mains adapters/chargers. Some of those are cheap switched-mode power-supply units that create DE noise on the supply wires. Test each (only one on at a time) in turn – measuring next to them at a double-socket outlet.

Fridges, freezers, ordinary cookers are usually fine and not a problem.

Some induction hobs can be a major problem. All induction hobs use HF to induce currents in the pans which then heat up. Some use between 55 and 85 kHz and that is right in the range of DE. Some use higher (real RF) frequencies that are too high for the G/S meter to read, but go around

the house wiring all the same. Induction hobs are not recommended from the EMF/EMR exposure point of view.

Some CFL bulbs are relatively fine. Some, especially cheaper ones, are bad. They mostly operate at a switching frequency of 32 to 60 kHz – again in the DE range and that needs internally filtering out to stop it appearing on the house wires. Some cheaper units do not really try to do this. Some older HF (non-flicker) long-tube strip lights are bad.

Some fish-tank lights are a problem for the same reason – again change the units or plug into the main via a filter strip such as the one referred to above.

Solar panels can produce high levels of dirty electricity. They communicate with the electricity company by sending an RF signal through the house wiring and connecting to the company. DE filters will not stop his communication, as the RF normally rides on both phase and neutral.

Most houses with high levels of transients should not need many filters to reduce spikes to an appropriate level. Too many can be counter-productive and people have reported health effects when they have used up to 20 filters! DE filters increase the currents flowing in the wires around a house. If the wiring is not perfect then this current significantly increases magnetic fields in the house. This extra current can also cause higher electricity bills, though this will not be the case for most people.

It is much better to connect the equipment producing the dirty electricity using a proper filtered mains strip than fitting lots of DE filters that increase the current flowing round the wiring in the house.

However, a dLAN broadband access system will not work if you use one of the mains filters in your system, as the filter is intended to screen the wiring from the RF that the dLAN needs to connect to the internet.

References

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Milham S & LL Morgan 2008 – *A new electromagnetic exposure metric: high frequency voltage transients associated with increased cancer incidence in teachers in a California school* Am J Ind Med 51(8):579-86

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www.powerwatch.org.uk or www.emfields.org