Introduction

There are more than 303 million cell phone subscribers in the United States.[1] Globally, the number of cell phone subscribers is approximately five billion.[2] Thus, a finding that cell phone use causes brain cancer or other harmful health effects would open the proverbial floodgates to claims against members of the cell phone industry and have huge ramifications for insurance companies. This memo discusses electromagnetic radiation emitted from cell phones, research regarding the relationship between cell phone electromagnetic radiation and cancer, and litigation regarding cell phone safety.

I. Electromagnetic Radiation

Cell phones emit a form of electromagnetic radiation called radiofrequency (“RF”).[3] There are two types, ionizing and non-ionizing.[4] During cell phone use, “the [body] tissues next to where the phone is held absorb [RF energy].”[5] High doses of RF energy cause localized tissue heating, but RF exposure from cell phones does not cause an increase in body temperature.[6] Heating is the “only known biological effect of [RF energy].”[7]

A cell phone user’s exposure to RF energy depends on several factors including: the model of the phone; the amount of time the user spends on the phone; whether the user is using a hands-free device; the amount of cell phone traffic in the area at the time of use; and the distance to the nearest cell phone tower (the farther away the user is from a cell phone tower, the more RF energy it takes to get a signal).[8] The amount of RF energy absorbed from the phone is called the specific absorption rate (SAR).[9] The Federal Communications Commission (FCC) regulates SAR levels,[10] and cell phone manufacturers must report the SAR level of their products to the FCC.[11] The current SAR level limit is 1.6 watts per kilogram of body weight.[12]
II. Cell Phones as Carcinogens

There are concerns that exposure to RF energy from cell phone use may affect the brain and other tissues in the head, leading to cancerous and noncancerous brain tumors.[13] Current research focuses on whether RF energy from cell phones causes “malignant (cancerous) brain tumors, such as gliomas as well as benign (noncancerous) tumors, such as acoustic neuromas (tumors in the cells of the nerve responsible for hearing), meningiomas (tumors in the meninges, membranes that cover and protect the brain and the spinal cord) and parotid gland tumors (tumors in the salivary glands).”[14] Scientists have not identified the mechanism through which RF energy may cause cancer.[15]

The level of radiation emitted by cell phones is much lower than that emitted by X-rays, gamma rays, or even microwaves.[16] Although scientists know that exposure to high levels of RF radiation can cause harmful health effects to exposed individuals, it is unclear whether the lower levels of RF radiation emitted by cell phones are similarly dangerous.[17] The main reason for this uncertainty arises from the lengthy latency period between RF exposure and the onset of a brain tumor. Additionally, the relatively recent introduction of cell phones into consumer culture means that conclusive long-term data about cell phone related RF exposure latency periods is not yet available.

As a result, much of the extensive research conducted on the human health effects of cell phone radiation is either inconclusive or conflicting, with scholars reaching widely divergent conclusions. For example, in 2011, Swedish researchers conducted a pooled analysis of case-control studies and found an increased risk for gliomas, one malignant brain tumor type, particularly as the latency time and hour usage increased.[18] At the other end of the spectrum, in a study conducted solely on children and adolescents with brain tumors, European researchers found that those who were cell phone users were not statistically significantly more likely to develop brain cancer than nonusers.[19]

Falling somewhere in between is the June 2010 Interphone Study.[20] The Interphone Study was a decade long study that started in 2000 with participants from 13 countries. The Interphone Study evaluated the risk for glioma, acoustic neuroma, meningioma, and parotid gland tumors associated with cell phone use.[21] Interphone researchers found, on the whole, no statistically significant correlation between cell phone usage and the increased incidence of certain brain tumors.[22] However, the results signaled a possible link between the development of one type of brain tumor, gliomas, and heavy cell phone use.[23] The Interphone Study Group, however, reported that this result may be a result of participation bias or other methodological limitations.[24] Bias and errors limited the strength of the results, thus preventing a conclusion with regards to causation.[25]

From May 24 to 31, 2011, 31 scientists from 14 countries convened at the International Agency for Research Center (IARC) of the World Health Organization (WHO) in Lyon, France, to review studies addressing the risk of cancer associated with RF energy emitted from cell phones.[26] On May 31, the IARC classified RF electromagnetic fields as “possibly carcinogenic” to humans based on an increased
risk for glioma related to cell phone use. It reportedly based its classification on a review of hundreds of scientific journals articles regarding health risks associated with exposure to RF energy, including a study called the Interphone study that showed a 40% increase in risk for glioma for people who used their cell phones for an average of 30 minutes per day over a 10 year period.

III. Current Status of Cell Phone Litigation in the U.S.

To date, personal injury suits based on the health risks associated with cell phones, for the most part, have been unsuccessful because it is difficult for plaintiffs to establish causation as the evidence is unreliable. Additionally, plaintiffs face a procedural hurdle, as their claims are preempted by federal law, which considers all cell phones that comply with the prescribed SAR standards safe.

A. Causation Hurdle

As of now, the weakness in the scientific basis for claims based on use of cell phone presents viable defenses to the claims of causation, as demonstrated below:

(i) Reynard v. NEC

The first tort suit in the United States to allege that cell phone radiation caused brain cancer was Reynard v. NEC, 887 F. Supp. 1500 (M.D. Fla. 1995). In that case, the plaintiffs filed a wrongful death suit alleging that the negligent and defective design of the defendants’ cell phone caused electromagnetic radiation from the phone to initiate the decedent’s brain tumor or accelerate and aggravate the course of her already existing-tumor. Id. at 1502. The defendants prevailed on summary judgment. Id. at 1505. The court ruled that the plaintiffs’ evidence did not satisfy their burden of showing an issue of material fact regarding causation. Id.

In support of their motion, the defendants submitted affidavits of two doctors, Dr. F. Kristian Storm III and Dr. Carl Huddson Sutton. Id. at 1502. In his affidavit, Dr. Storm concluded that no scientific or medical studies had shown that emissions deposited at the brain from a cell phone such as the decedent’s were associated with any adverse biological effects, including the initiation or acceleration of brain cancer growth. Id. Further, he noted that the incidence of cancer has remained fairly constant over time and the location of the cancer in the brain has remained random, showing a lack of association between cell phone use and brain cancer. Id. Similarly, Dr. Sutton’s affidavit stated that it was “within a reasonable medical probability that [the decedent’s] brain tumor was not initiated or promoted by the use of [her cell phone].” Id. at 1503. Dr. Sutton opined that the decedent had brain cancer before she started using the cell phone and that the type and location of the tumor, nor her survival time, were unusual. Id.

The defendants also asserted that the plaintiffs’ experts in the state court action, Drs. Leestma and Holt, did not establish medical causation. Id. at 1504. The defendants pointed out that Dr. Leestma could not determine or assign a probability as to whether exposure to electromagnetic radiation caused or
contributed to the growth of Reynard’s tumor. *Id.* The defendants also asserted that Dr. Holt’s testimony was unorthodox and that he had not expressed an opinion supporting the plaintiffs’ claims within reasonable medical probability. *Id.*

The plaintiffs proffered, among other evidence, the expert affidavit of Dr. David Perlmutter, a medical journal article written about Dr. Holt, and an article from a publication entitled “Microwave News,” which suggested that cell phone emissions can “act as cancer-causing agents.” *Id.* The court noted that Dr. Perlmutter’s affidavit indicated that he agreed with Dr. Storm’s opinion that the decedent’s tumor began before she started using a cell phone and that her cell phone use did not cause or aggravate the growth of her brain cancer. *Id.* Further, the court found that Dr. Perlmutter’s affidavit did not satisfy the admissibility criteria under *Daubert v. Merrell Dow Pharmaceuticals*, 509 U.S. 579 (1993), because it contained: (1) no reference to scientific or medical research by Dr. Perlmutter independent of litigation; (2) no evidence that he examined the decedent or reviewed her medical records; (3) no reference to independent research regarding the use of the type of cell phone that the decedent used or research regarding radiation to which she was allegedly exposed; and (4) no evidence that the “studies, analysis, and conclusions” of his affidavit had been subjected to peer review and publication. *Id.* at 1507-08. The court also concluded that the articles the plaintiffs submitted suggested that the their position was not generally accepted. *Id.* at 1504.

(ii) *Newman v. Motorola*

Another well-known cell phone case is *Newman v. Motorola, Inc.*, 218 F. Supp. 2d 769 (D. Md. 2002), aff’d *Newman v. Motorola, Inc.*, 78 Fed. Appx. 292 (4th Cir. 2003). In that case, Dr. Newman and his wife brought a claim against cell phone manufacturers and sellers alleging that his use of a cell phone manufactured by Motorola caused his brain cancer. 218 F. Supp. 2d at 771. The court ruled that the plaintiffs had not submitted any reliable or relevant evidence to support either general or specific causation, leaving the plaintiffs no admissible evidence on causation. 78 Fed. Appx. at 294. The court thus granted summary judgment to the defendants. *Id.*

The plaintiffs proffered a number of experts to support their causation theory, but the testimony of Dr. Lennart Hardell was crucial to their case. 218 F. Supp. 2d at 774-75. The plaintiffs relied on Dr. Hardell to support specific causation. *Id.* at 775. Dr. Hardell relied on his own epidemiological research set forth in two of his papers in forming his opinion that Dr. Newman’s cell phone use caused his brain tumor. *Id.* The court held that Dr. Hardell’s expert testimony failed the *Daubert* test and was thus inadmissible based on a lack of peer support and a lack of “statistically significant increased risk for the development of malignant brain tumors based on analog cell phone use.” *Id.* at 777-80. The court found the validity of the results of Dr. Hardell’s studies suspect for several reasons including the following: (1) recall bias of his research subjects regarding which side of their head they used their cell phone; (2) a lack of any dose-response relationship; (3) problems with relying on an ipsilateral association (“increased risk for brain
tumors located on the same side of the head as the cell phone use”) as evidence of causation when there was no evidence of an association between cell phone use and the development of malignant brain tumors; (4) too much emphasis on the positive findings for isolated subgroups of tumors; and (5) the fact that his methodology for testing laterality had not been used by any other scientist presented to the court. *Id.* at 778.

The court also held that the testimony of experts proffered by the plaintiffs on the issue of general causation, Dr. Elihu Richter and Dr. Jerry Phillips, was also inadmissible under the Daubert test. *Id.* at 779-83. Dr. Richter relied on one of Dr. Hardell’s studies as well as animal studies, including one by another of the plaintiffs’ experts, Henry Lai, Ph.D. *Id.* at 780. Dr. Phillips similarly relied on animal studies by Dr. Lai. *Id.* at 781. The court found that the Lai studies were not relevant as they were conducted at a higher frequency than the range of frequency of Dr. Newman’s cell phone. *Id.* at 781. Further, the court noted that Dr. Lai’s studies had not been replicated by other scientists, and Dr. Lai had stated in a paper after completing his studies that insufficient research data were available regarding whether RF radiation exposure during the normal use of cell phones could lead to hazardous health effects. *Id.* at 781.

B. Cell Phone Preemption Case Law

Since the FCC considers all cell phones that comply with the prescribed SAR standards safe, litigation has turned primarily on whether state law claims that directly or indirectly impose stricter emissions standards than those prescribed by federal regulations are preempted under the doctrine of conflict preemption. Three reported decisions are at the forefront of the conflict preemption issue – *Farina v. Nokia, Inc.*, 625 F.3d 97 (3d Cir. 2010); *Murray v. Motorola, Inc.*, 982 A.2d 764 (D.C. 2009); and *Pinney v. Nokia, Inc.*, 402 F.3d 430 (4th Cir. 2005). The U.S. Court of Appeals for the Third Circuit (*Farina*) and District of Columbia Court of Appeals (*Murray*) have held that state law claims are preempted, while the U.S. Court of Appeals for the Fourth Circuit (*Pinney*) allowed the claims to proceed.

Following a petition to the Supreme Court in *Farina*, it appeared that the Supreme Court was interested in hearing the case.[29] Last May 2011, the same day that the IARC of WHO announced that it was classifying cell phones as possibly carcinogenic, the Supreme Court invited solicitor general to file a brief on the issue. However, with the denial of certiori in early October 2011, the recent challenge to the federal preemption defense ended, and it remains a lead defense for defendants today.

i. *Murray v. Motorola*

*Murray*, 982 A.2d 764 (D.C. Cir. 2009), was a consolidation of six suits in which the plaintiffs sued numerous cell phone “manufacturers, distributors, promoters, sellers, service providers, industry associations and standards-setting entities” alleging that the plaintiffs suffered illness and injury, including brain cancer and tumors, or loss of consortium from the use of cell phones. The plaintiffs alleged that the
cell phone companies had been aware of studies revealing that radio frequency emissions ("RF radiation") from cell phones have thermal and non-thermal effects that are harmful to humans. Id. The plaintiffs also argued, among other things, that the Federal Communications Commission (FCC) “allowed cell phone manufacturers to self certify their cell phones as within standard absorption rate (SAR) limitations established by the FCC even though SAR results could be easily manipulated.” Id. at 770. Thus, “the gravamen of [the] plaintiff’s [c]omplaints [were] that the cell phones that [the] defendants manufactured or promoted were unsafe because they emitted a dangerous level of RF radiation, notwithstanding any FCC approval of the phones.” Id.

The D.C. Circuit held that, pursuant to the Supremacy Clause, the plaintiffs’ claims which rested on allegations regarding the inadequacy of FCC radiation standards or the safety of FCC-certified cell phones were preempted under the doctrine of conflict preemption. Id. at 771, 778. Under the doctrine of conflict preemption, “[f]ederal law supplants state law . . . where ‘compliance with both federal and state regulations is a physical impossibility, . . . or where state law stands as an obstacle to the accomplishment and execution of the full purposes and object[ives] of Congress.’” Id. at 771 (quoting In re Couse, 850 A.2d 304, 308 (D.C. 2004)). The court noted that the FCC explained that the RF radiation limits it adopted “provide a proper balance between the need to protect the public and workers from exposure to excessive RF electromagnetic fields and the need to allow communications services to readily address growing marketplace demands.” Id. at 776 (quoting Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation, 12 F.C.C.R. 13494, 13497, at ¶ 5).

The court reasoned that a state regulation that would alter the balance struck by the FCC would conflict with the FCC determination that cell phones complying with FCC standards are safe for use and may be sold in the United States. Id. at 776-78. Because plaintiffs’ claims on both the thermal and non-thermal effects of cell phones rested on allegations of the inadequacy of FCC radiation standards or the safety of the FCC-certified cell phones, the court ruled they were federally preempted. Id. at 777, 780-81. The court held, however, that the plaintiffs’ claims premised on the allegation that early-model, non-FCC-certified phones were unreasonably dangerous were not preempted. Id. at 768. Finally, the court held that claims under the District of Columbia Consumer Protection Procedures Act (CPPA), D.C. Code § 28-3904 (2001), premised on the defendants’ alleged affirmative misrepresentations or material omissions regarding the cell phones were not preempted. Id. at 789.


Pinney, 402 F.3d 430 (4th Cir. 2005), consisted of five multidistrict class actions in which the plaintiffs alleged, among other things, that cell phones emitted an unsafe level of RF radiation, and “Nokia, in knowing this, negligently and fraudulently endangered the consuming public by marketing wireless telephones without headsets.” Id. at 440. In that case, the plaintiffs sought damages “in an amount sufficient to buy a headset for each class member who [had] already bought one” and specific performance requiring Nokia to provide headsets to those members of the class whose cell phones were
not headset-compatible. *Id.* at 440-41. The plaintiffs alleged seven claims in their complaints: (1) “strict liability for placing a defectively designed product into the stream of commerce”; (2) strict liability for failure to warn about the adverse health risks associated with wireless telephones; (3) violation of various state consumer protection statutes; (4) breach of implied warranty of merchantability by selling and distributing unreasonably dangerous wireless telephones; (5) negligence in failing to conduct appropriate scientific research on the health effects of RF exposure and failing to provide headsets, among other things; (6) “fraud by misinforming and misleading the public as to the safety of wireless telephones”; and (7) engaging in a civil conspiracy to market unsafe wireless telephones by improper and wrongful means. *Id.* at 443-45. The court held that the plaintiff’s claims did not arise under federal law under either the substantial federal question doctrine or the doctrine of complete preemption. *Id.* at 441. The court thus ruled that the district court lacked jurisdiction over the claims, and erred in denying the plaintiffs’ consolidated motion to remand their cases to state court. *Id.* at 441-42.

The Circuit Court, however, found that the district court did have diversity jurisdiction over one of the lawsuits, and thus reviewed the lower court’s dismissal of the claim based on federal preemption. *Id.* at 451. Unlike the *Murray* court, the Fourth Circuit held that the plaintiffs’ claims were not federally preempted under the doctrines of express, conflict, or field preemption. *Id.* at 453, 456-7. Overruling the lower court’s decision, the Fourth Circuit held that § 332 of the Federal Communications Act (FCA) did not represent a congressional objective of ensuring that all equipment used in connection with wireless telephones be subject to exclusive RF radiation standards that have the effect of precluding state regulation on the matter, but rather that the section was enacted to “ensure the availability of a nationwide network of wireless service coverage” and “to develop the infrastructure necessary to provide wireless services.” *Id.* at 457. The court further noted that Congress had “specifically allowed for preemptive national RF radiation standards only for personal wireless service facilities.” *Id.* at 458. Finally, the court noted two applicable savings clauses; the general savings clause in the FCA and the savings clause in section 601(c)(1) in the Telecommunications Act of 1996. *Id.* at 458.

**iii. Farina v. Nokia**

In contrast to the *Pinney* court, in *Farina*, 625 F.3d 97 (3d Cir. 2010), one of the cases remanded to state court by the *Pinney* court, the Third Circuit held that the plaintiff’s claims were preempted by federal law under the doctrine of conflict preemption.[30] In that case, the plaintiff’s claims were based on the allegation that cell phones as currently manufactured were unsafe to be operated without headsets because a cell phone user was exposed to dangerous amounts of RF radiation when holding the phone to his head. *Id.* at 104. In finding that the plaintiff’s claims were preempted, the court noted that the plaintiff would have to establish that cell phones abiding by the FCC’s SAR guidelines were unsafe to operate without a headset in order to succeed on his claims. *Id.* at 122. The court reasoned that the SAR guidelines “represent the FCC’s considered judgment about how to protect the health and safety of the public while still leaving industry capable of maintaining an efficient and uniform wireless network.” *Id.* at
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125. The court further reasoned that allowing juries to impose liability on cell phone companies in cases such as the plaintiff’s would conflict with the FCC’s regulations and allow a jury to “second guess the FCC’s conclusion on how to balance its objectives.” Id.

CONCLUSION

As noted above, not enough is known about the long-term effects of cell phone use and, without an established causal link, plaintiffs’ burden of showing a causal relationship between their alleged injuries and cell phone use has been almost impossible to prove. However, with IARC’s recent classification of RF electromagnetic fields as “possibly carcinogenic” to humans, plaintiffs will have a better chance in prevailing against cell phone manufacturers and suppliers on personal injury and products liability claims. Whether IARC’s classification has real teeth is yet to be seen, however, it is apparent that this will only be the beginning of a wave of cell phone lawsuits.


[2] Id.

[3] Id.

[4] Id.

[5] Id.

[6] Id.

[7] Id.


[13] National Cancer Institute at the National Institutes of Health, supra note 1; American Cancer Society, supra note 9.
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[17] Id. at 6, 8.


[21] Id.

[22] Id.

[23] Id.

[24] Id.

[25] Id.


[28] The plaintiff and his wife previously filed and voluntarily dismissed an action in Circuit Court for Pinellas County, Florida. Id. at 1504, n. 2.
