

## **The Internet Of Things Poses Human Health Risks: Scientists Question The Safety Of Untested 5G Technology At International Conference**

Replicated research shows that Millimeter waves – used by the Department of Defense in crowd control weapons – interacts with human skin and eyes.

Israeli research studies presented at an international conference reveal that the same electromagnetic frequencies used for crowd control weapons form the foundation of the latest network – branded as 5G – that will tie together more than 50 billion devices as part of the Internet of Things. Current investigations of wireless frequencies in the millimeter and submillimeter range confirm that these waves interact directly with human skin, specifically the sweat glands. Dr. Ben-Ishai of the Department of Physics, Hebrew University, Israel recently detailed how human sweat ducts act like an array of helical antennas when exposed to these wavelengths. Scientists cautioned that before rolling out 5G technologies that use these frequencies, research on human health effects needed to be done first to ensure the public and environment are protected.

“If you are one of the millions who seek faster downloads of movies, games and virtual pornography, a solution is at hand, that is, if you do not mind volunteering your living body in a giant uncontrolled experiment on the human population. At this moment, residents of the Washington, DC region – like those of 100 Chinese cities – are about to be living within a vast experimental Millimeter wave network to which they have not consented – all courtesy of American taxpayers,” stated Dr. Devra Davis, President of the Environmental Health Trust. Davis proposed that the Trump Administration could provide funds for research and training by implementing a 2 cents per month fee on all wireless devices, their manufacturers and network providers. “Training and research in bioelectromagnetics including the evaluation of new technologies is essential before universal deployment.”

“This work shows that the same parts of the human skin that allow us to sweat also respond to 5G radiation much like an antenna that can receive signals. We need the potential adverse health impacts of 5G to be seriously evaluated before we blanket our children, ourselves and the environment with this radiation.”

Research studies from the Dielectric Spectroscopy Laboratory of the Department of Applied Physics, Hebrew University of Jerusalem, headed by Dr. Yuri Feldman, indicate that millimeter and submillimeter waves may lead to preferential layer absorption. The number of sweat ducts within human skin varies from two million to four million. The researchers pointed to replicated

peer research of these biological effects in laboratory research conducted in other countries and considered this mechanism of action well proven.

Today's cellular and Wi-Fi networks rely on microwaves – a type of electromagnetic radiation utilizing frequencies up to 6 gigahertz (GHz) in order to wirelessly transmit voice or data. However, [5 G applications will require](#) unlocking of new spectrum bands in higher frequency ranges above 6 GHz to 100 GHz and beyond, utilizing submillimeter and millimeter waves – to allow ultra-high rates of data to be transmitted in the same amount of time as compared with previous deployments of microwave radiation.

“Most people are unaware that these waves are cycling several billion times per second. 75 GHz is in fact 75,000,000,000 cycles per second,” stated Davis about these frequencies rapidly penetrating the skin.



**Active Denial Technology Fact Sheet**  
http://info.defense.gov

*Non-lethal weapons provide our operating forces with escalation-of-force options that minimize casualties and collateral damage.*

**What is it?**  
Active Denial Technology produces a focused beam of directed energy to provide our troops a non-lethal option to stop, deter and turn back suspicious individuals with minimal risk of injury. Active Denial Technology is designed to protect the innocent, minimize fatalities and limit collateral damage across the range of military operations.

**How Does it Work?**  
Active Denial Technology uses radio frequency millimeter waves at a frequency of 95 gigahertz. Traveling at the speed of light, the millimeter wave directed energy energizes the subject, penetrating the skin to a depth of only about 1/16th of an inch, or the equivalent of three sheets of paper. The beam produces an intolerable heating sensation, compelling the targeted individual to instinctively move. The sensation immediately ceases when the individual moves out of the beam or when the operator turns off the beam. There is minimal risk of injury due to the shallow energy penetration into the skin at this short wavelength and normal human instinctive reactions.

**Military Applications**  
Active Denial Technology can be used for both force application and force protection missions. Applications include crowd control, perimeter and convoy protection, perimeter security and other defensive and offensive operations from both fixed-site or mobile platforms. Non-lethal directed energy weapons using Active Denial Technology have the potential to provide a non-lethal effect at distances up to and beyond small arms range, providing U.S. military forces with additional time and space to assess the intent of potential adversaries.



**Active Denial System 1**  
Official Department of Defense Image

**Current Configurations**  
From 2000 to 2007, the Active Denial System Advanced Concept Technology Demonstration integrated and packaged Active Denial Technology into two system configurations. System 1, the technology prototype, integrated the technology into a High Mobility Multi-Purpose Wheeled Vehicle. System 2 was built as an armored, containerized system transportable by tactical vehicles. Both systems successfully completed a series of land and maritime-based military utility assessments. During 2014-2015, System 1 was refurbished into a more robust and mobile system transported by a Marine Corps Medium Tactical Vehicle Replacement truck. Both prototypes are long-range, large spot class systems, available for Service or Component Command exercises and suitable for operational employment.

For years, the U.S., Russian and Chinese [defense agencies](#) have been developing weapons that rely on the capability of this electromagnetic technology to induce unpleasant burning sensations on the skin as a form of crowd control. Millimeter waves are utilized by the U.S. Army in crowd dispersal guns called [Active Denial Systems](#). Dr. Paul Ben-Ishai pointed to research that was commissioned by the U.S. Army to find out why people ran away when the beam touched them. “If you are unlucky enough to be standing there when it hits you, you will feel like your body is on fire.” The U.S. Department of Defense explains how: “The sensation dissipates when the target moves out of the beam. The sensation is intense enough to cause a nearly instantaneous reflex action of the target to flee the beam.”

The conference at the Israel Institute for Advanced Studies at Hebrew University (IIAS) was organized in cooperation with the U.S. National Institute of Environmental Health Sciences (NIEHS) and the Environmental Health Trust (EHT).

Verizon just announced that 5G networks will be tested in 11 U.S. cities. 5G Networks will involve the deployment of millions of antennas nationwide, thousands in each city, because millimeter waves cannot easily travel through buildings or other obstacles. Proposed installations have led to public outcry in residential areas where homeowners do not want antennas mounted at their yards or near schools.

Several researchers at the conference raised concerns that current regulations are not adequate to protect public health.

“There is an urgent need to evaluate 5G health effects now before millions are exposed.... We need to know if 5G increases the risk of skin diseases such as melanoma or other skin cancers,” stated Ron Melnick, the National Institutes of Health scientist, now retired, who led the design of the National Toxicology Program study on cell phone radiofrequency radiation.

Dariusz Leszczynski, PhD, Chief Editor of Radiation and Health, stated that the international organization – called ICNIRP – developing recommendations for public exposure limits of these higher frequencies was planning to classify all the skin in the human body as belonging to the limbs rather than to the head or torso. Leszczynski cautioned that, “If you classify skin as limbs – no matter where the skin is – you are permitted to expose it more than otherwise.”

“The use of sub-terahertz (Millimeter wave) communications technology (cell phones, Wi-Fi, network transmission antennas) could cause humans to feel physical pain via nociceptors,” stated Dr. Yael Stein, MD, who wrote a letter to the Federal Communications Commission about 5G Spectrum Frontiers.

Medical experts worldwide are calling for action. Dr. Cindy Russell detailed the state of science in [a recent Santa Clara Medical Association article](#) and concluded, “Do not proceed to roll out 5G technologies pending pre-market studies on health effects. 2. Reevaluate safety standards based on long term as well as short term studies on biological effects.”

[Videos of Lectures and Presentation Slides from the Conference](#)

## **SCIENTIFIC REFERENCES**

[Human Skin as Arrays of Helical Antennas in the Millimeter and Submillimeter Wave Range](#)  
[The Helical Structure of Sweat Ducts: Their Influence on the Electromagnetic Reflection Spectrum of the Skin](#)  
[Circular polarization induced by the three-dimensional chiral structure of human sweat ducts](#)  
[Tissue Morphology and Bio-metamaterials as the Driving Mechanism of Human Electromagnetic Response in the sub-THz frequency Range](#)

[Research Study Summaries at Hebrew University Department of Applied Physics](#)

[PDF of Abstract for January 24, 2017 IIAS Presentation](#)

[Letter from Dr. Yael Stein to Federal Communications Commission on Spectrum Frontiers](#)

[Modelling millimetre wave propagation and absorption in a high resolution skin model: the effect of sweat glands.](#)

[Terahertz Channel Characterisation Inside the Human Skin for Nano-scale Body-Centric Networks](#)

5G Wireless Future, by Dr. Cindy Russell: WILL IT GIVE US A SMART NATION OR CONTRIBUTE TO AN UNHEALTHY ONE? [Page 20-21](#)

## **REFERENCES**

[US Department of Defense Non-Lethal Weapons Program FAQs](#)

[A Narrative Summary and Independent Assessment of the Active Denial System The Human Effects Advisory Panel](#)

[Everything You Need to Know About 5G](#)

[Potential Risks to Human Health from Future Sub-MM Communication Systems: Paul Ben-Ishai, PhD Video Lecture Presentation](#)

## **VIDEOS**

[Health Risks of 5G Technology: Dr. Devra Davis](#)

[Potential Risks to Human Health from Future Sub-MM Communication Systems: Paul Ben-Ishai, PhD](#)

[5G Technology: Potential Risks To Human Health: Excerpts From Scientific Conference](#)

[NBC: Hundreds Do Not Want Small Cell Towers Near Homes: Montgomery County](#)

[Non-Lethal Weapon: Active Denial System \(ADS\)](#)