

# Previously unaccounted mechanism proposed for cell phone radiation damage

April 29 2011, by Deborah Braconnier

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(PhysOrg.com) -- The long running debate on whether cell phones are capable of damaging human tissue and causing health problems received new fuel from a paper published at arXiv by theoretical biologist [Bill Bruno](#) from Los Alamos National Laboratory in New Mexico.

Cell phones and the microwave photons they create have been looked at for some time as having the potential for causing damage and health issues to humans. One side shows evidence that cell signals have affected human behavior and health, while the other side says there is no epidemiological evidence and that microwave photons do not have enough energy to damage chemical bonds and biological tissue.

However, as Bruno points out in his paper, microwave photons can cause damage if the conditions are right. The main argument is that [microwaves](#) are not able to damage human tissue when the photon density in a cubic [wavelength](#) is less than one.

Bruno compares this to [optical tweezers](#), which are able to manipulate and damage cells with the use of photons. Optical tweezers have large amounts of photons piled on each other creating a stronger force. It is this reasoning that Bruno believes that cell signals are capable of damaging human tissue because their [photons](#) per cubic wavelength are much greater than one.

Bruno has shown that the argument that microwaves cannot disrupt a chemical bond is no longer enough to say that cell phones are unable to

damage [human tissue](#). This new information will most definitely add more fuel to the cell phone debate. Bruno argues that the way current safe dosage limits are determined is not accurate because it does not take into account this tweezer-like notion into consideration.

**More information:** What does photon energy tell us about cellphone safety? arXiv:1104.5008v1 [q-bio.OT] [arxiv.org/abs/1104.5008](https://arxiv.org/abs/1104.5008)

### **Abstract**

It has been argued that cellphones are safe because a single microwave photon does not have enough energy to break a chemical bond. We show that cellphone technology operates in the classical wave limit, not the single photon limit. Based on energy densities relative to thermal energy, we estimate thresholds at which effects might be expected. These seem to correspond somewhat with many experimental observations.

via [Technology Review](#)

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