

phones were not widely available until the 1990s, and brain tumors develop over many years. Hence, the early studies did not cover long-term cell phone use.

A study funded by the National Cancer Institute and published in 2001 focused on 782 patients who had brain cancer and 799 patients who did not have brain tumors. This study did not find any increased risk of brain cancer for the patients who had used cell phones. Many other studies have found similar results. However, a few studies have found a possible link, including one Swedish study that found an increased risk of acoustic neuroma (a benign tumor) in long-term cell phone users. In 2006, the FDA announced that it would revisit the issue. The FDA stated that the findings of two Swedish studies are inconsistent with earlier studies and acknowledged that these studies are difficult to interpret.

Reducing RF Exposure

Although they have not demonstrated a link between cell phone use and brain cancer, scientists have not concluded that there is no risk. More research is needed, especially on the long-term effects of RF exposure. In the meantime, concerned cell phone users can take measures to limit their exposure to RF. Exposure depends on a number of factors, including the amount of time spent using the phone, the amount of cell phone traffic in the area, and the distance

between the antenna and the user's head. One way to reduce exposure is to minimize the time spent on cellular calls. Another option is to use a hands-free device that puts the antenna farther from the head.



Researching the Issue

1. Cell phone makers are now required to report the *specific absorption rate* (SAR), the amount of RF energy absorbed by the user. The maximum allowed SAR is 1.6 watts per kilogram. Conduct research to find the SAR of several top models of phones. If you own a cell phone, see if you can determine the SAR of your phone.
2. Research the effects of ionizing radiation on the human body. What are some sources of ionizing radiation? How does ionizing radiation affect living tissue?
3. Use the Internet to research one of the recent epidemiological studies done on cell phone use and brain cancer. Write a short report describing the study, including the subjects and control group, the method of obtaining data, and the conclusions reached by the researchers. Share your report with the class.
4. As cell phones have grown in popularity, concerns have arisen about the safety of driving while using a cell phone. Several countries have banned the use of cell phones while driving. Conduct research to find out about studies conducted on this issue. Is it hazardous? Should we pass laws to prevent it? Choose a position on the issue, and write a paper defending your position.