



# Electrical Pollution

“Electrical Pollution” is a relatively new, unscientific term used by some to describe a variety of normal and unavoidable electrical phenomena.

## Key Facts

- There are a variety of well understood electrical phenomena that are the normal consequence of delivering and using electrical energy. The term “electrical pollution” is being loosely used to describe these phenomena.
- These electrical phenomena include;
  - Stray voltage
  - Electric and magnetic fields
  - Earth currents
  - Transients and high frequency noise
- The recent availability of sophisticated measuring devices has made electrical data acquisition simple and inexpensive. Unfortunately, electrical data are easily misinterpreted, potentially causing unwarranted fear and anxiety.
- There are devices on the market that falsely claim to eliminate “electrical pollution.” Not only do they fail to do what they promise, they may even create electrical safety hazards.

## Questions and Answers

### ***What is “electrical pollution”?***

“Electrical pollution” is a misused and misunderstood term that has no basis in engineering or electrical science. There are a variety of normally occurring electrical phenomena that arise from our everyday use of electricity. “Electrical pollution” is being loosely used to describe these phenomena. There is no scientific consensus that “electrical pollution” is harmful to human beings. Some self-described “experts” are using the term to describe beliefs that are not entirely based on the laws of physics. Consequently, there is a lot of misuse of sound science and long-proven technical information, and there are “quick fixes” for “electrical pollution” on the market that do nothing and may create electrical safety hazards.

### ***Why are there concerns about “electrical pollution”?***

Use of the term “electrical pollution” may include one or a combination of several well understood electrical phenomena:

- Stray voltage is current from on- and off-farm sources that may be present on farms at levels known to cause behavioral changes in cattle. This is often a localized condition due to poor grounding of the farm or utility electrical system, or a failure of some electrical application.
- Electric and magnetic fields, or EMF are weak, invisible fields of energy that exist around anything that carries or uses electricity. The strength of these fields quickly decreases as you move away from the source. Extensive research has failed to conclusively link EMF to cancer or any other disease.
- Earth currents are very low magnitude electrical currents that can be detected in the soil. Natural activity such as movement of magma deep within the earth and solar flares create some of these currents, while the delivery and use of electrical energy create others. The Public Service Commission of Wisconsin (PSCW) has concluded that most earth currents are the result of local electrical loads by the end consumer of electrical power.
- Transients and high frequency noise on the wiring of our homes and businesses are created by the use of modern electronic devices such as radios, televisions, cell phones and microwaves. This “noise” is normally very small (a tiny fraction of one volt) compared to the standard 120 volts at a typical wall outlet. As with earth currents, the source of transients and high frequency noise is primarily the end user. Because of the design of the electrical distribution system, this noise cannot be transmitted very far from its source. We occasionally experience this noise as momentary interference (snow) on a television screen or a fuzzy buzz in our communications systems.



To the layperson these naturally occurring phenomena can be very confusing. Unfortunately, these phenomena, once observed only by the professional in the lab or controlled situations, are now more easily detected by a wide variety of sophisticated instrumentation available to almost anyone. This has led to an increase in the measurements of these phenomena with subsequent, and misleading, claims that if they are detectable they must be harmful.

***Will “electrical pollution” make me sick?***

There is no proven link between any of the electrical phenomena listed and cancer or other human disease. MREC member utilities are concerned about the safe use of electricity, and we design and operate our generation and distribution systems in a manner that meets all nationally recognized codes and regulatory requirements. Real or perceived concerns about the health and safety of our families can create deep emotions and anxiety. Misleading electrical information can further contribute to this effect. Consequently, some individuals have attempted to make a connection between these measurements of “electrical pollution” and a wide variety of ailments including chronic fatigue syndrome, fibromyalgia, nervousness, weakness, headaches and more. At this point, there is no convincing scientific evidence to prove these cause and effect relationships.

***Is electricity safe?***

MREC member utilities, working in cooperation with the PSCW, have installed distribution systems that comply with the requirements of the National Electric Safety Code (NESC) and all applicable standards. When properly installed, safely grounded, and used in approved equipment, electricity provides value and convenience to our daily lives.

***What about devices that claim to get rid of “electrical pollution”?***

MREC member utilities are aware of equipment sold for the sole purpose of eliminating “electrical pollution” or to “clean up electricity.” Other devices seek to send the “dirty electricity” back to the utility. Some of these devices attempt to eliminate the high frequency noise that is often created in a home due to the homeowner's use of electronic equipment.

Unfortunately, these devices may not work as intended, or may create unsafe conditions in the building's electrical system. MREC member utilities have additional information if you would like to learn more about these devices.

***How can I obtain more information?***

If you have specific questions about “electrical pollution”, contact your electric utilities directly or visit our website at [www.mrec.org](http://www.mrec.org).

