

# Hazardous radiation

## Thesis shows correlation between deaths from cancer and location of mobile antennas

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*link on the original:*

*<http://www.ufmg.br/boletim/bol1690/4.shtml>*

*Translation: Susan Strickland*

In order to avoid prolonged exposure to electromagnetic radiation the engineer Adilza Countess Dode uses her mobile phone only in cases of extreme necessity. The precaution came after the studies that she has carried out for about a decade which aimed to discover the physical, chemical and biological effects of radio frequency in living beings. Having argued her thesis at the University in late March Dode Adilza confirms the hypothesis that a correlation exists between the cases of death from cancer and the location of cellular antennas in the city of Belo Horizonte.

Through GIS the researcher notes that the central-southern Minas Gerais state capital has the highest concentration of antennas and the highest cumulative incidence rate of cancer deaths. The lowest rate is in the area of Barreiro that also holds the lowest number of antennas installed.

"The pollution caused by electromagnetic radiation is the biggest environmental problem of the 21st century," said the engineer who in her thesis recommends the Brazilian government the adoption of the so-called precautionary principle approved at the Rio Conference in 1992. Under this assumption until there is scientific certainty of no risk, launching new product or technology must be accompanied by measures to predict and prevent possible damage to health and the environment.

Member of the Board that evaluated the thesis of Adilza Dode, Professor Alvaro Augusto Almeida de Salles from the Department of Electrical Engineering of Federal University of Rio Grande do Sul (UFRGS), stressed that the research confirms results of studies conducted in Germany and Israel . "With this work Belo Horizonte

stands in an important position in the area," he said.

## **The research**

Concerned with the virtual absence of data on the effects of a technology that quickly became popular Adilza Condessa Dode defended in 2003 dissertation directed by Professor Maria Diniz Monica Lion from the Department of Sanitary and Environmental Engineering, UFMG, which proved the existence of overlapping radiation in areas where there are antennas installed causing electromagnetic pollution.

For her doctorate she worked with the hypothesis of a relationship between cancer mortality and residential proximity to antennas - base stations (BTS) - mobile phones. Adilza Dode conducted research on pre-existing databases, crossing information on deaths in Belo Horizonte between 1996 and 2006 with population information provided by IBGE (Brazilian Institute of Geography and Statistics).

Among the 22 543 deaths from cancer in the period 1996-2006, the researcher selected 4924 which types - prostate, breast, lung, kidney, liver, for example - are recognized in scientific literature as being related to electromagnetic radiation. To process this information she had the co-supervision of Professor Caiaffa Waleska Teixeira, one of the coordinators of the Centre for Urban Health of Belo Horizonte and the Epidemiology Research Group from Medicine University of UFMG.

In the next phase of the study Dode Adilza developed a new methodology using the GIS of the city to discover how far from the antennas lived the 4924 people who died during that period. "Up to 500 meters from the antennas I found 81.37% of deaths by cancer," says the researcher, professor at the University Center Izabela Hendrix and the Faculty of Medical Sciences of Minas Gerais.

She also mentions that in recent years there has been an increase of brain cancer cases in the country, as demonstrated by data from the National Cancer Institute (Inca) alongside increased use of mobile phones. "I can not say that this is the cause of death, but what is the new factor in this period? The environmental factor in the public domain is the cell phone, no other" she says. She adds that scientific literature suggests people that have cancer and undergo chemotherapy treatment are to avoid exposure to electromagnetic fields.

## Safe levels?

There are safe levels of radiation to human health? "This is exactly the problem: until now nobody knows what are the safe limits of usage that can be considered harmless to health," explains Adilza Dode, emphasizing that the standards allowed in Brazil are the same ones adopted by the International Commission on Non-Ionizing Radiation Protection (ICNIRP) , standardized federal legislation in May 2009. For the researcher these standards are inadequate. "They were drafted focusing the needs of the technology aiming efficiency and cost reduction, and not based on epidemiological studies," states the report.

According to Professor Alvaro Augusto Almeida de Salles, UFRGS, also there are no epidemiological studies demonstrating the effects of waves emitted by wireless equipment, wi-fi and bluetooth, which radiate into the lower levels, but continuously. "We are guinea pigs of technologies that are not yet proved to be safe" - he states.

Adilza Dode reports that electromagnetic fields interfere also in biomedical equipment. "For this reason it is necessary to turn off the phone when entering hospitals and ERB should not in any way be installed near hospital areas," she warns recalling that even people who do not use cell phone receive radiation continuously from the antennas.

She mentions that countries like Switzerland, Italy, Russia and China have adopted standards much lower than those allowed by the ICNIRP and in Brazil the municipality of Porto Alegre established by law defining levels of radiation emissions similar to those in Switzerland.

In her thesis Adilza cited several international studies that seek to understand the effects of electromagnetic fields. One of these, the SLR project, funded by the European Union and held in 2004 by 12 specialized laboratories in seven countries says that the electromagnetic radiation emitted by mobile phones can affect human cells and cause DNA damage by impairing the function of certain genes, enabling them or disabling them. Another study in Naila (Germany) found the incidence of cancer to be three times higher in people who lived within a radius up to 400 meters of distance from the antennas of mobile telephony.

In Netanya, Israel, another study showed an increase of 4.15 times the incidence of cancer among residents who lived within a radius of

up to 350 meters of the antennas of mobile telephony. There are also studies that indicate greater risks for children due to the peculiarities of their bodies. "The penetration of electromagnetic radiation in the brain of children is much greater than in adults," said Adilza Dode, who is preparing to begin a new phase of studies. Her goal now is to measure levels of human exposure to electromagnetic radiation in homes of people diagnosed with cancer.

## **Recommendations**

"We are not against mobile phones, but we want Brazil to adopt a precaution principle until new scientific discoveries are recognized as a criterion for establishing or changing patterns of human exposure to non-ionizing radiation," says the researcher.

In a chapter of her thesis she lists a series of recommendations. Among them that Brazil adopts the limits already adopted by countries such as Switzerland. She also suggests that the government should not allow signal transmission of wireless technologies to nurseries, schools, nursing homes, homes and hospitals; create infrastructures to monitor and measure the electromagnetic fields from telecommunications stations and discourage or ban the use of phones by children and preadolescents.

To Industries the thesis recommends the production of mobile phones with radiation towards the opposite direction of the user's head; the investment in research to find safe limits and reduce the levels of radiation emitted by the antenna. To users Adilza suggests not to keep the phone next to the body, to adopt the practice of sending messages, avoiding the maximum of its proximity to the ear, and keep away from other people while using the device. The author further recommends that each building should have a reserved area for mobile phone usage and that its residents should not accept the installation of antennas nearby. "The belief that the building where there is an antenna does not receive radiation is now contradicted by recent research," warns the researcher.

Thesis: Mortality from cancer and mobile services in  
Belo Horizonte, Minas Gerais  
Author: Countess Adilza Dode  
Defense: March 26, 2010,  
with the Doctoral Program  
Sanitation, Environment,

and Water Resources (Desa)

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