

**Statement for the Subcommittee on Labor, Health and Human Services,  
Education, and Related Agencies  
Committee on Appropriations  
United States Senate  
September 14, 2009  
Hearing on The Health Effects of Cell Phone Use**

**Statement of  
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Mr. Chairman and distinguished members of the Subcommittee—I am pleased to appear before you today to present testimony on research supported by the National Institutes of Health's National Institute of Environmental Health Sciences (NIH/NIEHS), through the National Toxicology Program, on exposure to radiofrequency energy from the use of cellular telephones. My name is John Bucher; I am the Associate Director of the National Toxicology Program (NTP).

Personal (cellular) telecommunications is a rapidly evolving technology that uses radiofrequency energy or radiation for mobile communication. Currently, wireless communication devices are used by over 270 million Americans, or greater than 85% of the U.S. population. With so many users, this could translate into a potentially significant public health problem should the use of these devices even slightly increase the risk of adverse health effects.

While the weight of the current scientific evidence has not conclusively linked cell phones with any health problems, we and other scientific organizations evaluating the available studies have concluded that better data are needed to establish any potential risks to humans from the low-level radiofrequency radiation exposures associated with their use.

The Food and Drug Administration (FDA) nominated cell phone radiofrequency radiation emissions to the NTP for toxicology and carcinogenicity testing. The FDA nomination was based on the following concerns:

- There is widespread human exposure;
- Current exposure guidelines are based on protection from acute injury from thermal effects;
- Little is known about the potential for health effects of long-term exposure; and
- Sufficient data from human studies to definitively answer these questions may not be available for many years.

The NTP is working to provide information that will help clarify any potential health hazards, including cancer risk, from exposure to cell phone radiation and pave the way to better protection

for public health. The NTP is in the initial stages of conducting toxicology and carcinogenicity studies in laboratory animals, using specially designed chambers to provide exposures that simulate those of cell phone users in the United States. The rats and mice will be exposed to radiofrequency energy from the two technologies (CDMA and GSM)<sup>1</sup> currently used in the U.S. at two frequencies (900 and 1900 MHz).

Because of the technical complexity of studying cell phone radiation, NTP staff are working closely with radiofrequency radiation experts from the National Institute of Standards and Technology (NIST). Through an interagency agreement, NIST scientists worked to develop an exposure system that would provide uniform exposures to radiofrequency radiation in unrestrained rodents in the frequency bands used in mobile communications. This design allows for exposures of up to 20 hours per day, in contrast to the most comprehensive rodent cancer studies carried out to date in Europe using restrained animals, where exposures were only 2 hours per day. The NIST system consists of 21 separate chambers specially assembled in Switzerland and installed in IIT Research Institute laboratories in Chicago. These 21 chambers are essentially shielded rooms with a transmitting antenna radiating radiofrequency fields and rotating stirrers to generate a statistically uniform field.

The NTP is conducting studies in three phases: (1) a series of pilot studies to establish field strengths that do not excessively raise body temperature; (2) subchronic toxicology studies where the animals are exposed to various subthermal field strengths for one month; and (3) chronic toxicology and carcinogenicity studies where the animals will be exposed for 24 months. The studies are being carried out with both sexes of rats and mice and with pregnant female rats. Thus, these studies will examine potential health effects resulting from exposures starting in gestation and continuing through old age.

The projected timeline is that pilot studies should be completed in November 2009. Subchronic toxicology studies then are expected to begin in early 2010, and the chronic toxicology and carcinogenicity studies are expected to start in late 2010, with an anticipated completion in 2012 and subsequent reporting and peer review of the data in 2013-2014.

Collectively, these rodent studies conducted by the NTP will provide critical information regarding the safety of exposure to radiofrequency radiation and strengthen the science base for determining any potential health effects in humans. These data could contribute to information used by the federal government, including FDA, in making decisions with respect to radiofrequency radiation health issues consistent with the protection of public health and safety.

In addition to the NTP study, research is underway in academic institutions supported through the NIH extramural grants program. The research portfolio of the National Cancer Institute (NCI) includes several grants examining possible associations between cellular phone use and cancer. Internationally, an NCI-funded grant is exploring possible links between exposure to electromagnetic frequencies from new communication technologies and tumors of the brain and central nervous system. In the U.S., researchers at five academic centers are undertaking the first

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<sup>1</sup> CDMA is Code-Division Multiple Access and GSM is Global System for Mobile communications.

concentrated effort to examine environmental and genetic risk factors for meningioma, a tumor that forms in the thin layers of tissues protecting the brain and spinal cord. Cellular phone utilization serves as one of the major environmental risk factors being considered in this study. These grants are expected to conclude in 2010 and 2011, respectively, and findings will be made available shortly thereafter.

NIEHS is using American Recovery and Reinvestment Act funding to support researchers at the University of California, Los Angeles, who are studying whether exposure to cellular telephones in childhood can have effects on the central nervous system. The cohort for the study consists of over 100,000 Danish children born between 1996 and 2007, with data gathered on cell phone use. The research team plans to study whether cell phone exposure might be related to behavioral and developmental problems, as well as other outcomes such as seizures, migraines, and sleep disturbances.

Thank you for the opportunity to talk about these important studies. The NTP/NIH studies I have described represent a significant commitment to determining whether any risks to public health are posed by the current use of these mobile communication devices. I will be happy to answer any questions you may have.