



Wireless: How does a cellphone work?

The level of radiofrequency (RF) fields coming from a cellphone antenna installation is very low (generally a hundred to a thousand times below the limits set in the Canadian RF exposure guidelines). These guidelines are maintained by Government of Canada scientists who are at the forefront of global research. The government requires that wireless network providers and device manufacturers comply with the Canadian guidelines.

What are some characteristics of the cellphone network?

The cellphone network, including its antennas and towers, establishes the link between a cellphone and the rest of the communications network. An outdoor antenna sends RF fields out into the local environment, much like a street lamp shines light on the surrounding area. A cellphone can detect the signal from the outdoor antenna and then understand the specific patterns of energy within the RF field. Simply put, the cellphone “sees” the RF fields and can “read” the information contained in them, similar to how your eye and brain can receive and process information sent in the form of visible light. This exchange of RF back and forth from the outdoor antenna to your cellphone allows you to talk with your



friends, surf the web, and send and receive text messages and other information.

For a cellphone network to work properly, areas are divided into “cells.” Within the cell is a cell site, usually near the centre. Each cell site contains an antenna installation, usually on top of a tower, building or other tall structure, and your call automatically goes to the nearest one as you move about.

In an area where there are many cellphone users, more cell sites are required. The antenna installation is carefully designed and installed so that the established Canadian RF exposure standards are respected at all times. A cell site’s design, including its antenna height and emitted RF, ensures good coverage within the area while not interfering with neighbouring cells. The cell network, then, allows the greatest number of people to connect with the highest quality of service.

So what’s the bottom line?

The Government of Canada is confident that there is no clear evidence suggesting the use of wireless communications devices, including cellphones and cell sites, is harmful provided that RF exposure guidelines are respected.