

Power lines — Radiation? ^[1]

Dear Alice,

Do you know anything about possible radiation effects from high voltage power lines near one's home, and also any adverse effects from cellular tower "radiation" or exposure? Any references you could offer would be much appreciated.

Answer

Dear Reader,

Kudos to you for using the “power” you have to investigate whether these lines or towers are hazardous to your health. While some older studies do note an association between cancer and exposure to these forms of radiation, these results haven't been replicated in studies since then. As such, there's currently very little evidence to show that power lines and phone towers cause cancer, which might be due to the fact that the waves transmitted by the towers don't emit enough energy to break the chemical bonds of an individual's deoxyribonucleic acid (DNA). Read on for more information about the types of waves you may be facing.

To provide more context, power lines and cellular towers all produce electromagnetic (electric and magnetic) fields (EMF). People are exposed to electromagnetic fields every day; in fact, EMFs are an integral part of human beings' natural environment. However, cellular towers and power lines give off two different types of EMFs. Cellular towers, radio stations, and some electronic equipment produce radiofrequency fields, while power lines have an even lower frequency. Ultimately, both types of energy given from the towers and power lines are considered non-ionizing radiation ^[2], which means that it isn't strong enough to damage cellular DNA (relative to ionizing radiation, which can change DNA at a structural level). That being said, the intensity of the radiation exposure decreases the further a person is from the source. Therefore, the exposure is highest right below power lines, but eventually fades to normal household background levels the further away you are from the lines.

So what are the concerns around these EMFs and what is it about these fields that could possibly be damaging? Biological research has found that electromagnetic fields can affect certain processes and functions at cellular and molecular levels, but there are no conclusive studies as to whether any damage is done. Additionally, it can be dependent on the amount of

exposure a person has and the type of EMF to which a person is exposed (e.g., whether it's ionizing or not). Some epidemiological studies have shown an increased probability of childhood leukemia and brain tumors in areas where there might be more exposure to extremely low frequency EMFs, such as those created by high voltage power lines (the ones on big steel towers). In occupational settings, a similar correlation has been identified between breast cancer and leukemia and EMFs, but the risk is low. However, more recent studies have indicated that there isn't an association between cancer and exposure to extremely low frequency EMFs, so the findings have been mixed.

Generally, cellular towers are considered to not pose much risk because the radiation emitted is far from the ground. Additionally, a number of studies have found no associations between DNA damage and proximity of home to a cell phone tower. If you're concerned about EMF exposure from cellular towers, consider evaluating the amount of time you spend on your phone, as [cell phone use](#) [3] offers much higher exposure to radiofrequency waves than cell phone towers (although cell phones too pose very little risk).

Here's to hoping none of this information gave you a shock!

Alice!

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