

NTP Toxicology and Carcinogenicity Studies of Cell Phone Radiofrequency Radiation

Cell phones transmit their signals via non-ionizing radiofrequency radiation (RFR). It is known that acute exposures to high levels of RFR can produce a heating effect that can damage tissues and biological systems, but the potential impact of chronic exposure to low levels of RFR from wireless devices on human health is not currently known. While little is known about the potential health effects in humans, the use of cell phones and wireless devices continues to increase in the United States and throughout the world. It was recently estimated that greater than 91% of the adult population and greater than 75% of teens in the United States use cell phones (Pew Research, 2013).

<http://www.pewresearch.org/fact-tank/2013/06/06/cell-phone-ownership-hits-91-of-adults>). The number of worldwide users of cellular devices is estimated to exceed 5 billion. Given the large number of users, a small increase in the incidence of adverse health effects associated with cell phone use could potentially pose a widespread public health concern. None of the currently published animal studies have provided adequate information to conclusively determine the carcinogenicity of RFR. Epidemiology studies have not conclusively demonstrated a causal link between cell phone RFR exposure and any health problems in humans. However, the results of these studies are complicated by confounding factors and potential biases. Additionally, exposures in the general population may not have occurred for a long enough period to account for the long latency period of some types of cancers in humans. Similar to the challenges faced in epidemiological studies, studies investigating the carcinogenicity of RFR in rodents have not demonstrated a conclusive association between RFR and tumors in any tissue. However, certain design features in these studies limit their utility to adequately assess carcinogenicity. The NTP RFR initiative was conducted in four phases designed to: (1) establish and validate an exposure system that would allow for optimal exposure conditions, (2) conduct a series of pilot studies to evaluate the effects of increasing levels of RFR exposure on body temperature, and (3) conduct studies to characterize subchronic and (4) chronic toxicity and carcinogenicity of RF radiation at relevant levels of exposure. The results of these studies will provide critical data for the evaluation of risk to humans exposed to radiofrequency radiation emitted from wireless devices.