

# questions & ANSWERS

**Q. How does AltaLink make its decisions about EMF? Are there independent assessments of the scientific research about health effects?**

AltaLink relies on the consensus of national and international scientific and health agencies, for example Health Canada. Such agencies provide guidance based on thorough reviews of the literature on EMF and health.

**Q. What is the position of Health Canada?**

Health Canada regularly monitors EMF literature and has concluded that typical exposures to EMF have no known health risks. They do not recommend exposure limits for electric and magnetic fields because there is no conclusive scientific evidence that EMF adversely affects health. Health Canada states: "You do not need to take action regarding typical daily exposures to electric and magnetic fields at extremely low frequencies. There is no conclusive evidence of any harm caused by exposures at levels normally found in Canadian living and working environments."

For more information, go to:

[www.hc-sc.gc.ca/iyh-vsv/environ/magnet\\_e.html](http://www.hc-sc.gc.ca/iyh-vsv/environ/magnet_e.html)

This conclusion is consistent with that reached in January 2005 by the Federal-Provincial-Territorial Radiation Protection Committee.

Visit:

[www.bccdc.org/content.php?item=196](http://www.bccdc.org/content.php?item=196)

The World Health Organization also has a fact sheet on ELF-EMF, found at:

<http://www.who.int/mediacentre/factsheets/fs322/en/print.html>

**Q. What do other scientific agencies say?**

Numerous national and international organizations responsible for public health have convened groups of scientists to review existing EMF research. Such expert groups include the U.S. National Institute of Environmental Health Sciences, the International Agency for Research on Cancer, the Health Protection Agency of Great Britain, and the Health Council of the Netherlands.

All of these agencies:

- conclude there is little evidence suggesting EMF is associated with adverse health effects, including most forms of adult and childhood cancer, heart disease, Alzheimer's disease, depression, and reproductive effects;
- report that some epidemiological statistical data have associated magnetic fields at high exposures to childhood leukemia;
- state that the laboratory data does not support a link between EMF and any adverse health effect, including leukemia;

Furthermore, these agencies:

- have not concluded that EMF causes any disease; and
- have not recommended exposure limits or other measures to reduce exposures at levels associated with typical sources in our communities.

**Q. Can you eliminate transmission line EMF by burying the lines underground?**

No. The ground will block the electrical field, but the magnetic field will still pass through.

**Q. Can I avoid exposure to EMF if I stay away from power lines?**

No. EMF is found wherever there is electricity, whether in household wiring, power lines or electrical appliances. Your overall exposure is determined by how strong the field is at its source, how far you are from the source, and how long you remain near the source.

The strength of EMF diminishes as you move away from the source.

**Q. Should I take steps to reduce my exposure to EMF?**

To date no cause and effect connection has been established between EMF and human health at levels typically encountered by the public. No health agency has determined that your health would benefit from reducing your exposure. There doesn't appear to be any need to take special precautions. However, there are simple steps you can take to reduce your exposure, if you choose to do so.

For example, you could:

- Stay at least 1.2 metres (four feet) back from the screen when watching TV;
- Sit 50 centimetres (20 inches) away from a computer monitor;
- Move a motor-driven electric clock away from the head of the bed, or replace it with a digital or wind-up clock;
- Use an electric blanket or electrically heated waterbed to pre-heat the bed only and then unplug it; or
- Request measurements at your home to identify sources that may contribute to your overall exposure.

## for more INFORMATION

### ALTALINK

AltaLink is an independent company that owns and operates approximately 11,600 kilometres of transmission lines and approximately 260 substations. We provide electric service to more than 85 per cent of Albertans and work to maintain the safest, most reliable transmission facilities possible.

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# a DIALOGUE on ELECTRIC & MAGNETIC FIELDS



ALTALINK

# the EMF issue

At AltaLink, we recognize that some people are concerned about electric and magnetic fields (EMF). EMF is encountered virtually everywhere that electricity is used in our modern society, not just near transmission lines, so all of us have an interest in learning more about EMF.

Research on EMF has been undertaken for more than 30 years and some studies have suggested that people with certain diseases may have had higher exposures to EMF, specifically magnetic fields, compared to people without these diseases. It is unclear, however, whether the exposure to EMF actually caused the disease. Other studies have not reported such associations, including studies on animals.

No national or international health agency has concluded that EMF from power lines pose any health risk. In fact, national and international health agencies that have conducted thorough reviews of the past 30 years of literature and research on EMF and health have not recommended limiting everyday exposures to electric and magnetic fields.

Based on this research and the conclusions of scientific organizations and health agencies, AltaLink believes that the levels of EMF associated with its electric system are not a risk to human health.

If you are concerned about EMF, we can suggest some reliable scientific sources that have evaluated the potential relevance of EMF to human health as well as provide you with information about ways you can minimize your exposure to EMF.

# all about EMF

EMF are everywhere there is electricity. They can be both natural and man-made. Naturally occurring EMF include:

- the static electricity that sparks from your fingers if you touch an object after walking across a carpet
- the magnetic field that surrounds the earth and causes compass needles to point north
- the fields generated by nerve cells in the body

Man-made EMF include the 60 Hertz fields generated by household wiring, power lines and electrical appliances, that alternate 60 times per second. These fields are sometimes called 'extremely low frequency' (ELF) fields, a term that applies to frequencies below 300 Hz.

## Electric Fields

Electric fields are created by the voltage in a wire. The higher the voltage, the stronger the field. Electric fields are produced whether the current is flowing or not. For example, a hair dryer that is plugged in produces an electric field, even if it isn't turned on. Electric fields are easily blocked by objects, like trees or buildings. Electric fields can also be shielded by insulation on the wires.

## Magnetic Fields

Magnetic fields are generated only when current is flowing. Using the previous example, if the hair dryer is switched on, there is a magnetic field and the more current that is flowing, the stronger the magnetic field. At a high setting, a hair dryer

produces a stronger magnetic field than one on a low setting. Magnetic fields pass through most objects.

For the most part, only magnetic fields have been the focus of research studies. Unlike electric fields, magnetic fields cannot be easily shielded.

## Field Strength

The strength of electric and magnetic fields falls off quickly as you move away from the source.

At a distance of 20 metres (60 feet) from a transmission line, for example, the fields may be only one-quarter as strong as they are directly under the line. Beyond 200 metres, the field strength is usually too low to distinguish from other sources of EMF.

The strength of EMF from electrical appliances diminishes even more quickly with distance, so that by 1.0 to 1.5 metres (three to five feet) from the source it reaches very low levels.

## Transmission line EMF is different than other electromagnetic fields

EMF associated with electricity is not the same as EMF from other sources. Extremely low frequency EMF, like those from transmission lines, is too weak to break apart molecules as can X-rays, and have too little energy to heat food like microwaves.

# the BOTTOM LINE

Everyone in our society is exposed to EMF from many sources, including household wiring, power lines and electrical appliances. While questions have been raised that some aspects of ELF-EMF exposure might possibly be harmful, the scientific evidence does not support a cause and effect relationship between EMF and any health outcome, including cancer. Scientific studies in animals, humans, and cells have been conducted over the past 30 years and these efforts led to stronger studies, better able to detect risk. These studies have failed to find convincing scientific evidence that EMF is harmful. In fact, national and international health agencies that have conducted thorough reviews of the literature on EMF and health have not recommended that the public limit their everyday exposures to electric and magnetic fields.

